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Member of TAYSAD CLEPA, European Automotive Suppliers Association

Global player, global actor

13 global OEMs' vehicle production in Turkey increased to over 1,7 million units in 2017, while it was only 374.000 units in 2002, due to Turkey's competitive and qualified workforce, advantageous geographic location and dynamic domestic market. This means a 10 percent of annual growth in the mentioned period.

This significant growth of automotive sector led Turkey to become the world's 14th biggest and Europe's 5th biggest automotive manufacturer by the end of 2017.

Proving itself as a unique production center, Turkey's automotive industry now aims to develop its R & D, design and branding capacities. As of the end of 2017, 132 design and R&D centers, who are owned by automotive manufacturers/suppliers, operate in Turkey.

Automotive industry, which has been the sectoral export champion 12 years in a row in Turkey and completed last year with a record of 28,5 billion USD on an annual basis, aims to exceed its 29 billion USD export objective in 2018.

Turkey has a remarkable strength in its domestic market, which is the young and growing population. While EU countries experience a decline in their domestic demand, Turkey still protects its advantage in that area.

Turkey's ability to adapt legislative changes, cyclical fluctations and changes in the standards, is an important strength in automotive, as well as other areas. Foreign partnerships with strong groups and advanced supply industry vitalise the sector.

Despite the fact that it has negative impact over the social development, lower labor costs, compared to EU countries, indeed have a positive impact over the production costs. The need of innovation has many opportunities in itself. Turkish automotive sector has an

opportunity to create platforms that brings together the entrepreneurs with its entrepreneurship centers. Turkey is coming close to achieve its vision of becoming an R&D and design center day by day.

Turkish automotive industry, which meets, furthermore exceeds, the requirements of international quality and safety standards, is now at a very efficient and competitive point due to its added value production approach.

SEVGİ ÖZÇELİK TAYSAD Corporate Communication Specialist

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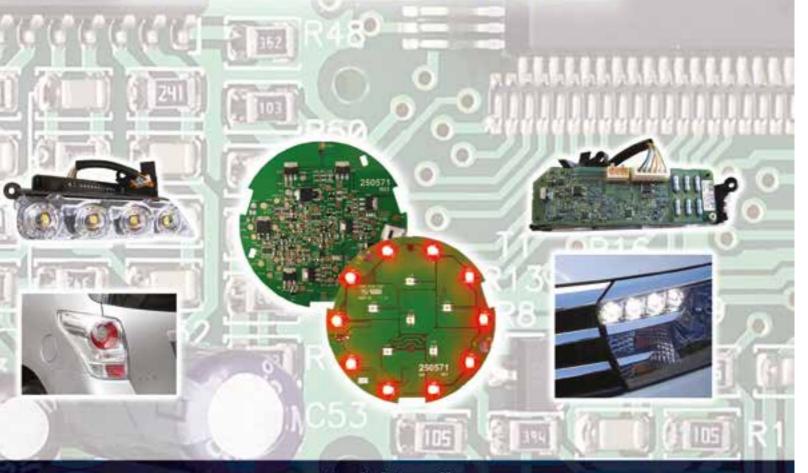




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Suppliers focus on innovative and value-added products triggered by technology and development

ALPER KANCA

TAYSAD Chairman of the Board

According to the data compiled at the end of 2017, Turkey ranks as the 14th major automotive producer with 78% average export rate in the world. Turkey has also become the 5th largest automotive manufacturer in Europe as of 2017.

urkish automotive sector has witnessed a significant transformation owing to a speedy industrialization, technical progress coupled with prominent harmonization with the international automotive industry since its foundation back in early 1960s. This transformation has been reinforced, following the investments worth around USD 14 billion by original equipment manufacturers (OEM) during the period between 2002 and 2017. With the support of these investments, Turkish automotive sector not only expanded its manufacturing capabilities but also fulfilled the outgrew international quality and safety standards and thus is now recognized as one of the robust production, export and engineering hub for the automotive value chain all around the world.

According to the data compiled at the end of 2017, Turkey ranks as the 14th major automotive producer with 78% average export rate in the world. Turkey has also become the 5th largest automotive manufacturer in Europe as of 2017. With the sale of 987.000 units in 2017, the vehicles of Turkish origin enjoyed the dominant position among the vehicles coming from outside of EU.

The recent export data released in the first half of the 2018 also validate Turkish automotive industry's success / competitiveness in the field of export. Turkish automotive industry has managed some \$16.4 billion in exports with a 14.5 percent increase in the first half of 2018 compared to the same period of last year. The sales to the European Union and other European countries constituted 80 percent of the sector's total exports as the automotive sector's exports to these countries rose by 15 percent and reached \$13.6 billion in this period.

Turkish automotive supplier industry is the branch that has been powering up the Turkish automotive sector. Accordingly, around 400 Tier 1 supplier companies work with OEMs with quality products. Additionally, more than 250 global suppliers have chosen Turkey as their production base. Component exports have also witnessed an increase by 13% CAGR over the past 16 years. It is worth noting that European countries, particularly Germany, are the top export markets for Turkish automotive supplier industry.

With the aim of remaining as center of excellence, Turkish automotive industry has incrementally focused on

advancing its effectiveness and efficiency in the fields of R&D, design and branding. New set of legislation on R&D, launch of project-based support, increase in the number of R&D and design centers contribute to this objective. There are 145 R&D and design centers that operate in the automotive manufacturers and suppliers industry as of 2018. Accordingly, the automotive sector remains as the sector that makes the most R&D investment compared to other sectors in Turkey. The actors in the automotive industry have been focusing on the innovative and value added products triggered by the latest technologic developments and R&D. The electrified, autonomous automotive, digitalization shared and connected technologies along with the environmental friendly technologies are the new agenda topics in the Turkish automotive industry.

TAYSAD, Association of Automotive Parts and Components Manufacturers, which represents 75% of the output of the automotive supplier industry and 85% of the industry's exports, attaches great importance to the abovementioned developments in the automotive industry. It aims at, positioning the Turkish Automotive Supplier Industry into the top ten in the Global Automotive Market through its Design-Technology-Logistics capability by 2030. We believe that with our 408 members, we are going to achieve our objective.

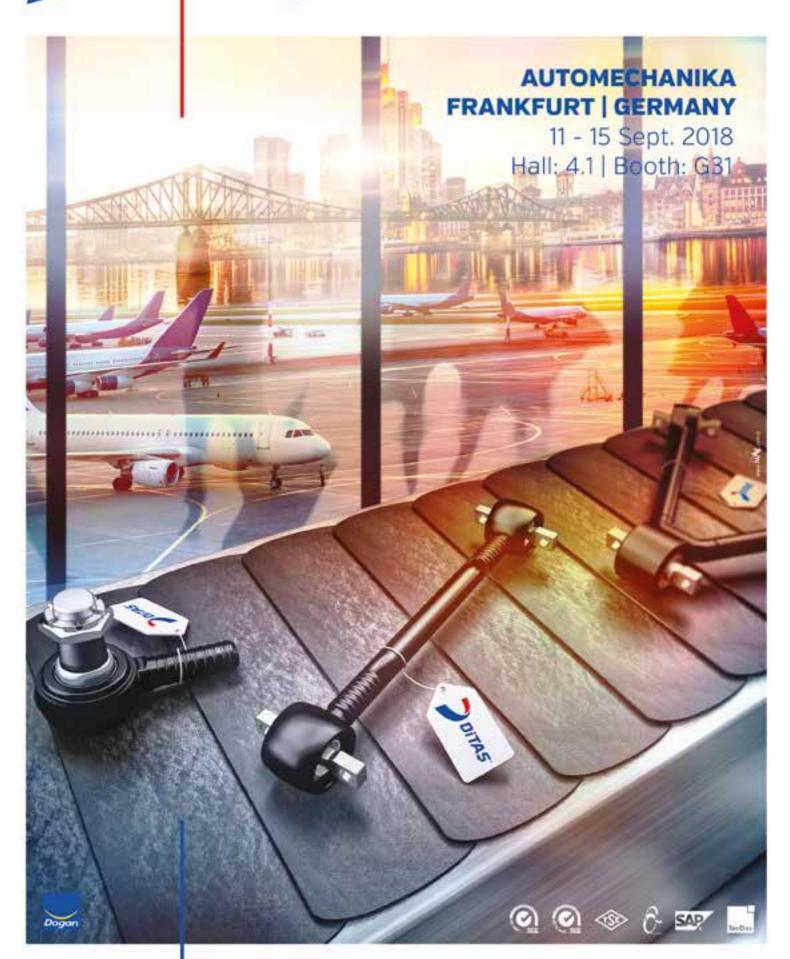
This issue of our magazine is a special issue, released for "Automechanika Frankfurt" and "IAA Hannover", two of the most exclusive exhibitions of the automotive industry. Professional staff from our association will participate in the fairs to help promote Turkish automotive industry, as well as our magazine.

I wish for both visitors and participating members of TAY-SAD the best in the fair, which will hopefully help many business deals to be established. We will proudly represent Turkish automotive supplier in-





steering towards technology







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A.I.O.S.

FORD OTOSAN

HATTAT TRAKTÖR

HONDA TÜRKİYE

HYUNDAI ASSAN

M. BENZ TÜRK

MAN TÜRKİYE

OYAK RENAULT

TÜRK TRAKTÖR

96.874 17,4

129.644 23,3

KARSAN

OTOKAR

TEMSA

TOFAŞ TOYOTA

TOPLAM

PRODUCTION OF AUTOMOTIVE MANUFACTURERS 1-6/2018 TOTAL L. Turck % Pick Up H. Truck 2.541 553 27,6 12.001 2.2 30,3 27.275 97,7 198.600 4 036 155.288 65,6 2.628 22.367 22 367 107.377 19,3 2.281 131 3 635 2.3 210 10,5 3.257 1.938 44,4 11.192 69,5 1.433 1.433 32,8 169 10,7 13 36,7 3,6 736 189.006 33.9 189.066 507 1.565 25,3

Total automotive production was 131,194 units in June 2018

4.365 100

27.910 100

78.267 33,1

236.752 100

According to figures presented in the Automotive Industrialists' Association's (OSD) monthly report for June 2018, total automotive production was 131,194 units in June 2018.

100

13.309 100

ith regards the results for the first half of 2018, the previous upward trend in production continues to flatten out with a fall of 3% on the same period for the previous year. Exports have also started to show vulnerability with a 3.7% decrease.

In OSD's report for June 2018, figures were also provided for sales, imports and exports as follows: Total production decreased by 3 in first

half of 2018 to 843,193 units compared with the same period of the previous year. Of this total, production of cars decreased by 7.4% to 557,269 units. Total automotive sales decreased by 11.4% in the first half of 2018 to 366,487 units compared with the same period of the previous year.

2.006 100

23.221 89,8

25.849 100

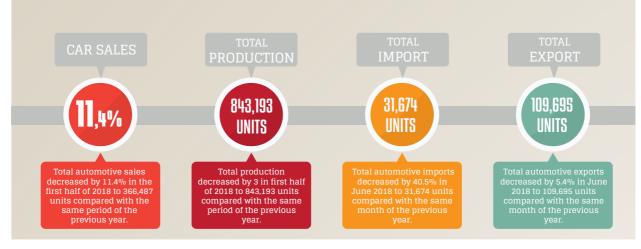
175.138

129.644

23.221

869.042

Total automotive imports decreased by 13.4% in the first half of 2018 to 225,270 units compared with the same period of the previous year. Total automotive exports decreased by 3.7% in the first half of 2018 to 688,081 units compared with the same period of the previous year. In USD terms, total automotive exports increased by 14.9% to USD 16,770 million, and car exports increased by 7.4% to USD 6,551 million in the first half of 2018 compared with the same period of the previous year.







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The European Transport Organisation

TURKISH AUTOMOTIVE INDUSTRY EXPORTER WAS 2,8 BILLION DURING JULY

12 years of automotive industry leader of Turkey's exports, Uludag Automotive Industry Exporters' Association (OIB) has signed a 2 billion 765 million dollars in exports in July, according to data.

Exports of the automotive industry in January-July 2018







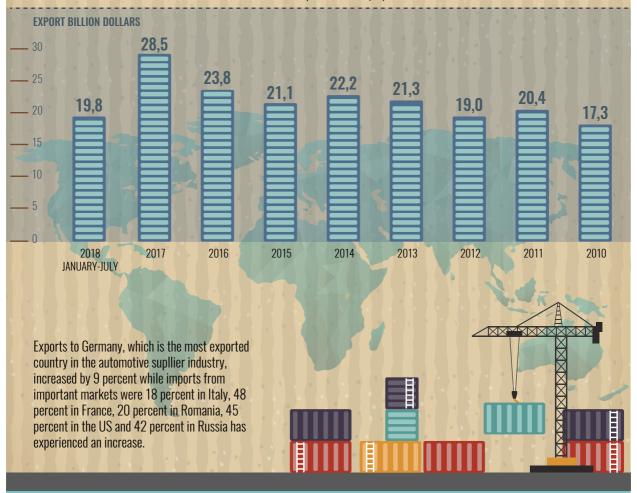


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COMMERCIAL VEHICLE

BUS, MINIBUS MIDIBUS

In the January-July period, exports of passenger cars increased by 7 percent compared to the same period of the previous year and reached 7 billion 662 million dollars, automotive sub-industry exports increased by 22 percent, exports of motor vehicles for goods transport increased by 15 percent and bus minibus midibus exports increased by 6 percent.



15% increase in EU countries

Exports to the European Union, the largest market on a country-by-country basis, rose 15 percent in July to \$ 2 181 million, with the country receiving 79 percent of total exports.



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27,2% SECTOR'S EXPORT SHARE

In 2017 automotive sector performed 27,2 percent of total export.

92,3 BILLION

Total export of the first 1000 companies increased by 13,4 percent in 2017 and realized as 92,3 billion USD.

Champion of the Export: Automotive

Turkey Exporters Assembly declared "Top 1000 Exporters" of 2017. Top 4 of the list is composed of automotive sector, where Ford Otosan maintained its place at the top with 4.8 Billion USD of exports.

urkey Exporters Assembly (TIM) announced the results of TIM's 2017 "Top 1000 Exporters" research. TIM President said: We believe both domestic and foreign investors will be more keen on investment after the election. Büyükekşi indicated that top 4 of the list is composed of automotive sector representatives and said that the biggest exporter is still Ford Otosan after two years at the top. Ford, which was at the top with 4 billion USD export in 2016, increased its export by 21,2 percent and strengthened its leadership with 4.797 Million USD in 2017.

Toyota rose by 5 steps in the ranking with an export performance of 4.443 Million USD and took the second place in the list. 3rd place belongs to Tofaş with a 0.6 percent increase, which is actualized as 3.209 million usd. Oyak Renault took the 4th place with 3.183 million USD and got over Turkey's average following an increase of 12,3 percent.

OYAK RENAULT

2017 EXPORT

183 BILLION DOLARS

TOFAȘ

3,209 BILLION DOLARS

TOYOTA TURKEY

4,443 BILLION DOLARS

FORD OTOSAN

4,8 2017 EXPORT | BILLION DOLARS

1

According to data driven from the research, the list of Top 1000 Exporters is composed of 66,8 percent by manufacturerexporter, 16,5 percent by exporter, 12 percent by group foreign trade and 4,7 percent by sector capital foreign trade companies. The companies' capital distribution showed that 81 percent of the companies were 100 percent domestic companies.

Dakka Consultancy

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Dakka Consultancy as a Special Employment Office subjected to Turkish Employment Agency (İşkur) provides a service for employment of the blue-white collars' workforce within the scope of İşkur's incentives according to organization's exact needs during 2018. We fully inform the employer of their access to incentives offered with in the scope of İşkur and handle the employment process of blue-white collars' workforce provided with in this context.

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EMPLOYING THE STAF

The industrialist who can't find the staff is putting off the investment.

Dakka Consultancy with a global experience both in domestic and internatioal arena and an operational worknet provides a service for employing both Turkish and Foreign skilled or unskilled blue collar-staff that can use necessary machines and equipment when the industrial organizations are in need of them. Organizations should have qualified workforce to improve their efficiency and sustainable growth. That's why Dakka Consultancy satisfies the need for the qualified workforce of business world by improving effective employment policies.

Our references are our clients....

INDUSTRIAL RELATIONS MANAGEMENT

Changing surrounding circumtances, as it does in every field, leads to a lot of shifts and innovations in business life as well...

Since employee-employer relations is an extremely dynamic area, we have been facing important structural changes in industrial relations especially for recent years. As it is all over the world, the crises of trade unions in business life is the most important topic in Turkey too.

With our deep experiences for more than 10 years, we have been modelling industrial relations -both for employer and employee- for organizations with trade unions or organizations that have newly developing trade unions. In addition to this, we are classifying employer's policies by improving a methodology for the policies of organization's industrial relations.

For detailed information, please get in contact with our industrial relations consultants.

186 K UNITS OF TOYOTA C-HR

Toyota produced a total of 186,000 C-HRs, of which 100,000 are hybrids, in 2017.

84 EXPORT TO COUNTRIES

Toyota exports its C-HR model, which is produced in Sakarya, to 84 countries in the world.

Turkey Becomes Base of Hybrid Manufacturing

The number of companies producing hybrid cars in Turkey are now three. Following Toyota, Oyak Renault and Ford Otosan will also produce hybrid vehicles. Thus, Turkey will become a base for hybrid.

fter Toyota, Oyak Renault and Ford Otosan are preparing to produce hybrid vehicles. Thus, Turkey will be among the few countries in the world that makes hybrid production. Toyota produced the first hybrid vehicle in Turkey at the end of 2016. Following Oyak Renault, which received investment incentive for hybrid production in 2017, Ford Otosan will also produce hybrid. The company plans to commission the Ford Transit Custom's Plug-in Hybrid (PHEV) version, which is produced at its Gölcük plants, in the last quarter of 2018. The hybrid model, which will be produced primarily for export purposes, is expected to be launched in 2019. Thus, Ford Otosan will contribute to the American automotive giant Ford's hybrid and electric vehicle project. Ford aims to develop 40 hybrid and electric vehicles by 2022 with an investment of 4.5 billion USD. Meanwhile, test drives of 20 prototypes of Transit Custom PHEV in the UK were successful. Prototypes have been tested in London since early 2017.

493 MILLION TL INCENTIVE

French automotive giant Renault, is prepared to make Turkey a hybrid base. The first hybrid engine of the French brand will be produced at Bursa Oyak Renault factories. The hybrid engine will be used in the fifth generation of Clio which is produced in Bursa. Oyak Renault, received a 493 million TL worth of incentive within the scope of Project-Based Incentive System. Toyota has started to produce Turkey's first hybrid SUV and model C-HR at the end of 2016 with an investment of 350 million euros. Toyota's production and exports with C-HR are increased. The production, which was 154K in 2016, increased by 81 percent in 2017 and reached to 280K. Exports increased by 110 percent from 116K units to 244K. Aiming to produce 280K units of vehicle production, Toyota will export 244K units of its production. Exports in the first five months of the year were 101 thousand units.

SALES IN EUROPE INCREASED by 22 percent.

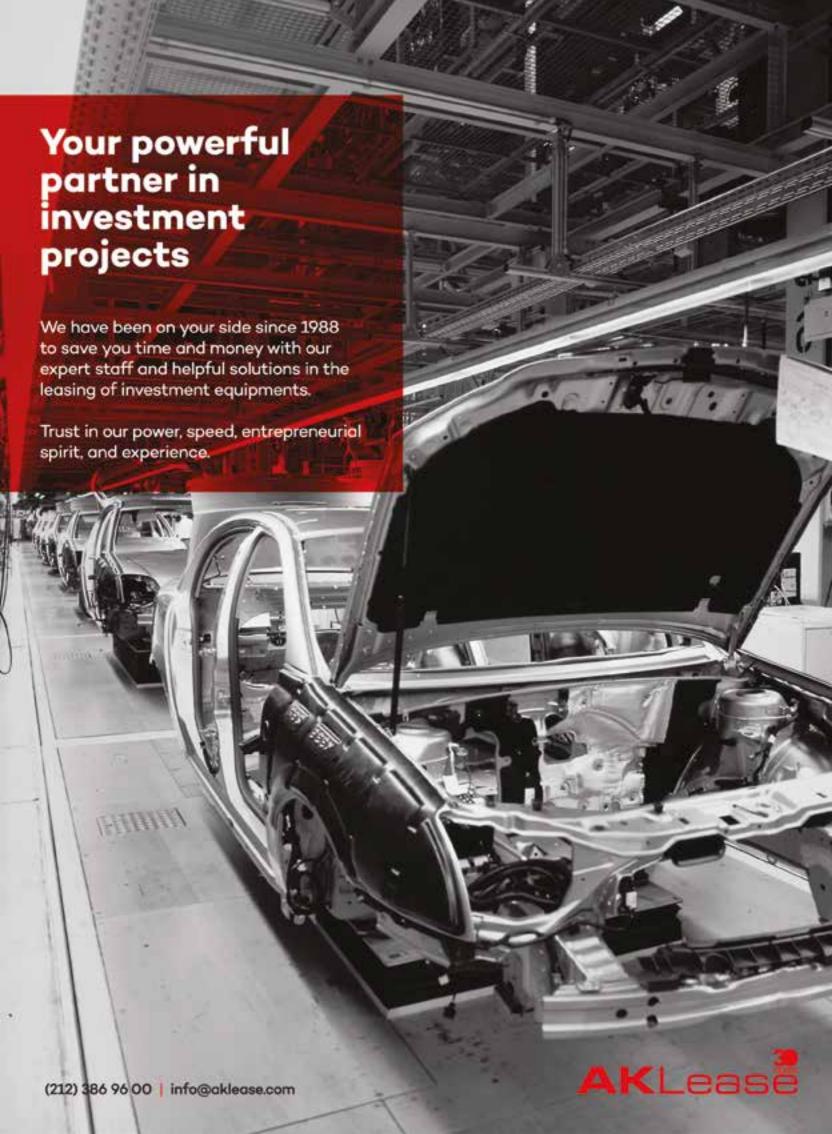
In January-May 2018, a total of 227,200 hybrid cars were sold in Europe. Hybrid sales rose as high as 22 percent, while market share rose to 3.3 percent. In the first five months of the year, the country where the most hybrid vehicles were sold was France, Italy followed France with 34K, Britain with 33K, Spain with 28K, Germany with 23K units.

Sabah Newspaper, Ufuk Sandık



Europe's best-selling hybrid car

CHR retained its title of Europe's best-selling hybrid car with 9,853 units of sales.









6th BIGGEST Market

Turkey is the 6th biggest market of Renault Group in global scale.

200 K UNITS OF EXPORT PERFORMED

OYAK Renault is the leader of automotive export with 288K units.

OYAK and Renault are going to be partners for another 27 years

The pension fund OYAK and world's automotive industry player Renault Group, renewed their partnership in Turkey at a signature ceremony that took place in France.

he two shareholders of MAIS Motor Vehicles Manufacturing and Sales Inc. and OYAK Renault Automobile Factories decided to "continue the harmonious and strong business combination for 27 more years" by signing a new partnership agreement in France, on June 26, 2018. The agreement were signed by Süleyman Savas Erdem, OYAK General Manager and Thierry Bollore, Executive Board Member and General Manager responsible for Renault Group Operation. According to the information, the contract, which brings cooperation to a new era, covers industrial and commercial activities of the Renault Group in Turkey, MAIS will continue sales. aftermarket, spare parts and service of Renault and Dacia brand automobiles. OYAK Renault will continue to play a role in the production and export of vehicles, engines and gearboxes. This new contract will make no changes to share distribution of both sides as it aims to prove the strength of the relations of two partners, who continues its industrial and commercial leadership.

According to the statement, OYAK General Manager Süleyman Savaş Erdem stated that the partnership with Renault Group has been extended for 27 years. He said: We are very excited and proud that it will provide significant added value to our country's economy as well as both groups. Automotive is the leader sector with a share of 21 percent in export and has a total volume of 150 billion USD.

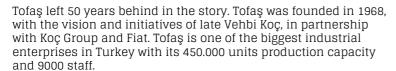
OYAK Renault is in the first place in automobile exports with 288 thousand units of exports. As for the domestic market, we completed 2017 as the leading brand, which is a sign of Turkish consumer's trust in OYAK and Renault. Thierry Bollore, General Manager responsible from Renault Group Operations and Executive Committee Member, said the renewal of the contract, opened a new page in the history of the company in Turkey.

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Fiat Chrysler Automobiles (FCA) Board President John Elkann

Tofaș Celebrates its 50th Year

Holding the production record of Turkish automotive industry for the last two years, Tofaş, who becomes prominent with its R&D investments as well, celebrated its 50th year with an event that took place at Four Seasons Hotel İstanbul Bosphorus.

iat Chrysler Automobiles Chairman John Elkann said: Back in the 60's, when my grandfather was the chairman, Fiat was searching for opportunities to enter new markets through combining strengths with a strong and reliable local partner. This cooperation, which was built at that time with Koç Family and expanded to three generations, has been the longest partnership of our group.

I consider the next 50 years as a new beginning

John Elkann continued to his statement saying: I am sure this solid partnership will continue in the future as well. Tofaş presents impressive capabilities not only as a leading, fully developed production center but also an R&D center with high technology. Tofaş R&D Center, is one of the two

biggest Fiat Chrysler Automobiles R&D Centers in Europe with its 600 staff, lab and office spaces built on 18.000 meter square. This center focuses on product development and new production technologies. Electrification and vehicle lightning have been the topics in terms of advanced research. I consider the next 50 years as a beginning. Tofaş has all skills to fight challenges, last its experience for long years and continue growing. I am sure that we will be celebrating our 100th year of patnership in 2068.

"Tofaş continued its growth and development with significant breakthroughs"

Koç Holding and Tofaş Chairman Ömer M. Koç said: Tofaş's foundation were laid down on the vision of "making every Turkish person car owner" by our founder Vehbi Koç. During its 50 years of journey, our company has played a significant role in the development of automotive sector in our country. We also represent our country in global scale with successful vehicles that we presented in international markets. Tofaş CEO Cengiz Eroldu also said that Tofaş has transformed from a company to produce vehicles to sell in domestic market to a company that develops products and exports these products all over the world and achieved many great successes.





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Turkish Automotive Sector

The foundation of Turkey's automotive industry dates back to the early 1960s. **During a period of rapid industrialization** and progress, this key sector transformed itself from assembly-based partnerships to a full-fledged industry with design capability and massive production capacity. Between 2000 and 2017, original equipment manufacturers (OEM) invested USD 14 billion in their operations in Turkey. These investments significantly expanded their manufacturing capabilities. which in turn led Turkev to become an important part of the global value chain of international OEMs. Meeting and exceeding international quality and safety standards, today's Turkish automotive industry is highly efficient and competitive thanks to value-added production.

Discover the potential

- Significant growth posted by Turkey's automotive sector led to Turkey becoming the 14th largest automotive manufacturer in the world and 5th largest in Europe by the end of 2017.
- Turkey has already become a center of excellence, particularly with respect to the production of commercial vehicles. By the end of 2016, Turkey was the number one producer of light commercial vehicles (LCV) in Europe.
- Proven as a production hub of excellence, the Turkish automotive industry is now aiming at improving its R&D, design, and branding capabilities. As of the end of 2017, 132 R&D and design centers belonging to automotive manufacturers and suppliers were operational in Turkey.
- Turkey is home to many global suppliers. There are more than 250 global suppliers that use Turkey as a production base, with 28 of them ranking among the 50 largest global suppliers.
- Auto manufacturers increasingly choose Turkey as a production base for their export sales. This is evidenced by the fact that around 80 percent of production in Turkey was destined for foreign markets in 2017. More than 1,300,000 vehicles were exported from Turkey to foreign markets in the same year. In addition, Turkey was the number one vehicle exporter to European markets with 986,000 units in 2017.

ÜRETİM SÜRECİNİZİN HER AŞAMASINDA İYİLEŞTİRME!



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Başarısı kanıtlanmış olan uzman ürünlerimizle tanışın!



24

Haydar Yenigün, Ford Otosan General Manager:

"Key to Continuity is Designing Innovative and High Valued Solutions"

The automotive industry is undergoing massive change globally. As the production models are reinvented with smart production, the key competencies are also redefined in the industry. Along with the sharing economy, self-driving and electric vehicles are spearheading a strong trend toward change in the automotive industry.



What are your thoughts about the development of the Turkish automotive industry? What do you think the priorities of the Turkish automotive industry should be?

he automotive industry in Turkey continues to elevate its position in the world year over year by increasing production and exports through new product and capacity investments. In addition to that, the industry is building on its R&D capabilities which is crucial in terms of competing with the global companies. These developments indicate that the automotive industry will continue to be the driving force of the Turkish economy in the coming years. Digitalization is currently affecting the automotive industry and its components as much as almost every other industry. In order to be a part of the transformation, designing and developing innovative and high-value solutions is among our top priorities. Therefore, R&D efforts, developing new technologies to improve efficiency and competitiveness, adopting innovation are all key to business sustainability.



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In 2017, we announced that we would increase our production capacity with an investment of US \$52 million to meet the growing demand from our export markets. Once the investment phase is completed in September 2018, the total vehicle production capacity of our company will rise from 415,000 units to 455,000 units.



What do you see in the future of the automotive industry in Turkey and the world?

The automotive industry is undergoing a massive change globally. As the production models are reinvented with smart production, the key competencies are also redefined in the industry. Along with the sharing economy, self-driving and electric vehicles are spearheading a strong trend toward change in the automotive industry. We keep seeing more and more prototype vehicles being unveiled. Ford is also working on smart mobility, electric and autonomous vehicles with firm and rapid steps. Ford announced their plan to expand its electrified vehicle lineup with a total of 40 vehicles globally, which will include 16 full battery electric vehicles by 2022 with an investment of \$11 billion.

We believe that digital transformation will play a key role in achieving our vision of becoming Turkey's most valuable and most preferred industrial company.

Please tell us about your projects and goals.

In 2017, we announced that we would increase our production capacity with an investment of US \$52 million to meet the growing demand from our export markets. Once the investment phase is completed in September 2018, the total vehicle production capacity of our company will rise from 415.000 units to 455.000 units.

Ford Trucks, our heavy commercial vehicle brand, is currently expanding its dealer network globally in line with its goal of having a presence in 50 countries in 2020. In this context, we also started to work on producing the domestic transmission by investing \$49.5 million with the aim of introducing another first in Turkey. We will also hold the world premiere of our new tractor at IAA Hannover. We will increase our global competitiveness with our new tractor targeting long haulage and international transportation.

We believe that digital transformation will play a key role in achieving our vision of becoming Turkey's most valuable and most preferred industrial company. Our digital transformation program encompasses a wide range of areas from customer experience, product and supply chain to production, employees and product development. We also offer opportunities for in-house entrepreneurs to implement their innovative ideas. Our goal, through all these efforts, is to build a faster, more flexible, more efficient, more competitive and more profitable organization to create higher value in the long run.







CENTIAS











"Vasıflı çeliğimizle

hayatınızı dengeliyoruz."

"We stabilize your life with our special steel."

Mercedes-Benz Türk President & CEO Süer Sülün:

"We are hardworking and passionate about our work since day one"

As Mercedes-Benz Türk, we work hard and passionate since our establishment until today to support the development of the Turkish automotive industry with our R&D investments.

> he automotive sector is among the locomotive sectors that provide high added value to the economy, accelerate technological developments, contribute to the development of many of its customers, and support subsidiary industries.

> The automotive sector in Turkev is R&D intensive industry and one of the sector that has been exported most in the last 10 years. At the same time Turkey takes part as the biggest producer of commercial vehicles in Europe. Shortly we can say the importance of Turkey for the automotive sector is growing day by day. In my opinion, Turkey's competency in the international automotive market will increase even further in the course of time.

As Mercedes-Benz Türk, we work

hard and passionate since our

All over the world, the automotive industry prepares to the new era about digitalization, autonomous driving and the new vehicle technologies that will work with alternative energies. This change in automotive sector creates a connection between the information technology and the industry. In the forthcoming years, the use of artificial intelligence will enable the vehicles to make decisions on their own. All brands should follow closely the technology and adapt to this technological developments.

The automotive sector is the sector that makes the most R&D investment compared to other sectors. A list of "the first 250 company with the highest R&D expenditures in Turkey" shows us that the automotive industry plays a significant role. The Turkish automotive industry should continue to closely examine the technological developments in the sector. Moreover, I would like to recommend to further increase the investments to strengthen and improve the actions in the field of R&D and create a competitive edge.

Step by step, all Mercedes-Benz vehicles

are going to be equipped with an elec-

and hybrid vehicles

into the Turkish

market to develop

our product port-

folio even further

and reach new

seg-

market

ments.

establishment until today to tric motor. According to our mother support the development of company Daimler AG's statement, the Turkish automotive industry an investment of over 10 Million € with our R&D investments. will have been made until 2022. Additionally until 2022, 50 new electric models will be launched in the international market. We, as Mercedes-Benz Türk, will introduce electric The automotive sector in Turkey is R&D intensive industry and one of the sector that has been exported most in the last 10 years. At the importance of Turkey for the automotive sector

the same time Turkey takes part as the biggest producer of commercial vehicles in Europe. Shortly we can say

is growing day by day.





President & CEO, Toyota Motor Manufacturing Turkey Hiroshi Kato:

"Environment Friendly Technologies is the most important topic of the industry agenda"

There is a trend in the global automotive industry with electrified, autonomous, shared and connected technologies. Also, environmental friendly technologies continue to be most important item in the agenda of automotive industry. I believe that this energy and environmental sensitivity will continue in the long period.

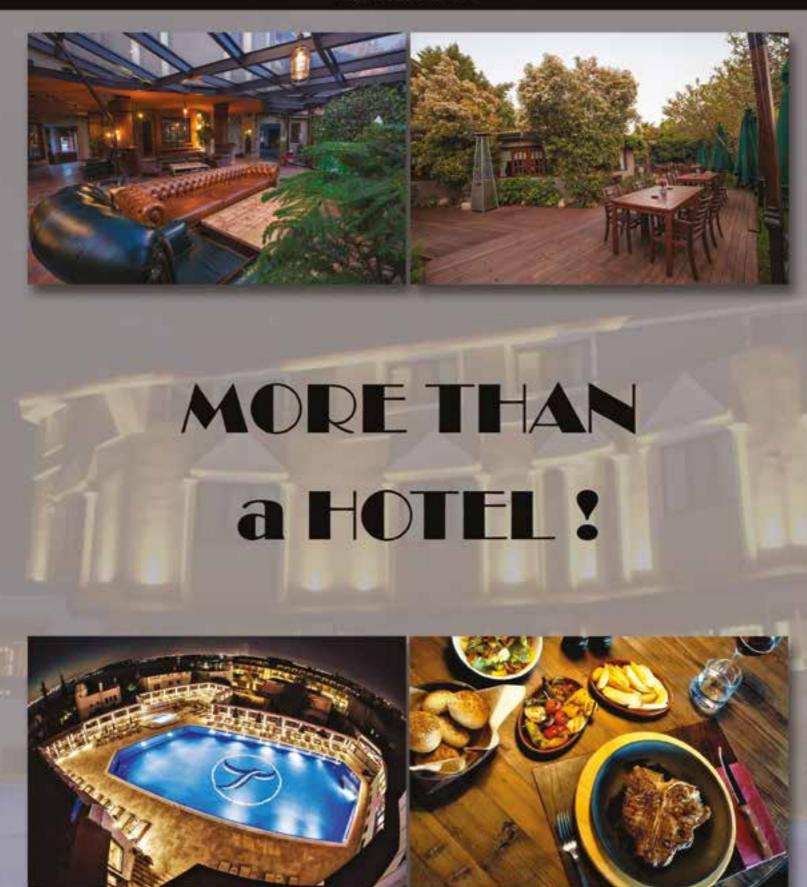
utomotive sector in Turkey developed very successfully and has increased competitiveness of the country. Today, Turkey is the fifth-largest automotive production base in Europe and recognized as a regional base of automotive and supplier industry with the high quality and value-added production. The automotive industry in Turkey, which has been operating for more than sixty years, has been the export champion for years. Thanks to the long history of automotive manufacturing, Turkey produces vehicles mainly for export. Currently, there are lots of suppliers producing variety of parts, engine, etc. In 2017, Turkey's automotive

production reached an all-time high, rolling out 1.7 millions of vehicles. This was an increase of 14% compared with 2016, according to a report from the Turkish Automotive Manufacturers Association. On the other hand export of the industry has increased by 20% and reached to 28.9 billion USD. The year 2017 that we have left behind has become a year of records not only for the entire Turkish automotive industry, but also for Toyota Motor Manufacturing Turkey. The total





In Toyota's corporate culture, developing environmentally friendly products and having environmentally friendly production facilities is one of the top priorities. We believe that hybrid technology is the most effective way in the transition period to the environmentally friendly technologies. Alongside our standard hybrid and plug-in hybrid technology studies, we are also working on mass production and long-range electric vehicles.



Bayramoğlu Mahallesi, Fatih Sultan Mehmet Caddesi. Kaptan Sokak No 11/1 PK. 41700, Darıca(Gebze) / Kocaeli TURKEY

RESERVATION

production, which was 1.7 million units this year, was recorded as the highest production volume reached until today. We are so pleased that we have made a significant contribution to this success of the Turkish automotive industry with the increase in our production and export in parallel with the increased capacity.

There is a trend in the global automotive industry with electrified, autonomous, shared and connected technologies. Also, environmental friendly technologies continue to be most important item in the agenda of automotive industry. I believe that this energy and environmental sensitivity will continue in the long period.

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mentally friendly technologies. Alongside our standard hybrid and plug-in hybrid technology studies, we are also working on mass production and long-range electric vehicles.

Turkish automotive industry should be more focused on improvement of its R&D, design and branding capabilities to be competitive in the global business environment.

As Toyota Motor Manufacturing Turkey, with a total investment of 2.3 billion US \$ and total exports about 30 billion US \$, we will continue to contribute to the economy & society and we will continue to contribute positively to Turkey's foreign trade with export surplus. With our over 5000 employees, our production in 3 shifts and 6 days will be maintained in 2018 too. Also, we are going to continuously improve our models this year. We will make some preparations for this purpose.

BIAS Mühendislik General Manager Aydın Kuntay:

"Technological Developments Create New Opportunities"



urkish automotive is currently very well established, having strong local suppliers, answering both Turkish and foreign market needs. Both OEM and suppliers have increased their R&D investment over the years. We are all aware that we need to be innovative and focus on value added products. Technological developments like digitalisation, electrification, autonomous vehicles will create opportunities but also new threats. We can be both creative in what we are producing today and meanwhile invest in new technologies to develop new technology products. I believe Turkish automotive industry is determined to be competitive in this market globally and ready to work even harder.



How will people travel in the future, and how will goods be transported? What resources will we use, and how many will we need? The passenger and freight traffic sector is developing rapidly, and we provide the impetus for innovation and movement. We develop components and systems for internal combustion engines that operate more cleanly and more efficiently than ever before. We are also pushing forward technologies that are bringing hybrid vehicles and alternative drives into a new dimension – for private, corporate, and public use. The challenges are great. We deliver the solutions.

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SCHAEFFLER

34

Kordsa CEO Ali Çalışkan:

"Turkey is an important part of the automotive's global value chain"

The transition to an emission-free era is one of the leading global trends in the automotive industry. Driverless cars will soon become a commercial reality.

utomotive industry is an essential engine of local and global economic growth. The global automotive market is on course to cross the 100 million units'

threshold in 2019. Turkey, today, is an important part of the global

New, lightweight value chain of international OEMs, the 14th largest automakers to reduce vehicle weight without sacrificing passenger value chain of international OEMs, the 14th largest automotive manufacturer in the world and 5th largest in Europe.

The transition to an emission-free era is one of the leading global trends in the automotive industry. Driverless cars will soon become

a commercial reality. Pay-as-you-go instead of ownership is becoming increasingly widespread in many areas. With the development

of autonomous vehicle technology, vehicles will be constantly connected to each other, traffic factors and the outer world. No one knows the full scope and magnitude of the changes that are yet to come. However, they will alter current industry structures, business models, competitive dynamics. In order not to miss this wave, and to be among the leading global players, Turkey has to follow the course of the world, understand the needs of the market and respond to them rapidly by aiming to improve its R&D capabilities.

At Kordsa, we are aware that we may be on the threshold of change as great as any the industry has ever seen. New, lightweight materials enable automakers to reduce vehicle weight without sacrificing passenger safety. In this regard, we see composite as the material of the future. With an aim to lighten vehicles to achieve sustainable mobility and to enable low carbon emission, we develop fabrics and prepregs for visual and structural parts at the Composite Technologies Center of Excellence, which is an innovation hub that serves stakeholders throughout the different stages of the R&D cycle depending on the customer's requirements, from basic research and prototyping to mass production. At our R&D center in Center, we have achieved an innovation that will increase production speed in automotive industry. With our new resin technology, we reduced the curing time to 3 minutes. Its fast curing cycle, preforming and hot de-moldable nature are especially optimized for mass production at automotive industry. We will continue to develop sustainable, environmentally friendly technologies that increase productivity.



http://www.eulerhermes.com/economic-re-search/publications/Pages/automotive-glob-al-sector-report-2018.aspx?postID=1349

http://www.invest.gov.tr/en-us/sectors/Pages/ Automotive.aspx

https://www.pwc.com.tr/automotive



safety. In this regard,

we see composite as

the material of the

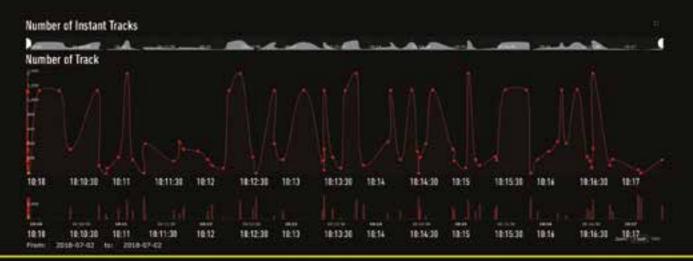
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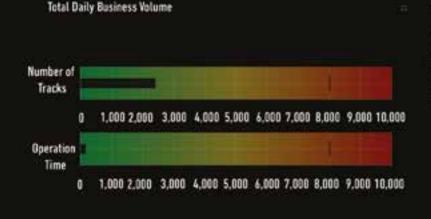


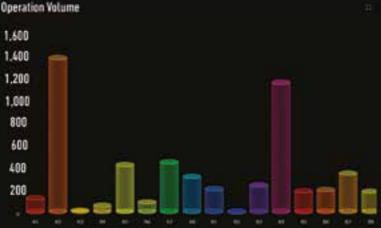
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36

TI Automotive General Manager Sezer Sönmez:

"A new era, which is productive, quality and sustainable production focused, has started"

In the last couple of years, we have been facing the radical changes of the political and technological spheres in the automotive industry too. Within the next few years, we will see that the use of fossil fuels will be replaced by electric vehicles and systems will be integrated with renewable energy resources.

he Turkish automotive industry has made significant progress, particularly in the last five years, as Ford, Tofaş, Hyundai and Toyota have increased their production capacities by 100,000-120,000 annually. As a result, it has become an industry that can produce 1.6 million vehicles a year, increasing its production capacity by 60% in total. This successful growth of the automotive industry with all its dynamics, has meant that it has proven itself from the perspective of the country's capabilities.

In the last couple of years, we have been facing the radical changes of the political and technological spheres in the automotive industry too. Within the next few years, we will see that the use of fossil fuels will be replaced by electric vehicles and systems will be integrated with renewable energy resources. Additionally, we are approaching periods of change and transformation in which "low cost" will no longer be attractive. Indeed, with developments such as Industry 4.0, a new period for our industry has begun, in which the focus is on productive, high-quality and sustainable production. This period brings with it unknowns, as well as new opportunities for our industry. With the experience and knowledge it has gained in the automotive industry over a long period, we are sure that in the new period our country will turn potential risks into opportunities.

Really, R&D and innovation should be among our priorities. Comprehensive test laboratories and centers are a must, not only for OEMs, but also for suppliers. In order to be competitive, innovative movements should be followed. In addition, strategic moves such as making it possible to produce imported raw materials and semi-finished goods in Turkey will pave the way for the success of the industry. In this regard, the focus should be on the use of the local resources, the creation of added value, and applications involving high technology.

We can see the direct effects of the development of technology both on vehicles, which are the final products, and on production technologies. A serious differentiation has started due to the change in both the production technologies and the systems on vehicles. With the influence of technology, radical changes have taken place in areas such as safety, comfort, communication, digitalization and customization, and these are no longer luxury preferences or options, but needs. This rapid technological transformation and change also gives rise to a brand new competitive environment. Players that are able to adapt to this transformation and change in the automotive industry will be the ones that survive.





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TT Çelikyay A.Ş. Vice Chairman of Board Aslı Kısacık:

"R&D and technological developments are at the focus of the sector"

R&D and technologic development should be our focus for now in my opinion. We are still in the plain manufacturing side of the field. But we urgently need take a side step to get ready for this transformed future of mobility.

urkish automotive sector has come a long way since the second half of the 20th century, both with the OEM and the sub-industry. Manufacturing and exporting values keep increasing each year, especially after the global crisis and automotive is still the major division in the country's export. Back in the days, this major growth was mostly due to low cost and industry development incentives however nowadays, with the highly sophisticated culture of the industry's players, I think Turkey competes in the automotive field with high quality and the business mind-set of its people.

When I think of the future of automotive, I think of shared mobility, autonomous vehicles



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are on this planet but it will definitely transform. We are highly affected by technology in our lives. There is no way that the automotive field; a field which continuously faces environmental and social concerns will not be affected from this.

I also think that, what will affect the future of automotive will be governments and legal procedures. All are related to one another. Autonomous vehicles create pressure for the governments to take legal precautions and we do not yet know how they might interfere with the future of the market of the AVs. There is even a chance for the market to go from cut-throat competition to oligopoly to state control...

R&D and technologic development should be our focus for now in my opinion. We are still in the plain manufacturing side of the field. But we urgently need take a side step to get ready for this transformed future of mobility. With all these incredible speed of the technologic development, virtually endless opportunities and connections take place, many of which we can't fully understand the impact of today. We must not see Industry 4.0 as only robotization; we must focus on the IoT or smart city transportations or how to use blockchain technologies for our businesses. Then we also have the issue of privacy and data sharing...

In this sense, I think the sector must prioritize the technological R&D along with the safety and legal concerns of these technologic transformations. We must also focus and participate on the human resource and governmental sides of this imagined future.

Conversations about the all these rapid developments are taking place all over the world as we seek to understand how this will impact our businesses and lives. We are also trying to understand what the many opportunities and challenges are going to be. We sure have to educate and prepare ourselves for this incredible future and its potential impacts.



SAFE WAY SAF

Norm Civata San. A.Ş is a member of





Maysan Mando General Manager Anıl Yücetürk:

"Automotive has a significant share in achieving Turkey's future objectives"

As a matter of fact, automotive sector is able to adapt and embrace developing technologies in most effective way through its production capabilities, sectoral infrastructure, R&D and innovation activities and digitalization steps.

utomotive industry of our country has a significant potential in terms of both product quality and production experience. Automotive has a significant share in achieving Turkey's future objectives.

The sector, which currently has a serious economic power of 25 billion dollars, is likely to create much more production wealth with an innovation and added value production approach that is based on R&D and innovation.

It is for sure that technology is rapidly changing, however automotive is at the forefront of the sectors with its adaptation abilities.

Besides, automotive sector is facing a significant change at global level. We are now able to say that smart technologies, vehicles communicating each other and autonomous systems will be an ecosystem of their own in near future.

It will be an important gain for Turkey in terms of economic growth and development to get a share from the sector following this transformation.

And in a sector, where innovative production approaches are impossible to avoid, we now see Turkish companies are putting more emphasis on R&D and innovation activities year by year.

As a matter of fact, automotive sector is able to adapt and embrace developing technologies in most effective way through its production capabilities, sectoral infrastructure, R&D and innovation activities and digitalization steps.

Stability is very important in the automotive sector. And a steady growth is only possible through focusing on difference

making projects, put importance on branding and meeting global customer demands in the fastest and best way possible.

In fact, adapting a "difference making" approach provides the company strength in terms of achieving sustainable successes.

The companies' priorities should be technology based product development, efficiency, quality and providing customer satisfaction focused solutions in order to stand out in this competition

In this context, as Maysan Mando, we concentrate our efforts to works, which are in line with our global objectives, that would create added value for our country and the world by developing high quality innovative products, of which's know how belong to us.

In that respect, we keep working non-stop since day one of our compa-

ny with the aim of













6th IAA TURKEY DAY 2018





IAA Turkey Day 2018

\(\) 14:00-16:30

9

67th IAA CV Fair Fairgrounds of Deutsche Messe Convetion Center Room 3B Hannover, Germany

Turkey Day

14:00 Welcome Address by

Klaus Bräunig, Managing Director, VDA German Association of the Automotive Industry

14:15 Turkish Automotive Industry Overview

Baran Çelik, President, OIB Uludağ Automotive Industry Exporters' Association

14:30 **Investment Opportunities in Turkish**

Automotive Industry

Arda Ermut, President, ISPAT Prime Ministry Investment Support and Promotion Agency, Turkey

World Commercial Vehicles Outlook & Turkey
14:45 IHS MARKIT. Andrei Divis. Director.

IHS MARKIT, Andrej Divis, Director, Global Heavy Truck Research

Supplier Activities - From FDI Point of View

15:05 KNORR BREMSE, Germany /Turkey Fabian Schlegel, Vice President, Global Category Purchasing & Purchasing Europe

15:25 ANGST PFISTER, Germany/Turkey Hans Luginbühl,

Director International Business Development

15:40 ODELO- BAYRAKTARLAR HOLDING Fatih Bayraktar, Managing Director

16:00 – 16:30 **Closing Remarks,**

"Coffee Meeting & Networking"



IAA Türkei Tag 2018

() 14:00-16:30

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67. IAA Nutzfahrzeuge Deutsche Messe, Messegelände, Taagungszentrum Saal 3B Hannover, Deutschland

Türkei Tag

14:00 Willkommensrede von

Klaus Bräunig, Managing Director, VDA Verband der Automobilindustrie

14:15 Überblick auf die

Türkische Automobilindustrie

Baran Çelik, Präsident, OIB Uludağ Automotivindustie Exporteure Verband

14:30 Investitionsmöglichkeiten in die Türkische Automobilindustrie

Arda Ermut, Präsident, ISPAT
Agentur für Investitionsunterstützung

und -förderung der Türkei

Welt Nutzfahrzeug Perspektive & Türkei

14:45 IHS MARKIT Andrei Divis Director

IHS MARKIT, Andrej Divis, Director, Global Heavy Truck Research

Zulieferer Aktivitäten - Von der FDI Perspektive

15:05 KNORR BREMSE, Deutschland /Türkei Fabian Schlegel, Vice President, Global Category Purchasing & Purchasing Europe

15:25 ANGST PFISTER, Deutschland /Türkei

Hans Luginbühl, Leiter internationle Geschäftsentwicklung

15:40 ODELO- BAYRAKTARLAR HOLDING

Fatih Bayraktar, Geschäftsführer

16:00 – 16:30 Schlussbemerkungen,
"Coffee Meeting & Networking"



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Elatek Kauçuk A.Ş. General Manager Namık Elibol:

"State Incentives support technological developments"

Young population of Turkey, the fertility rate, the increase in female participation in the labor force, urban development, development of road networks, economic growth potential, consumer finance to strengthen the healing factors such as vehicle demand in Turkey and increase the potential for market growth.

here is no doubt that the automotive sector has the greatest added value to the production economy and the country in terms of the location of the automotive sector and opens the way to new technological developments and contributes to the exchange rate with the export cause. It is the pioneer production sector which leads the development of many different sectors due to its very large customer base, which is leading the development of transportation, tourism and manufacturing industry, defense and transportation.

The automotive sector accounts for about 5% of the world economy and corresponds to the world's 4th largest economy. The production of motor vehicles in Turkey ranks 5th in Europe, and ranks 15th in the world. There is also Turkey's position in the largest commercial vehicle manufacturer in Europe. General Automotive car manufacturer's production number coming to Turkey in the process of moving into new geographies and increased foreign direct investment. Until 2000; automotive

As for priorities of Turkey's automotive industry: R & D investments to Turkey for the development of competition in the sector of automotive industry, As attractive as investment incentives to attract new investments, sustainable and internal policies, Importance of government Incentives to support technological development.

brands that made investment in Turkey in order to produce largely for the domestic market. Export-oriented investments were speeded up in Turkey to feed European market after the provision of the Customs Union agreement with the European Union in 1996. After 2000, investments of global manufacturers were made in Turkey which have led to only make technological investments for new competition instead of expanding the assembly process.

Protection in future years of production experience, has reached the international

automotive industry in Turkey and will be important in terms of developing the concept of competition.

Sectors of designing products and services, manufacturing, and compared to their competitors in pricing stage we define competitiveness as winning the ulti-

The production of motor vehicles in Turkey ranks 5th in Europe, and ranks 15th in the world. There is also Turkey's position in the largest commercial vehicle manufacturer in Europe.

ess as winning the ultimate-luxury Turkey's stance against the world's
remaining automotive manufacturers in a
concrete way foreign trade data to based
on competitive terms to determine should
update indexes.

Turkey has demonstrated a fairly lively
appearance throughout the history of the
automotive market. For example, having
a car in the 1930s marked a high level
of richness, and in those years
a car sold to 6,000 Turkish

a car sold to 6,000 Turkish
Liras amounted to about
110 civil servants salaries.
In Turkey becomes accessible within the car's
time, although higher-status perception
weaken that digitization of considered,
but the automobile

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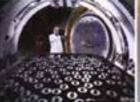
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industry on fuel efficiency, emissions, in many areas such as safety and design for consumer demand, reveal new targets has strengthened it's desired object position today.

As of 2016, Turkey car park has exceeded 16 million units. Historical annual growth rate of the car park in the last 30 years has been realized as 7.8%. Car ownership rate per 1.000 persons, since the date of entry cars to Turkey, is situated far behind the developed countries but still showed a rapid development.

Young population of Turkey, the fertility rate, the increase in female participation in the labor force, urban

development, development of road networks, economic growth potential, consumer finance to strengthen the healing factors such as vehicle demand in Turkey and increase the potential for market growth.

However, Turkey automotive market mentioned factors with long-term changes in the exchange rate though highly promising growth potential, inflation and vehicle loans with interest rates applied as macroeconomic variables in the volatility of tax rates and the rise in the exchange rate from year to year the market growth rate make it wavy and the destabilization of vehicle demand.

Demisaş General Manager Emre Giray:

"We are the biggest automotive production center in the world in terms of suppliers and producers"

urkey and EU has agreed to establish a customs union in 1995, which eliminated the customs barriers, allowing the free movement of goods. Turkish automotive industry has taken the biggest advantage of this agreement, raising the production level from around 300.000, to more than 1.600.000 vehicles today, mainly due to big investments by major OEM companies. The global Tier1 companies followed the OEMs and with the addition of the local suppliers, the growth of the automotive supply industry, even, surpassed that of the OEMs during this period. In this context, today, Tur-

n this context, today, Turkey is one of the major automotive production hubs in the world – in terms of both vehicle manufacturers and the suppliers – and still has significant room for further growth. Due to developments in e-mobility, connectivity, autonomous driving, we are in an era of transformation in the automotive industry. The business models, the priorities of the customers, the regulations of the governments etc, a lot of parameters are subject to change and I think this is posing important opportunities for the dynamic and versatile Turkish entrepreneurs. Today we are discussing that high tech companies could be serious players in tomorrow's automotive world, so we all have to navigate in such unchartered waters.

Turkish companies should make sure that they jump into this bandwagon of this new automotive world and this is exactly what is going on in Turkish automotive industry these days. I am really excited to witness all these changes in the automotive world but even more excited to see how Turkish companies are working so hard to adapt.



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Ditaş Sales Manager Mustafa Ertürk:

"The policies supporting sustainable production should be developed"

It is important for being a major player in the global market to be able to develop technology. The innovative products cannot be easily copied by competitors and therefore these type of products must not enter the market with low prices.

e are observing that the production of various automotive parts with a wide variety of technological infrastructure in Turkey are sold both in domestic market and abroad. Due to evaluating the technological developments in the automotive industry, we can easily foresee that the electric and autonomous vehicles will be increasingly seen in the developed countries. Technologic development on batteries and charging systems are very fast. The prices are getting lower. It looks like that it does not take too much, the prices and performance of electric vehicles catch internal combustion engine (ICE) technologies. Using electric vehicles are promoted in many countries, especially in the North of Europe. In the many regions all over the world, using ICE vehicles is becoming impossible. Therefore the technology developing in Turkey should be aligned with this flow is not so hard to say. In the renovation market battery technologies, the electronic

products and sensors would be more in the foreground in the near future. With the availability of the affordable technological infrastructure, we can predict an increase of conversions to EV from current ICE vehicles. "Industry 4.0" defines communication among machines and systems at the industry side, while human mobility on the earth is getting smarter and smarter in time. It looks like all objects around human will be communicating. Therefore developing software for smart cars, smart homes or smart cities will be one of the most important competition area. It can be surely stated that automotive part industry will be naturally affected from all these developments. In Turkey, independent aftermarket (IAM) is mostly shaped by competition of low price products. The policies supporting exporting higher quality products and sustainable production mostly relying on export sales can have significant change in the process. It is very crucial stage for developing domestic production competitiveness.

Nationalization policies have also very important role in terms of increasing and developing domestic production. For example, the taxes for import products compel the well-known

brands to invest in Turkey
to produce some mod-

Today, producing equivalent parts and entering the market with low price competition provide an accessibility to many domestic manufacturers in the global market.

els in Turkey in tractor sector. Similarly in the railway sector, the national tenders requiring the products consisting of 80% domestic components and systems is



Hazar Yıldır, Sales Specialist, Turkey Onur Aksaray, Sales Specialist, EMEA Sibel Yüzbaş, Sales Specialist, EMEA Koray Güner, Deputy GM Marketing & Sales Mustafa Ertürk, Sales Manager, Turkey Tuncay Aykaç Sales Manager, EMEA



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contributing domestic production and technology transfer to Turkey.

The biggest challenge in the market is the rapid increase on raw material prices. Fluctuations in exchange rates cause inconsistency in product costs. The collective labor agreement in 2018 has resulted in a higher increase in labor costs than expected. All these reasons have influenced competitiveness of manufacturers in Turkey. It is important to follow up the long term strategies and providing more consistent macroeconomic circumstances in domestic market for being much more competitive in the global market.

Today, producing equivalent parts and entering the market with low price competition provide an accessibility to many domestic manufacturers in the global market. On the other hand, developing technology and innovative solutions as well as producing not only part but also components and sub-systems are the key success points to become major player and to create global brands. The innovative products cannot be easily copied by competitors and therefore these type of products are not entering the market with low prices.

Successful development of domestic automotive production clearly depends on the technological base of their suppliers. The OEMs cannot define and produce all technological developments. Actually, global suppliers are developing the most of new technologies. It can be observed that the major suppliers understanding the needs of OEMs are also the pioneers of the technological developments.

Opaș Otomotiv Deputy Chairman Nurgül Uras:

"The sector quickly adapts global changes"



he history of the Turkish Automotive Industry goes back as far as the beginning of the 20th century. Ford, Chevrolet automobiles and trucks as well as Fiat automobiles have entered the Turkish market after World War I. The development of road infrastructure, the increase of urbanization and the rise of the income level after the 1950s gave rise to the increase in demand in automotive products. The first significant automobile production has started with the manufacture of the Anadol automobile in 1966 and has produced 87.000 automobiles until 1982.

The industry appears to target the internal market, with no foreign competition, far from current technology and have a limited range of models until the 1990s. A serious form of competition arose in the automotive sector with the 1996 Customs Union Agreement and the significant discounts on protection rates especially after the EU full membership application.

After the unsuccessful coup attempt and later the announcement of the state of emergency, the automotive sector, which is the leading sector in the Turkish economy, has given a clear message that it will continue at full speed. The ones who shape the world of automotive have said that Turkey has the power to turn the new era into an opportunity.

Recently, the automotive sector in Turkey has the potential for gaining momentum in the wake of the domestic production in prospect of the electrical automobiles. In recent years, the automotive sector is especially in the position of the exportation sector and it provides business opportunities to almost half a million people. Besides all this, it tries to keep up with global changes.

It's a possible chance that quicker steps will be taken towards passing on to electrical vehicles by developed countries which have technological and economic power, and that are more sensitive to the environment and human health. If we bear in mind the extent of the existing capacity, the automobile industry will direct automobiles that use fossil fuel to developing or less developed countries in a short time.



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Cadem Board Member and General Manager Saffet Çakmak:

"Turkish automotive sector will keep its leadership in commercial vehicle segment"

I believe, the Turkish automotive industry will be in a leading position about commercial vehicles (especially mass transportation as electrical, autonomous buses) about which it is already well positioned.

he Turkish automotive industry will continue to be Turkey's leading sector as it is keeping its first place in exports since 10 years. Ranking 5th in Europe and 15th in the world, it will sustain to be a reference point for Turkey's economic scale.

Its position in commercial vehicles production and exports will continue to keep the enthusiasm of the sector at a high level and will be a motivation for new investments.

As we enter the digital transformation era, our

supply industry which can produce %85 of automotive parts, can turn its sucess to a new opportunity with its product range, production speed, quality and efficiency.

To this end; the related strategic plans in the prioritized areas need to be examined urgently.

The electrical and autonomous vehicles are the new agenda globally and Turkish automotive sector will be in line with this global agenda.

While the electrical vehicles make up the main

agenda; the high performance and efficient electrical motors and high capacity energy storage systems serving to this end, will be the most important actors of the competition.

Autonomous and communicating vehicle technologies will lead the way for new business areas and engineering education topics.

Turkish automotive industry will head towards technologies in line with the digital transformation era while continuing with its product variety and quality.

It needs to follow closely technology, processes and materials geared towards electrical, autonomous and shared vehicles and contribute to their development.

I believe, the Turkish automotive industry will be in a leading position about commercial vehicles (especially mass transportation as electrical, autonomous buses) about which it is already well positioned.

To sustain its current product variety, production capabilities, light and strong new material technologies, it must continue with its R&D and production investments.

In today's rapid digital transformation world, studies about sensor, radar, IoT, Big Data globally and they will be the priority subjects of the academia and private sector R&D units.

Studies around image processing with fast and big data, augmented reality practices, high speed data transmitting like 5G, autonomous driving techniques will bring new competition areas and cooperation opportunities to the sector.

Everything will be changing much more faster than it is today.



The electrical and autonomous vehicles are the new agenda globally and Turkish automotive sector will be in line with this global agenda. While the electrical vehicles make up the main agenda; the high performance and efficient electrical motors and high capacity energy storage systems serving to this end, will be the most important actors of the competition.





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Doruk Automotion General Manager Gönül Kamalı:

"Enabling manufacturers to use Digital Automation tools will generate great advantages in competitiveness!.."

The priorities of Turkish Automotive industry should be R&D. Especially for autonomuous vehicle technologies and spare parts. The next important priority is the activities on cultural changes to manage operations digitally using ERP+ MOM+PLM+CRM systems.

urkish Automotive Industry is one of the leading and mature industries in Turkey.

In addition to R&D and Innovation investments on different products and services, OEMs and

ments on different products and services, OEMs and sub contractor companies have the vision of installing sustainability and continuous improvement environment in the companies.

The number of manufacturers who are managing production, maintenance and qualty test operations via digital MOM systems are being rised. This approximation is providing to them sustainable operational man-

DORUK OTOMASYON

agement discipline and sustainable production management culture. Agility, detailed cost management and precise decision making ability using digital tools are other competitive advantages of the Turkish automotive industry.

Human life styles and transportation needs are changing. It is obvious that automotion industry will change but keep the importance high. Because of the autonomous vehicle needs of the big crowded cities, all the automotive producer companies begin to transform their production facilities to a kind of robot producer companies. This means the manufacturing processes will need much more sophisticated process management and operational management abilities which easily be gained via digital tools.

The weight, prices and delivery times will need to be reduced more and more. In addition to technological developments on the parts of vehicles, manufacturing operations should be very well managed.

In my opinion, the best companies will be the ones who is mostly internalize the usage of digital tools effectively.

The priorities of Turkish Automotive industry should be R&D. Especially for autonomuous vehicle technologies and spare parts.

The next important priority is the activities on cultural changes to manage operations digitally using ERP+ MOM+PLM+CRM systems. Depending on the clear and precise results coming from usage of the digital tools, machinery investments should be decided as it is reported via digital system datas.

Nowadays, adaptation to new technologies are slightly faster and flexible than before therefore industiries such as manufacturing and automation are very sensitive to cost and quality of production so eager to try oppurtunities generated by innovative, data augmented, automated and predictive method of technologies. Even more, enabling creative and attractive design to generate new product models are easier and faster by using technology with prefered demand of customer in predictive methodoligies.



Cevher Döküm COO / Executive Committee Member Oğuz Özmen:

"The new key to meet the demands of the market is human"

We believe "Human" factor needs to be in the middle of the "FOCUS" Strategy in order to successfully response the new expectations of the market. We need definetely innovative and well educated people to be able to cope with those new challanges.

he history of Turkish Automotive Industry goes to 1950's. Ford was the first global OEM who made a JV with Otosan by 1959. The industry started to gain power by the late 1960s when Fiat-Tofaş and Oyak-Renault JVs were established. The trend was followed by more OEMs, e.g. Toyota, Honda, Mercedes-Benz in following years. Since then, the industry keeps its leading position in the total export of Turkey.

According to the closing results of 2017, Turkey is the 14th biggest automotive producer in the world, 5th biggest producer in Europe and biggest automotive exporter to EU, which positively distinguish "Automotive Industry" among all others.

We believe that even if there will be some ups and downs in the market, automotive industry keeps its strong position in global economy and innovation culture. That's why we as Cevher Group keep investing in new technologies and state of art softwares and equipments to enhance our pioneering position in the market.

Currently 4 main trends are driving Automotive Industry; Electric Cars, Autonomous Vehicles, Car Sharing and Connected Vehicles. In paralel to those main trends in the customer market, there are other big changes and challanges in the manufacturing industry, e.g. Digitalisation, IoT, Deep/Machine Learning and Artificial Intelligence.

It is obvious that those trends will gain more and more power in the upcoming future.

Therefore, Turkish Automotive Industry has to "focus" much more on those trends in order to sharpen its position in the strongly transforming automotive industry, driven by quite destructive technologies.

We believe "Human" factor needs to be in the middle of the "FOCUS" Strategy in order to successfully response the new expectations of the market. We need definetely innovative and well educated people to be able to cope with those new challanges. The Industry has to solve firstly that challange with the support of all relevant authorities and resources.

It is clear that the technological developments are re-shaping the whole industry. In order to be ready for the upcoming future, each company needs to define a clever road map which is resilient enough to adapt itself to any further "game changer" development in the market.



We believe that even if there will be some ups and downs in the market, automotive industry keeps its strong position in global economy and innovation culture.



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ROTA branded steering and suspension parts are designed for working under harsh conditions. The parts offer smooth and safe driving experiences for commercial vehicles such as truck & trailer, bus, light trucks and vans. ROTA produces more than 2125 OEM reference parts for European and American commercial vehicles. In addition, ROTA develops around 200 new for commercial vehicles every year.

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Turkey Discover the potential

Dönmez Debriyaj General Manager Ahmet Coşkun:

"Branding is vital to sustainable growth"

urkish automotive sector has undergone tremendous growth in recent years, mainly led by passenger car and light commercial vehicles production and export. In spite of the fact that its primary effect on Turkish economy is mostly considered as the high added value it creates; I strongly believe that the more important benefit on Turkish economy is its enhancing effect on the quality system of other sectors.

Although OEM companies take the lion's share of the sector, spare parts industry has been very successful in last decade by exporting to almost all main European vehicle manufacturers.

After the establishment around 50 years ago and achievement of a period of rapid progress, the sector has been evolved from assembly based partnerships to a full process manufacturing industry adding R&D capability on its mass production capabilities.

Turkish automotive industry has a very competitive supplier base hiring a high skilled labour force and very good quality level.

Turkey has become a manufacturing base of Europe for especially truck and bus as vehicles and spare parts in addition to light commercial vehicles production. There exist many manufacturing companies international & global and also family owned ones.

Dönmez Clutch which has been founded in 1986 is

a family owned manufacturing company which has almost all processes inside; produces clutch sets for almost all European trucks and busses and exports to more than 60 countries worldwide, for OEM, OES and IAM.

In addition to the mandatory fundamentals of automotive sector as quality, flexibility, and competitive pricing, branding has vital importance to obtain sustainable growth. As Dönmez Clutch, we have accelerated our activities to promote Hammer Kupplungen as our main brand in Europe. We have actually founded Hammer GmbH in Germany last year as the second company in Europe after Hammer UK which has been operating since 2011.

Accelerating speed in technological advances has caused a revolutionary effect on automotive sector and its elements. In addition to the steeply increasing amount of electrified vehicles in the market, connectivity, sharing and autonomous properties are accepted to be the future of the sector.

The trendy abbreviation C.A.S.E. which stands for a totally new era in automotive sector is used to explain future of the sector. C.A.S.E.: connectivity, autonomous or assisted driving, car sharing or new mobility, electrified powertrains.

The word "Automobile" means self-moving, self-propelled. This name was first put to explain the evolvement from horse-drawn carriage to a vehicle with engine which does not require horse. We can claim that, this word is reverting to type in recent years: Autonomous cars are almost on the roads which allows the people to move on the cars without any drivers.

In Europe, % 40 of the cars are expected to be autonomous and one third to be shared in 2030. On the other hand, it is clear that the technological obstacles facing autonomous trucks are higher than the ones for self-driving cars. But, it wil also happen sooner or later.

Electric vehicles will decrease the work-force to one seventh, the component quantity from 4.000 to 300. Automotive manufacturers should be ready for this tremendous change expected to happen within near future.





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Discover the potential



Aktaş Holding Board Member, Chief Executive Officer Sami Erol:

"The sector has enough potential to create difference in global arena"

Development of the automotive industry in the world, we see that processes such as smart technologies, electric vehicles, mobility, artificial intelligence and digital transformation are decisive factors in the development of the industry.

he Turkish automotive sector has been providing our country and global economy with very serious added value as the locomotive of our country's exports for many years.

When we consider the Turkish automotive industry as a whole, we see that the industry has a very serious economic strength at the level of 30 billion dollars. This power, which the sector has, continues to increase rapidly.

In addition, when we look at the development of the automotive industry in the world, we see that processes such as smart technologies, electric vehicles, mobility, artificial intelligence and digital transformation are decisive factors in the development of the industry.

As might be expected with the global economic crisis and especially the political tensions in our immediate geography, the fluctuations in the Euro / Dollar parity are directly affecting the automotive industry as well as every sector.

On the other hand, while competition in today's world makes itself felt intensely in almost every arena, we can see that firms that cannot adapt to technological progress are falling behind within the competition.

For this reason, it is necessary for the firms to adapt to what we call "technology age" in the best way. As a matter of fact, there is a constant change in customer / market expectations in a competitive environment.



In order to be successful in the global arena, it is very important to know the conditions of the current competitive environment and develop appropriate strategies accordingly.

At this point, prioritizing new technologies on the basis of R&D and innovation and focusing on branding efforts should be among the priorities of the industry.

As industrialists, we have important responsibilities for the further development of our industry which has a key role in catching up with the strong future goals of our country.

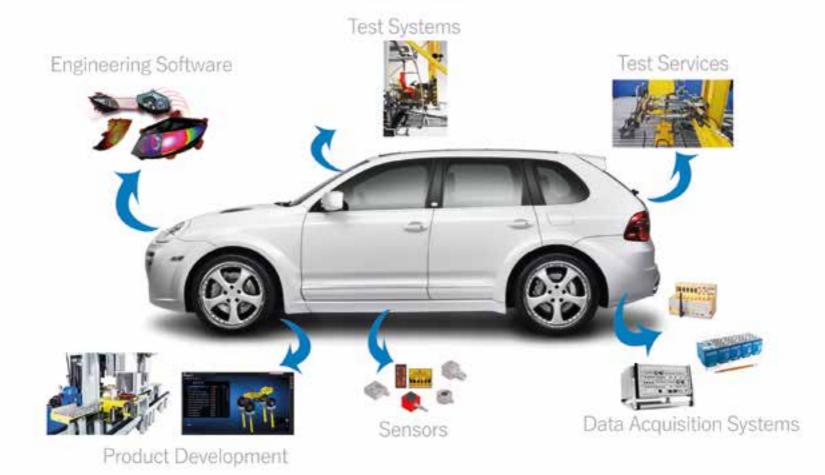
In fact, as sector representatives, we should continue to shoulder responsibility and to lead the development of our country by investing in knowledge and technology.

Actually I think that the market share of our sector will increase even more in the coming years. The Turkish automotive industry has more than enough potential to make a difference in the global arena with its production experience and R&D power...

We, as Aktaş Holding, continue to work on the basis of sustainable growth-oriented develop-

In order to be successful in the global arena, it is very important to know the conditions of the current competitive environment and develop appropriate strategies accordingly.

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ment strategies that we have established since the day we were founded, and always to advance the level of added value created by our country and world scale.

We are investing in information and technology in this regard. While accelerating digital transformation efforts, especially in recent years, we are also working on improving our existing infrastructure in line with the requirements of Industry 4.0.

We have recently started field analysis work on Industry 4.0 and are taking decisive steps in this regard. To sum up, as Aktas Holding we will continue to focus on creating value for the development of our industry.

At this point, we will continue our efforts in the direction of continuous improvement culture and perfectionist understanding, and we will endeavor to provide contribution to our country's future goals without any doubt.

Altan Hidrolik General Manager Tevfik Altan:

"A know how that requires innovative strategies is the most important need of the sector"

urkish automotive industry; with its automotive supplier industry's and OEM's high quality and productivity level has become an essential part of the world automotive industry and is continuing its growth at a fast pace. Some of the world's most important automotive manufacturers such as DAIMLER MERCEDES, VW MAN, FORD, FIAT, RENAULT, TOYOTA, HYUNDAI, ISUZU have been constantly in a trend of increasing their production volume in Turkey in the past years.

I believe that the automotive industry will continue its growing trend, however this growth will be much faster in the Asian-Pacific countries due to their relatively faster growth compared to the

rest of the world.

Along with Turkey already having high production volumes in both passenger and commercial vehicle manufacturing, it also has the highest growth potential in the CEE area.

My prediction is that especially in the passenger vehicle segment, diesel vehicle manufacturing will decline in the future and instead; gasoline, hybrid

and electrical vehicle manufacturing will increase substantially.

Turkey is an essential part of the world with it's strategic position. Due to this position as a bridge between the West and the East, it carries great potential culturally and socially.

For the advancement of the automotive industry, Turkey needs to come up with knowledge requiring, innovative strategies on electrical and hybrid motors, electronic control units and software instead of focusing on internal combustion engines. Especially, investments to improve and manufacture batteries and charging units should be made. These topics should be specifically given weight to in the education of the new generation.

Technology is advancing at a tremendous pace, hence OEMs are able to incorporate these advancements in their products and their business applications to create new and diverse opportunities very quickly.

OEMs in Turkey utilize most advanced technologies for qualitative and productive manufacturing. These changes bring the level of competition for OEMs and automotive suppliers very high so the companies that can not adapt to these advancements in technology and fail to improve constantly are forced out of the game.





Yıldız Kalıp Sanayi ve Ticaret A.Ş.

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Automotive Sector Manager Mehmet Şahintürk:

"Technology is one of the most central and significant parts of our business"



utomotive sector is the one of the most vital sectors in Turkey in terms of economy, development and employment. Therefore, we plan our strategies by taking into consideration this reality. We always follow the the most recent and innovative improvements in each step of our business. By analysing the needs, demands, potentials, sources and capacities of the suppliers and companies, we provide the optimised and sustainable solutions with tailor-made solutions. Thus, we ensure many connections among Turkish and European companies with long-term cooperation in mind. Through this means, we support Turkish supplier firms and increase our logistics market-share

OEM companies should provide new and more advantageous alternatives to their customers to be able to stronger than their competitors. As a logistics company, we always follow all these changes concurrently with the market and provide the best and proper solutions for each and every customer.

in the world. Our main target is high quality and sustainable and efficient logistics service.

Automotive business dynamics are very variable both in Turkey and the world. Requirements always vary according to the customer demands and needs. Technology is an extremely crucial part of the new cars. OEM companies should provide new and more advantageous alternatives to their customers to be able to stronger than their competitors. As a logistics company, we always follow all these changes concurrently with the market and provide the best and proper solutions for each and every customer.

Technology is one of the most central and significant parts of our business. It makes all proceses easier and more efficient for every phase regarding R&D, production, sales, logistics, etc. We always monitor the current developmental periods of the sectors and determine the neccessary improvements and investments for our company. With our strong R&D Center and IT team, all of our sources and processes can fulfill all expectations in regard to every kind of possibilities in logistics. We call this "Logistics 4.0"





Stock Systems

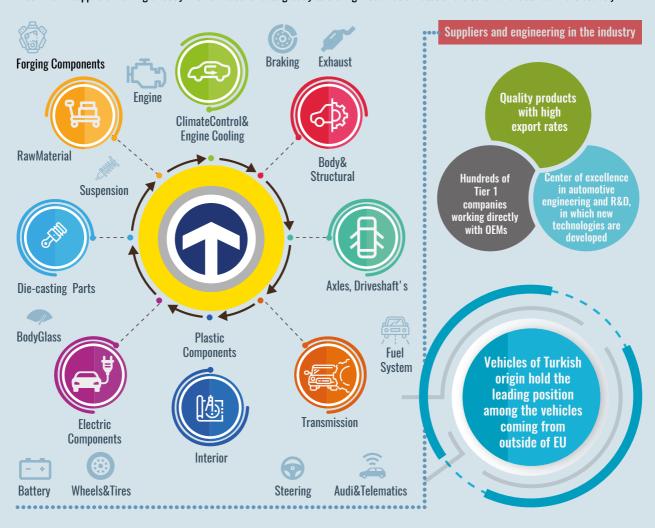
- a.Standard Steel Pallet
- b.Special Steel Pallet



TURKISH AUTOMOTIVE SECTOR

Suppliers and Engineering in the Industry

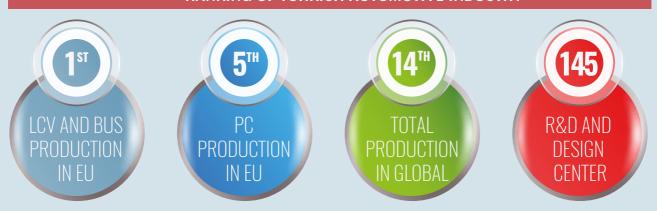
400+ Tier 1 suppliers working directly with OEMs contribute greatly to the high localization rates of the cars manufactured in the country



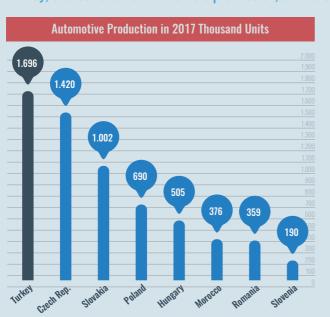
Turkey has become an important part of the global value chain of international OEMs in the last 25 years

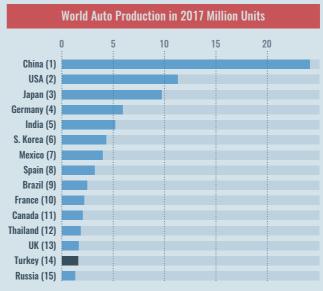


RANKING OF TURKISH AUTOMOTIVE INDUSTRY



Turkey, the leader of CEE in vehicle production, climbs the ranks in the World Auto Production list as well

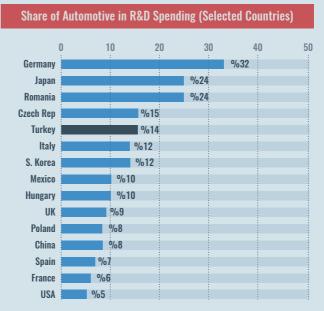




In line with global developments, component exports have increased by 13% CAGR over the past 16 years, reaching diversified markets all around the World

Automotive industry leads the country in R&D and patent applications









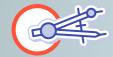
ADMOG is a social responsibility project run by TAYSAD to support technical vocational education.



The key aim of this project is to serve as a means to train qualified workers for industry.



Participation in the project is through the donation of new and used tools and machines.



ADMOG is a completely voluntary initiative that reinforces the cooperation between industry, businesses and schools.



Through this project, businesses and schools work together towards the acquisition of skills.



It is a project that is not only open to TAYSAD members but also all industrialists.



Since 2013, when it was started, the project has made it possible for 18.503 tools to be sent to 296 schools in 81 provinces.

"You Do The Donating, We Will Get It To The Right Place"

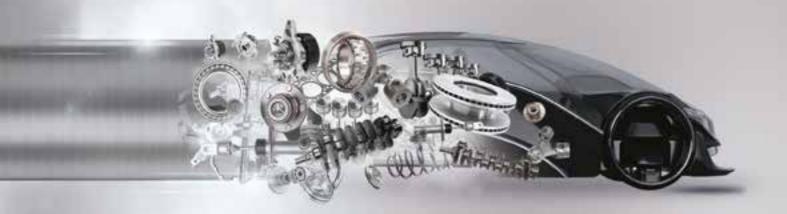


A Global Brand in Engineering Steel Bars

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The 20,000 Careers Project

The 20,000 Careers Project is an informative study that will help students studying at universities to determine the elements that will affect their career. 20BİN Kariyer is launched to allow students to define the values that will add value to them until they graduate, give up-to-date information on the conditions that they will face after their graduation and to show the needs in the fields that the project focuses on and allow students to ask questions about their preferences.

he 20,000 Careers Project is carried out by the Company Owners, Directors and managers in the sector, Human Resource Managers, professional recruitment companies working on Human Resources, and symposiums and panels where the connoisseurs of the industry share their knowledge on the relevant issues with students.

The 20,000 Careers Project was launched as a pilot project with Yıldız Technical University, Kocaeli University, Sabancı University and Uludağ University in the academic year of 2015-2016. Today, the project is expanding within the framework of collaborations between state and private universities such as Marmara University and Işık University.

The 20,000 Careers Project is carried out by TAYSAD in collaboration with student clubs in the selected universities and different sub-dynamics may be established along with lecturers

namics may be established along with legturers

JULY AUGUST 2018 ISSUE: 103

in the universities. For example, together with Marmara University, Faculty of Business Administration, German Language Department, the commencement of an elective course program called "Practice-Oriented Business Administration Applications" is under discussion. Although the project is structured in the limelight of engineering faculties of universities, it also aims to serve for the search of qualified personnel for departments such as HR, Sales etc. of our organizations. A survey will be applied to the students who take courses within the same program for determining the departments that are of interest to them. Thus, internships will be offered to the students in the relevant departments of the member institutions that are under the umbrella of TAYSAD. Students who continue to work in said companies may be asked to write a "dissertation" in their fourth year about a topic that is relevant to the company or the automotive industry. The topic to be selected can be selected from among the topics that will draw interest of both parties. Here, the lecturers of Marmara University Department of Business Administration (in German) will focus on the academic competence of the dissertation while the managers of the relevant company will take into evaluation the industrial content and practical benefit of the dissertation.

Some of the topics to be addressed:

- Strategic partnerships in the automotive supply industry, the effects on information management and innovation
- Risks and benefits of cross-border mergers and acquisitions: An example from Automotive Industry
- Internationalization concept in Turkish companies

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In the 20,000 Careers Project that started off with the mottos "How to Create Careers in the Automotive Industry?" and "Take The Right Step towards Your Career at University", we aim to introduce the youth to the experts of our industry and continue to offer career opportunities that involve global opportunities and we intend to take the project to a deeper level in the new period in the framework of the following headings:

- Creating Human Resource for TAYSAD Members
- Clarifying the needs of our R&D Centers
- Initiating Vocational/Technical High Schools, except universities

- Making a difference in the lives of the students through Anadolu Foundation Mentorship Project
- Transformation to university-industry cooperation platform (Professionals should give lectures/seminars in universities/high schools, Lecturers should give seminars in TAYSAD, Creating collaboration in course and laboratory contents at Vocational/Technical High School, Bachelor's and Master's Degrees and Doctorate levels

The 20,000 Careers Project aims to transform its works into a sustainable and corporate form in order to create synergy with new stakeholders and other TAYSAD events (ADMOG, training etc.).



Knorr Bremse at TAYSAD

Holding the world leadership in the production of rail and commercial vehicle brake systems, Knorr Bremse, which is based in Munich, Germany, visited TAYSAD both to exchange information on sectoral work and to increase cooperation.

t is agreed at the meeting in which TAYSAD Chairman Alper Kanca informed the Turkish automotive industry about the latest status and sectoral work, that TAYSAD and Knorr Bremse could work together on the product groups specified in the procurement activities.

Turkey acquisitions are in a increasing trend at Knorr Bremse

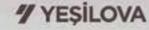
At the meeting, Knorr Bremse's Vice President of Global and European Purchasing, Fabian Schlegel, first mentioned about the news recently found coverage in the press regarding the purchases from Turkey and he said this is not official policy or opinion of the Knorr Bremse and it reflects solely the personal opinion of that person. Schlegel, indicated that purchasing from Turkey is at an increasing trend and they are making plans to increase this volume.

LIGHTER & SAFER



Aluminium Automotive parts By Canel

Crash Management solutions Roof rail application Sunroof application Window Implementation







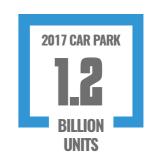
Trends had been discussed at TAYSAD 9th Aftermarket Conference

9th edition of Aftermarket Conferences', which brings experts from automotive sector together every year, is organised this year.



lper Kanca had a speech at 9th Aftermarket Conference, was organised in cooperation with TAYSAD, OIB and OSS, with a special support from Turkish Republic's Ministry of Trade. During his speech Alper Kanca stated that 200 out 1000 people in Turkey has a vehicle. In his speech, he said: According to the world average, 208 out of 100 people have a vehicle. This number is 940 in US, 700 in Italy, 650 in Poland and over 600 in Europe. When we look at Turkey, we are not close to global scale in vehicle ownership. We have to increase numbers of vehicles.

Indicating that the number of vehicles used in the world was 1.2 billion in 2017, Kanca said, "In



Alper Kanca indicated that the number of vehicles used in the world is 1.2 billion in 2017 and said: this number is expected to reach 1.3 billion by 2018. 37 percent of the vehicles in the world represent Europe, 17 percent represent China and 23 percent represent North America and 1.3 percent represents Turkey.



CHOICE OF OVER 45 COUNTRIES WORLDWIDE

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Delphine Lafon Degrange, Head of PSA Group Spare Parts Division, Fotios Katsardis, TEMOT International Autoparts GmbH President and CEO, and Gael Escribe, Nexus Automotive International Co-Founder and CEO shared their information with the participants.



2018, this is expected to reach 1.3 billion. 37 percent of the vehicles in the world represent Europe, 17 percent represent China and 23 percent represent North America and 1.3 percent represents Turkey.

2017 has been a success

As a keynote speaker, OIB Chairman Baran Çelik said, "The automotive sector has historic achievements in 2017. The automotive sector, which becomes the export champion of our country 12th time, continues to grow rapidly and exports 80 percent of its production. Considering the first four months of 2018, we think we will achieve the annual export objective worth of 30 billion dollar easily. Çelik, who stated that they follow technological advancements closely to ensure sustainability of export, also said: The automotive industry should adapt all innovations, changes and consumer habits. That's why the Industry 4.0

transformation has been on the agenda of the automotive industry. Another keynote speaker, OSS Chairman Riza Sahin said: "The automotive industry continues to grow, with a 23 percent increase in the total number of units in the last 10 years. Aftermarket sector in automotive aims to reach 6 billion USD in 2020.

We aim to be the leader of the Eurasian region.

Sahin pointed out that aftermarket in the automotive industry will completely change with the industry 4.0 and said: We think that the prepared ones will win in this process and we also continue our work in this area. Especially we aim to be the leader of the Eurasian region.

Speaking at the 2018 Sector Evaluation panel, LMC Automotive Director Jonathan Poskitt stated that there has been a 3 percent growth in global scale in 2018 and said: In Europe, we have



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had a 12 percent slowdown in the economy, but regardless of last year economy is improving, sales of commercial vehicles have increased since 2009.

The number of driverless vehicles will increase

Poskitt, who pointed out that number of autonomous vehicles will soon become widespread, said: Even if it is not at all points in the world, the number of driverless vehicles will increase and become widespread around the world in around 2020-2045.

Speaking at the Automotive Supply Sector General Evaluation Panel, Frost & Sullivan Director Moosa Mubarek pointed out that the changing technologies affect customer expectations and behaviors and said: Now millennium children and women are becoming customers too. With they become customers as well, the automotive sector faces new expectations.

Mubarek quoted the results of a study in Poland, "There is now a big trend for electric and autonomous vehicles. According to a survey in Poland, 44 per cent of producers and investors see electrical and autonomous vehicles as threats. If we





see these developments as a threat, we can lose a lot. The reason why I give examples from Poland is that Turkey shows great similarities with the structures there, "he said.

Vehicle density in Turkey lower but has a good amount of spending per vehicle

Focus Market Aftermarket Sector Assessment Session Speaker, Wolke Aftersales Senior Advisor to Zoran Nikolic shared aftermarket data of the European G5 countries, Turkey, Russia and Africa. Nikolic, who indicated that European G% countries have a 73,1 million euro worth aftermarket, said: This figure is 3,8 Billion Euros in Turkey. There are 12 million vehicles in Turkey, which counts 141 vehicles per 1000 habitants. In Russia, the market volume is over 10 billion euros.

There are 41 million vehicles, and Russia counts 280 vehicles per 1000 habitant. Africa's market volume is 8,7 million euros and there are 33,5 million vehicles. 79 vehicles per 1000 habitant. To summarize, Africa has a low density and low expense per vehicle. Turkey has a low density and yet high expense per vehicle. Russia spends less money per vehicle but vehicle density is high. European G5 countries is at where Turkey, Russia and Africa aims to be.





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TAYSAD Konya Supplier Day



TAYSAD Konya Automotive Supply Industry Day is held by Konya Chamber of Industry (KSO), TAYSAD and Corporate Governance Association of Turkey (TKYD).

he meeting held at the Conference Hall of Konya Chamber of Industry (KSO) and Deputy Chairman Mustafa Parents Tekelioğlu, TAYSAD Board Members Naci Faydasıçok, Tolga Yalgi and Executive Officer Süheyl Baybalı, and Board Member of Turkish Association of Corporate Governance, Mehmet Buldurgan attended the meeting with many industrialists. Speaking at the opening of the program Konya Chamber of Industry Deputy Chairman Mustafa Veli Tekelioğlu said that Konya is now an industrial city. Noting that Konya, which has a long history in the industry, also has an important infrastructure in the automotive sector, Tekelioğlu underlined that the industry is in second place in Konya's exports.

TAYSAD want to get involved in Turkey's car

TAYSAD Board Member Naci Faydasıçok said that TAYSAD has 408 members in Turkey, and 9 of them are in Konya. Pointing out that members employ more than 200 thousand employees and

having 140 R & D and design centers, Faydasıçok also emphasized that they create a business volume of 22 billion usd and export performance of more than 10 billion usd. Stating that TAYSAD is on a project that would support Turkey's Automobile, Faydasıçok said: We are listing the capabilities of our members. This report will be shared with localization executive board and joint initiative group. At the end we want to be a part of this investment.

Companies' burdens related to purchasing will be decreased.

TAYSAD Board Member Tolga Yalgı provided information about Joint Purchasing Group that is presented by TAYSAD to its members. Yalgı said: As the purchasing group, we are not replacing purchasing experts of the member companies. We just try to help them and lighten their burden. We provide help with issues such as packaging, trade union packages, job security, transportation, car rental.

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VAROL KARSLIOĞLU

In Memory of Sergio Marchionne



Sergio Marchionne, the visionary Italian-Canadian who left an indelible mark on the global auto industry, has died at age 66.

ergio Marchionne came into the auto industry 15 years ago as an outsider, a middle-aged accountant-turned- corporate strategist with no experience about the automotive industry.

When he died on July 25th at the age of 66, he had become one the industry's great leaders matured in the difficult years of early 21st Century. His long, sleepless hours and intercontinental travels filled with smoking and espresso took its toll.

The Italian-Canadian guy pulled Fiat and Chrysler from the brink of failure and made them work together globally. On June 1, he had said he expected Fiat Chrysler Automobiles to at least double its adjusted earnings from 2017 through 2022.

Born into postwar Italy, where family members had been killed by soldiers or partisan unrest, Marchionne grew up on Italy's Adriatic coast. His family moved to Toronto when he was 14, and he later studied philosophy and other subjects at Canadian colleges, receiving business and law degrees before becoming an accountant. He rose through management ranks at several businesses in Canada and then Switzerland, becoming a tax specialist, attorney and corporate fix-it man.

His success at the Swiss quality-inspection company, SGS, made him known and respected by the Agnelli Family, one of the biggest shareholders. And shortly after this, he was a board member of the Agnellis' primary business, Fiat.

As he took over Fiat as CEO, the Italian automobile conglomerate had lost \$2.5 billion from its car operations in 2004. He provided a significant cash injection by negotiating a payment of more than \$2 billion by General Motors to settle past contractual obligations with Fiat. He closed inefficient factories and restructured debt, then focused on expanding Fiat's product line, investing €10 billion to develop 20 new models in four years.

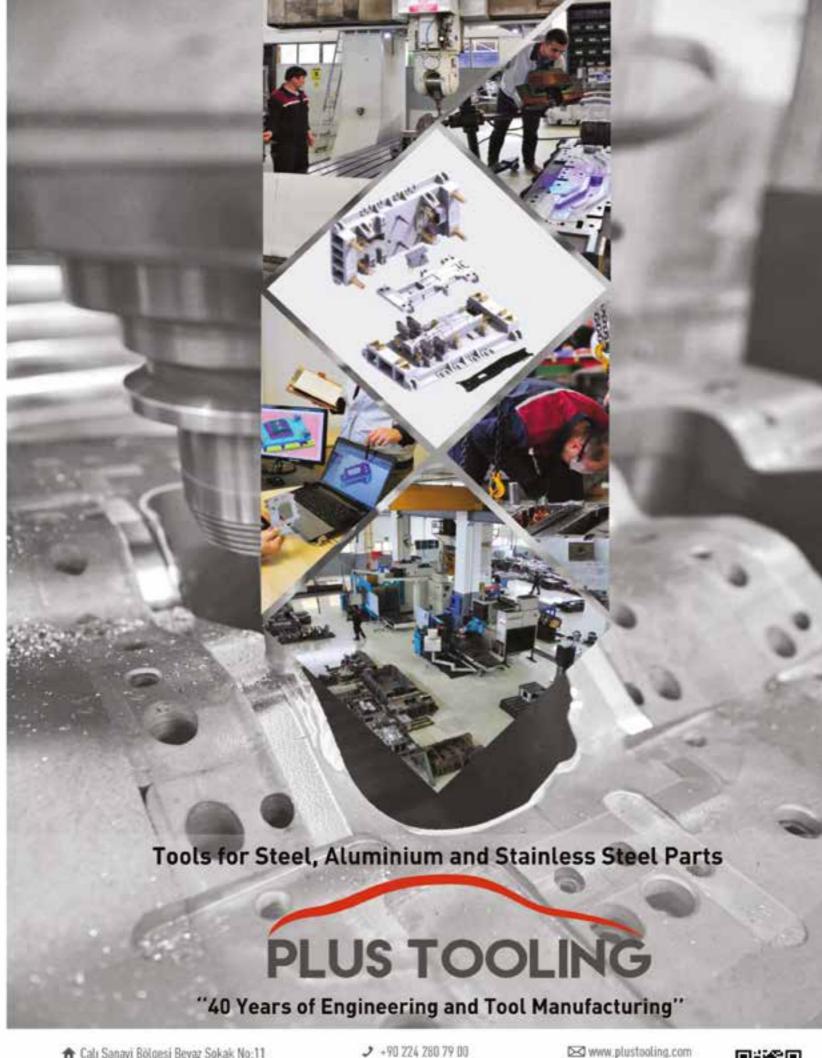
The turnaround made Fiat an independent, cashrich player by the end of the decade, just as the economic crash of 2008 hit the U.S. and battered the auto industry.

And in 2009 he dared to acquire for Fiat a 20 percent stake in the financially disastrous Chrysler.

With this strategic and transcontinental move, the man in black sweaters became a star of the automotive world: Although dressing the same everyday, he had multiple hats: Chairman and CEO of FCA, chairman and CEO of Ferrari, chairman of Maserati, chairman of SGS and chairman of CNH Industrial, a European producer of trucks, buses, tractors and construction vehicles.

He later sized up his challenge at Chrysler as rebuilding its product line.







Marchionne's strategy for returning Chrysler to profitability was to invest in new products, with Fiat and Chrysler sharing vehicles, engines and factories.

Ram was spun off from Dodge. Younger Chrysler executives replaced veterans and were handed ambitious sales and financial targets but with autonomy to reach them. The Jeep lineup was nourished and expanded globally. Chrysler's American roots were played up in advertising — most famously with the tag line "Imported from Detroit" — that drew plaudits from dealers, employees and many consumers.

By May 2011, the company was healthy enough to enter the private capital markets and shed its high-interest government debt.

By 2014, Fiat had gained full ownership of Chrysler, but Marchionne's original plan to expand products and restore profits at Fiat Chrysler was thwarted by changing consumer preferences. The small and cute Fiat 500's were not so popular as the consumer preferences moved to pickups, SUV's and crossovers in the recovering US economy.

Not his every action served the interests of FCA:

In the final days of the Obama administration, when the EPA alleged that FCA had undeclared emissions software on diesel Ram pickups and Jeep Grand Cherokee SUVs, Marchionne angrily protested. His steadfast denials likely factored into delayed certification of the 2017 Ram 1500 EcoDiesel and difficulty earning certification on other vehicles.

Marchionne also surprised the auto industry three years ago with his provocative vision for the global business in a presentation called "Confessions of a Capital Junkie." He complained that the auto industry generates a low return on capital in large part because each automaker incurs the same high expenses to develop the same products and technologies, so they can achieve the same results.

In calling for more industry consolidation, Marchionne even proposed that FCA should merge or be acquired. That appeal was roundly rebuffed by his two chief domestic competitors, Ford Motor Co. and General Motors.

Adapted from Lindsay Chappell's article in Automotive News with contributions from Larry P. Vellequette and Reuters.

Mike Manley, born in Edenbridge, England, has been part of the Group Executive Council, FCA's governing body, since 2011.

Fiat Chrysler announces new CEO Mike Manley

Prior to his new position, 54-year-old Manley worked as the firm's Head of the Jeep and Ram brands. The CEO joined Chrysler in 2000, when the company was part of Daimler, and took on his previous job in 2009.



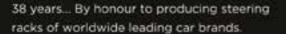
The British-born Manley had been the head of Jeep since 2009 and of Ram since 2015. He has held various positions at the company since joining DaimlerChrysler in 2000 (as Director - Network Development in the UK), including Chief Operating Officer for the APAC region, lead executive for Chrysler international activities outside of NAFTA, Executive Vice President - International Sales and Global Product Planning Operations. In this position, he was responsible for product planning and all sales activities outside North America.

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Assan Hanil's Technology Leap

Assan Hanil, has introduced cutting edge technology products that provides tailor made solutions for its customers and R&D investments for autonomous drive transition at Technology Day, which is held for Assan Hanil's customers, Turkey's important OEMs and prominent specialists of the sector.

ssan Hanil organised Technology Day on 12-13 July. Developments on R&D studies regarding the autonomous drive and electric vehicle technologies were elaborated in the event. Participants are also informed about trends and product technologies. Assan Hanil General Manager Atacan Güner hosted the event, which is attended by Kibar Holding CEO Haluk Kayabaşı, Seoyon E-HWA executives, Hyundai Assan CEO Mr. Yoon, Ford Otosan General Manager Haydar Yenigün, OSD and TAY-SAD board members. Assan Hanil's and Seoyon E-HWA's products were exhibited in three days event.

"We sell the products we developed to the world"

Kibar Holding CEO Haluk Kayabaşı said that Assan Hanil is not only an important supplier for automotive sector, but also guides the sector with its R&D studies. Kayabaşı stated that they have increased their R&D staff by 35 percent in the last two years and Assan Hanil achieved significant success through these studies, and he said: "Assan Hanil, is on the way to become a world brand with its seats produced via cutting edge technol-

Acting with the vision of making future investment already, Assan Hanil brought autonomous drive simulated cabinet from South Korea in order to show the recent developments in automous drive technologies and company's investment objectives.

ogy. We are the one and only company in Turkey that produces seats in partnership with THY. Plane seats that are developed in Assan Hanil R&D center brought us the privilege of being the only approved supplier of Airbus and Boeing. By this we also contribute our country economy via decreasing the seat import. We expand our expertise in car seats. We developed driver and passenger seat (ASD) with air suspension, which are used in bus and trucks.

I believe our agreement with Ford Otosan on ASD will improve our current know-how. We have flexible production capabilities that are close to our customers. We plan to make a 40 million Euros investment and open a production facility for ASD in the mid term. We continue our feasibility studies for this and we aim to increase our global market share to 15 percent for air suspended driver seats in the mid term.













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JSC SEZ Alabuga General Manager Timur Shagivaleev, Governor of Chelyabinsk RegionBoris Dubrovskiy, Coşkunöz Holding Board MemberOva Coskunöz. Coşkunöz Holding Board Member Nuran Besler, OJSC Magnitogorskiy Metallurgicheskiy Kombinat Chairman of the Board Viktor Rashnikov, Director of Metallurgy Department, Ministry of Industry of Russian Federation Pavel Servatinskiy, Ford Sollers JV President and CEO Adil Shirinov, Yelabuga Mayor Gennadiy Yemelyanov, General Manager of OJSC Magnitogorskiy Metallurgicheskiy KombinatPavel Shilyayev, Coşkunöz Holding General Coordinator Erdem Acay. President of Tatarstan Rüstem Minnikhanov

Inauguration of MMK-Coşkunöz Alabuga Steel Service Center (SSC) in Tatarstan

MMK-Coşkunöz Alabuga Steel Service Center (SSC) established as a joint project of Magnitogorsk Iron and Steel Plant and Coşkunöz Alabuga companies for operating in the Republic of Tatarstan was opened with a formal ceremony on 14 May 2018, Monday.

great number of top government officials and guests from various countries attended the opening ceremony of the center, which will provide steel service for the first time in its region, at Alabuga facility, the biggest private economy region of Russia.

Tatarstan President Rustam Minnihanov, Çelyabinsk Oblast Governor Boris Dubrovskiy, "Magnitogorsk Iron-Steel Factory" Board Viktor Rashnikov, Coşkunöz Holding Board Members and General Coordinator Ahmet Erdem Acay, Ford Sollers President and Acting General Manager Adil Şirinov, and Mr. Pavel Servatinskiy on behalf of the Russian Federation's Minister of Industry and Commerce, as well as the other officials and potential customers of leading automotive companies attended the ceremony.

In the opening speech, Erdem Acay, General Coordinator of Coskunöz Holding, who thanked Tatarstan government for its supports to the center whose construction was completed in less than 1 year by Alabuga Economy Region stated that MMK-Coşkunoz —Alabuga

would make important contributions for increasing career opportunities and improving competences of local people. Mr.Acay continued in this way: "I am sure that this center will bring many benefits to the region by increasing quality and then reducing costs along with opportunities such as localization of production of pressed sheet metal parts, logistics optimization and export."

Viktor Rashnikov, Chairman of the Board of "Magnitogorsk Iron and Steel Plant" Inc., stated his faith that this facility, which MMK and Coşkunoz-Alabuga established by combining their forces, would become a leader producer not only in Tatarstan but also throughout the country.

MMK-Coşkunöz Alabuga will produce all types of blanking sheet metals required for the production of high-quality automobile body parts and it aims at providing service to Russian auto manufacturers in especially Volga and Ural Regions and to foreign auto manufacturers operating in Russia. Companies such as Ford, KAMAZ, Kamaz-Daimler, Renault, Nissan, AVTOVAZ, GM-Avtovaz, UAZ, GAZ are one of the potential customers of SSC which will make production with a capacity of 41,5 thousand ton per year.

SSC which will make production in accordance with TS-16949-2002, ISO 9000, ISO 1400, OHSAS 18001 standards will provide quickly meeting of quality steel material need of automotive producers as the first and only establishment that makes blanking dies from steel roll operation using high technology.



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In the 50th year of Çolakoğlu Metallurgy A.Ş., employees received the seniority and achievement awards at the traditional award ceremony, which is organised second time by the Human Resources Directorate on 4th of May.

Çolakoğlu Metallurgy A.Ş. honoured the employees

aving a high level of employee loyalty, Çolakoğlu Metallurgy A.Ş's long term employees received awards at a ceremony with the participation of board members and senior management team. Employees, who have served for more than 30 years at various levels of the company, are celebrated by Chairman Hasan Çolakoğlu and received their seniority plaques and awards.



ROTA again among the first thousand exporters

NSK Group, with the brand ROTA list of Turkey's First 1000 Export Company took place this year.

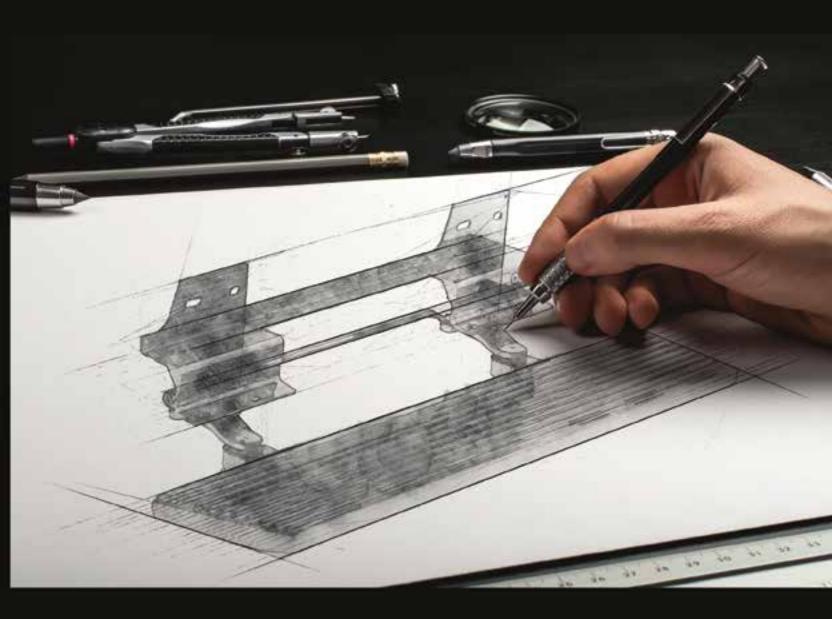
he company ranked 968th in the overall ranking and the automotive industry rankings were 85 in the same survey. More than 10.300 OEM reference products such as rods, rods, rods, complete rods, spindle, V-arm,

new arm and repair kit for commercial vehicles, agricultural tractors, work machines and special vehicles with NSK Group ROTA brand. in the factory. Its products are exported to more than 100 countries in 5 continents with its sales and marketing offices in Istanbul and Sao Paulo.

Yavuz Kazangil, Chief Executive Officer of NSK Group, said: "We would like to thank our business partners and employees for attaining this achievement."



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Everything starts with an idea. With our 550 colleagues, we have the enthusiasm, to execute ideas and build strong, efficient, attractive and high quality products.

We are celebrating the official opening of Birinci R&D Center.

As Tezmaksan Makina continues its social responsibility projects, a new cooperation started with OIZ Vocational and Technical Anatolian High School.

Tezmaksan's Investment to Vocational Highschool Students' Future

Within the scope of the project, a classroom will be opened under the name of Tezmaksan, where 30 students will receive training for three years. Students will receive a certificate at the end of this training, which will provide them employment opportunity in the sector.

apid development of Turkish machinery industry increases the need of technical human resource that knows new technologies well. Being aware of this need, Tezmaksan, as a prominent company of the sector, implements many social responsibility projects. In that respect, a new cooperation has started between Tezmaksan and Private İkitelli OIZ Vocational and Technical Anatolian High School. Tezmaksan, will start vocational trainings at a classroom that will be opened within the scope of the projects.

We will make industry pleased.

30 students, whom will be selected through interviews, will receive applied trainings in Tezmaksan classroom at CNC machines. Trainers, whom will come from Tezmaksan, will provide



professional development information to the students a few days every week. General Manager of Tezmaksan, Hakan Aydogdu, had a statement regarding the project and stated that they attach great importance to their responsibility projects. Aydoğdu said: We are helping the students to love the industry, to own their vocations and to build their future.

Qualified Staff Problem will be solved

Hakan Aydoğdu indicated that they build new cooperations, partnerships to solve the qualified personnel problem of the machinery sector, which is the locomotive of economy, and said: Our cooperation with Private İkitelli OIZ Vocational and Technical Highschool is a crystal clear example of this. Our social responsibility projects will continue. Through our activities that aim to find a solution for the lack of qualified personnel, students will easily adapt to business life. Hakan Aydoğdu also said that following the trainings, graduated students will be provided employment opportunities.



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Mehmet Tiryaki and Sergei Kogogin, with Tatarstan President Rustam Minnihanov wished success following the signature ceremony.

Tirsan Kardan and Kamaz's joint venture Tirsan Kama JV established

The Joint Venture Agreement between Tirsan Kardan and Russia's biggest truck manufacturer Kamaz are signed in Russia.

iRSAN KARDAN, the main production company of Tiryakiler Group, which is one of the leading supply industry groups, and Kamaz, Russia's biggest truck manufacturer, established a joint venture under the name of TiRSAN KAMA. The joint venture came alive with final signatures at 22nd St. Petersburg International Economic Forum (SPIEF-18) in Russia. A Memorandum of Understanding were signed during a meeting, which was attended by the representatives of two companies and countries, at "Guest Country: Russia and Turkish-Russian Business Forum", which was organised within the scope of İzmir International Fair last year.

TIRSAN KAMA JV partnership agreement was signed by Tiryakiler Group's Chairman Mehmet Tiryaki and Kamaz Factories' General Manager Sergei Kogogin at a ceremony, in which President of Tatarstan Republic, where the joint venture

will be located, Rustam Minnihanov was present. Tiryakiler Group's Board Member Prof. Yahya Doğan and Tirsan Russia's General Manager İsmail Aliyev were also present at the ceremony.

Mehmet Tiryaki had a statement following the signature ceremony and said: We have finally signed the official establishment of TİRSAN KAMA IV, of which's foundation was laid by signing the Memorandum of Understanding last year in İzmir, with Mr. Kogogin. We are proud and pleased to become partners with Kamaz, the biggest truck manufacturer of Russia. This new company will produce drive shafts for both Kamaz factories and Russia's other leading commercial vehicle producers.

We have been operational in Russia since 2012. They have always showed us support and sympathy. The interest of H.M Minnihanov and Mr. Kogogin and excitement of doing business encouraged us to take greater steps in this country. I am grateful to them. I believe, this partnership will provide new horizons for Russia and Tatarstan and it will be an occasion for two countries' people to know each other and improve economic relations.

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Maxion İnci and Maxion Jantaş Chairman Mustafa Zaim says: Aegean Region has become the registered wheel rim manufacturing center. We are proud of to be the locomotive of this growth.

Aegean Region has become the registered wheel rim manufacturing center

Maxion İnci climbed up 14 steps up in ISO 500 list and ranked as 115th. Maxion Jantaş climbed by 40 steps and ranked as 380th.

axion İnci and Maxion Jantaş have produced more than 10 million wheel rims, which is a first in its history, in 2017. The companies aim to continue to create added value for Turkish economy and produce 400 million USD worth of export by producing 11 million wheel rims in 2018. Maxion Wheels of Brazil, the biggest wheel rim producer of the world, and İnci Group companies create employment and contribute to country's economy via producing wheel rims at four factories located in Manisa Organised Industrial Zone to be exported to more than 50 countries.

Chairman of the Board of Maxion İnci and Maxion Jantaş, Mr. Mustafa Zaim says İnci Group has become an example for Aegean region by producing

wheel rims and investing in the region. Zaim said: "We have become an example for the upcoming investments by producing wheel rims in Aegean Region. Now there is a know-how. Manisa and İzmir have become Europe's wheel rim manufacturing centre. Aegean Region is now registered as the wheel rim production center of the world. We are proud of leading this branding and be a part of the biggest industrial companies of Turkey. We have trust in our country. Therefore we work hard to develop our company as well as our country."

Mr. Zaim, who states that Maxion İnci and Maxion Jantaş will continue with their investments, also said: Our companies with their 1700 employees, 220 out of which were employed additionally in the last two years, will continue to increase Turkey's brand value in the world, as well as to contribute the economy. These days, in which we achieve our sustainable growth objectives one by one, we are also proud of being among the biggests of ISO list. We will continue to work for the benefit of Manisa, İzmir, Aegean Region and Turkey with our quality and leadership.

TKG Automotive is one of the leader companies in cold forming of steel, aluminium and stainless steel. We will continue to create integrated solutions to be a global supplier with integration of cutting-edge technology into business process.







osch and Daimler are speeding up the development of fully- automated and driverless driving (SAE Level 4/5) in the city and are decisively setting the course. The partners have chosen California as the pilot location for the first test fleet. In the second half of 2019, Bosch and Daimler will offer customers a shuttle service with automated vehicles on selected routes in a Californian metropolis. Daimler Mobility Services is envisaged as the operator of this test fleet and the app-based mobility service.

less vehicles, Bosch and Daimler rely on their automotive expertise accumulated over many decades to bring mature and safe innovations to market. Both companies are guided by a shared philosophy: "The decisive factor is to introduce a safe, dependable and mature system," says Dr. Michael Hafner, Head of Automated Driving at Daimler AG. "Safety has the highest priority, and is the constant theme of all aspects and development stages on our way to the start of series production. If in doubt, thoroughness comes before

Fully-automated, driverless driving in the city requires the highest level of functional safety.

Bosch and Daimler: Metropolis in California to become a pilot city for automated driving

In 2019 a major city in the Silicon Valley will become the first pilottesting city for Bosch and Daimler.

US technology company Nvidia supplies the platform for AI algorithms from Bosch and Daimler.



Bosch and
Daimler possess
know-how from
the individual
component and
the entire vehicle
to the operator
model.



The pilot project will demonstrate how mobility services such as car sharing (car-2go), ride-hailing (mytaxi) and multi-modal platforms (moovel) can be intelligently connected to shape the future of mobility. In addition, the partners have decided on the US technology company Nvidia as the supplier of the artificial intelligence platform as part of their control unit network.

For the joint development of a driving system for fully-automated and driver-

speed." "Developing automated driving to a level ready for series production is like a decathlon", according to Dr. Stephan Hönle, Senior Vice President Business Unit Automated Driving at Robert Bosch GmbH. "It's not enough to be good in one or two areas. Like us, you have to master all disciplines. Only then will we succeed in bringing automated driving to the roads and the city safely."







MANN+HUMMEL agrees to acquire Tri-Dim Filter Corporation

The MANN+HUMMEL Group announced that they have entered into a definitive agreement under which MANN+HUMMEL will acquire the Tri-Dim Filter Corporation, a USA-based air filtration company.

Headquartered in Louisa, Virginia, Tri-Dim is the single largest privately-held air filtration company in North America. With approximately 800 employees, Tri-Dim is a provider of a full-line of HVAC filtration products and services, including air and liquid filtration, heating/air conditioning supplies, cleanroom filtration, air purification equipment, gas phase filtration, and air testing & remediation.

Toyota Motor Corporation, Toyota Motor North America to absorb Toyota InfoTechnology Center

Toyota Motor Corporation (TMC) is to absorb the research and development functions of its wholly owned subsidiary, Toyota InfoTechnology Center (ITC Japan) into its in-house Connected Company by March 2019.

oyota Motor Corporation (TMC) is to absorb the research and development functions of its wholly owned subsidiary, Toyota InfoTechnology Center (ITC Japan) into its in-house Connected Company by March 2019. It also plans to absorb the research and development functions of Toyota InfoTechnology Center, U.S.A. (ITC U.S.A.), a wholly owned subsidiary of ITC Japan, into Toyota Motor North America (TMNA).

As the development of automated driving technologies and the roll-out of businesses related to mobility services continues to gain momentum, this decision fits with TMC's drive to speed up the development and application of ever-better services based on connected technologies to meet the needs of customers more closely.





SKF offers new ultrasonic leak detection device

SKF Ultrasonic Leak Detector TKSU 10 simplifies leak identification

Announced the introduction of its SKF Ultrasonic Leak Detector TKSU 10. Simple to operate, this device utilizes ultrasonic technology to locate leaks in compressed air or vacuum systems.

Designed for use in noisy, industrial environments, the intuitive TKSU 10 identifies leakage via its ultrasound measurement sensor. The device features a convenient LED display, helping the user to optimise leak detection and supporting quantification of leakage. The SKF Ultrasonic Leak Detector is designed for use in most industries utilizing compressed air, including paper and chemical, as well as workshops with air-driven power tools.







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Hyundai and Wartsila to turn used EV battery packs into energy storage solutions

Hyundai Motor Group (HMG) has selected Finland-based technology company Wartsila for a technology and commercial partnership that is designed to utilize second-life electric vehicle (EV) batteries for the growing energy storage market.

The global partnership aims to combine HMG's expansion in electric vehicles with Wartsila's growing energy business across 177 countries, which includes 67 GW of installed power plants and advanced energy storage technologies and software created through its acquisition of Greensmith Energy.



Volkswagen to invest \$100 million in Quantumscape for solid-state batteries

California-based technology company Quantumscape
Corporation and Volkswagen
Group are forming a joint venture for commercialisation of Quantumscape's solid-state batteries. Volkswagen's investment of \$100 million (Rs 677 crore) will make it the enterprise's largest automotive shareholder.



ZF's new solutions enable easier electrification for trucks and buses

German technology major ZF's new offering the AVE 130 electric portal axle and the CeTrax electric central drive for city buses, which will allow OEMs to choose between conventional low-floor and high-floor platforms as well as low-entry buses for electrically powered models, which makes the electrification of vehicle fleets more economical and convenient.



Michelin and Maxion Wheels win awards for punctureresistant flexible tyre technology

Michelin, one of the world's largest tyre makers, and Maxion Wheels, which ranks as one of the world's largest wheel manufacturers, received the 2018 'CLEPA Innovation' award at this year's European Association of Automotive Suppliers (CLEPA) innovation award program.

Nissan Leaf batteries power Dutch stadium's energy storage system

The largest energy storage system comprising electric car batteries in Europe has been switched on today in Amsterdam, where it will help power the Ajax football team's Johan Cruijff Arena.





Faurecia's two cockpit solutions win German Innovation awards

Part of its 'Cockpit of the Future' solutions, France-based Faurecia's 'Morphing Instrument Panel' and 'Immersive sound experience' concepts recently won the German innovation award.





COMPANY INTRODUCTION PAGES



































































DORUK

A High Tech Company Experienced on Improvement of Automotive Companies' Competitiveness via Digital Tools of Industry 4.0



Doruk Otomasyon is a high-tech company with the expertise in the field of Digital Manufacturing Management. An extremely competent team of engineers, experienced and graduated, have doctoral degree and academic & sectoral experience in digitalization and industry 4.0 subjects such as; Augmented Reality, Machine Learning & AI and Big data & Analytics.

Board Director/CTO Cengiz Ozden, General Manager Gönül Kamalı, Managing Director of ProMANAGE, USA Aylin Ozden

oruk Automation and Software Inc. was founded in 1998 to develop digital manufacturing management tools, software and hardware for the industrial companies to manage their manufacturing operations in a faster, agile, high quality and more productive way.

It is the first technology company in Turkey to make R&D works regarding digitalization in industry.

Since its foundation the company has been putting emphasis on developing Digital Manufacturing Operations Management (MOM) Systems, which corresponds to a structure that adopts new decisions via receiving automatic feedbacks from the actual situation. These systems form Smart Factories & Smart Manufacturing within the concept of Industry 4.0 and their versions that are managed with digital tools.

In line with this aim, Doruk Automation started its working life via developing one of the world's first Programmable Data Terminals, as an R&D project supported by Scientific and Technological Research Council of Turkey's (TÜBİTAK) Technology Monitoring and Eval-

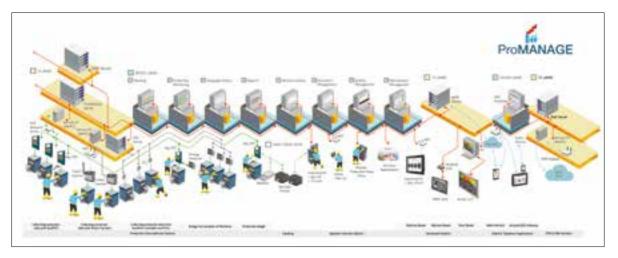
uation Directorate (TİDEB), which is the former Technology and Innovation Grant Programs Directorate (TEYDEB), at a time when a similar project didn't exist anywhere in the world, in 1998.

Due to the advantages its Manufacturing Operations Management (MOM) System ProMANAGE, which it has been developing and implementing, provided to the industry, the company was selected as the Innovative SME of the Year by the Istanbul Chamber of Commerce (iTO).

It has taken part in plenty of fairs in the field of manufacturing technologies in Germany, France, China, Canada and the United States as an exhibitor and turned its vision towards the international arena.

In 2017, the company started its expansion into the U.S. and founded its company called ProMANAGE Smart Manufacturing Solutions Corp. in Chicago. In line with these developments, it was included in the R&D partners of DMDII (Digital Manufacturing Design and Innovation Institute), which is a public/private institution founded with the aim to develop digital manufacturing concepts and technologies in the U.S. within the body of UILABS (University of Illinois Labs).Doruk Automation's U.S. branch has an office in the UILABS building





and the company aims to make the office the center of its global R&D and expansion operations.

The 20-year-old company provides extensively rich solutions in the MES/MOM field and has more than 200 prominent national and international customers. With its products functioning and operating in tens of thousands of manufacturing points under various heavy industry conditions with a significantly low repair and return rate, Doruk Automation is the unchanging leader in the MES/MOM market.

Doruk Automation's high-quality products are designed in line with international standards that meet the demands and know-hows of its customers and they are being constantly developed. The company fulfills all the needs of its customers via its hardware and software designs, creation and integration of industrial solutions, while also providing consultancy and academy services in the aforementioned areas that result in a 100 percent customer satisfaction.

The offered products and solutions ensure the shortening of delivery periods in significant amounts through providing the production enterprises and factories with the opportunity to make rapid, agile, high quality and low cost production.

ProMANAGE is the essential aid in ISO 16949's application in factories in the best way. It perfectly supports the application of methodologies, such as TPM, Lean Management and WCM (World Class Manufacturing). With its polyvalence, quality test operations management, product backward traceability, Kanban supermarket applications, IIT (Just in Time) and JIS (Just in Sequence) applications, it ensures companies that supply components to the automotive sector to be among the essential suppliers and also makes sure that they manage their costs outstandingly. It provides extensively detailed support on raw materials and product backward traceability.

Doruk Otomasyon is a high-tech company with the expertise in the field of Digital Manufacturing Management. An extremely competent team of engineers, experienced and graduated, have doctoral degree and academic & sectoral experience in digitalization and industry 4.0 subjects such as; Augmented Reality, Machine Learning & Al and Big data & Analytics. Also managing team has significant R&D, sales and marketing expertise from pioneer international IT, Telecom and Automation companies and working to make Pro-MANAGE System the leading MES/MOM solution world wide.







Tiryakiler Group



Chairman of the Tiryakiler Group Mehmet Tiryaki:

"Turkish supply industry is to succed in becoming global investors"

How do you evaluate the development of the Turkish automotive sector?

ntil the 1980's, the relationship between the Oems and the parts supplier industry were not developing conveniently because the Turkish economy was not outward oriented. On one side, the government was applying pressure on the local Oems for domestic production under the Domestic Assembly Law issued in the year 1965, and on the other hand the supply industry companies could not achieve sufficient development because they were working for the domestic market and were not exporting.

Finally in 1995 with the help of the Customs Union, a brand new period growth started for the automotive and supply industry just like every other sector. After 2004 both the total export volume of the country and the total export of the automotive industry increased significantly. Between the years 2004-2017 our country's total export increased 2.5 times, while our total automotive i.e. Oems and subsidiary industry export increased around 4 times. Our total export of the automotive industry in 2017 reached 28,5 million dollars.

This increase had an immediate effect on our country's domestic Oem production. In parallel, the production and export of Turkish parts suppliers also increased.

Of course our most important achievement resulting from these developments were our production capabilities, patents and know-how, our R&D ability, educated manpower, automotive test and R&D centers. Thus, the automotive supply industry has become the solution partner of the main industry. Our sector's technological competence improved.

One of Turkey's biggest gains in this respect is the increase in the number both of qualified and highly motivated individuals. Besides, it has become a sector where 218 thousand qualified personnel are employed. Technology conversion studies in the automotive supply industry are still continuing.



Incentives of our government towards R&D and test centers also had quite positive contribution to our sector's development and supported the development of the sector.

How do you see the future of the automotive sector in our country and the world?

Having looked at increasing figures in the last 33 years we can say that this is a success story. However, comparing the automotive figures of Japan and South Korea with whom we started the automotive industry race almost in the same years, we see that there is still a long distance we have to go. And assuming that the beginning of our country's automotive adventure are the 1965's, we can see a significant difference between Turkey and Japan.

Looking to the future of our Turkish automotive and supply industry; it is not possible to say that we have obtained from world's automotive market the share we deserve. However we can express that Turkish parts suppliers have an important potential in world's supply industry.



What we need to do for this as the supply industry is to succed in becoming global investors. A good example for this is that the Japanese automotive industry's abroad production quantities during the years 2005-2015 nearby doubled up the domestic production quantities. Half of the total vehicle production of 21 millions in 2005 were consisting from domestic production quantities and the other half from abroad production quantities, while the total production of 27 million in 2015 was consisting of 9 millions produced domestically and 18 millions produced in abroad. The difference in between is increasing more and more in favor of the abroad production.

What should be the priorities of the Turkish automotive industry according to your opinion?

As it is also understood from the domestic and abroad production quantities of the Japan automotive industry is the answer to your previous question, it is mandatory that activities of a global sector have also be global. Sustainable export requires investment abroad

Particularly when deceleration occurs in global and regional markets, it is required to pay attention to abroad investments instead of searching new markets. Due to its flexible working features and suitable structure of the manpower costs which is a requirement of Turkey's structure but independent from the country's technological level, Turkey will obtain a share from this potential owing its geopolitical position Being an investor in abroad will also increase the chance to reach a broader market and customers.

What are the effects of the improvement of the technology on the sector?

The automotive industry, which is one of the sectors where technology is used most intensively, is on the verge of a huge conversion. This conversion of the sector, trending to produce electrical and hybrid vehicles because of environment pollution and fuel costs, is also of close interest of the automotive supply industry, which will produce the parts required by the electrical vehicles.

Many Oems of the world are continuing their design and R&D studies regarding the materials to be used in the electrical automobiles with full speed. They introduce their new concept models to the world. Since developments in the technology will increase the global competition even more, global automotive brands are forming joint production platforms in order to be able to manage such competition. For example, the companies Toyota and Mazda stated that they will establish in the USA a joint venture factory for the production of electrical vehicles.

All these developments indicating the future of the automotive will unavoidably affect the automotive supply industry too. Not only technology companies, also suppliers producing parts for the automotive industry will be affected from this conversion. Companies preparing themselves to this conversion have to plan their future

TİRYAKİLER GROUP

For more than 60 years, Tirsan Kardan has specialized in the engineering, design, and manufacturing of Propeller Shafts, Steering Columns, Transmission and Axle flanges. As the Flagship company of "Tiryakiler Group of Companies", Tirsan has been the preferred Tier 1 supplier of many global customers.

Serving customers with production facilities in Turkey and in Russia, Tirsan Kardan continues to innovate and develop new solutions for its customers with its proudly certified R&D center.



oriented production manners accordingly. We as the country and sector have to make our preparation for this conversion and plan our future production models; as we can not miss this conversion.



ÜNSPED CUSTOMS CLEARANCE & SERVICES CO.

Former Undersecretary and UGM General Coordinator Remzi Akçin

The Turkish automotive sector is an important part of the global structure



UNSPED CUSTOMS CLEARANCE & SERVICES CO.

How do you assess the development of Turkish automotive sector?

irst attempt to the Turkish automotive sector to produce cars resulted unsuccessfully due to the economic crisis of 1929. Although automotive plants were established for production purposes during 1953, 1954, 1955 and 1957, it is widely accepted that main automotive industry in Turkey started with Otosan that was founded by Ford-Koç partnership in 1959. In 1969, Oyak-Renault and TOFAŞ were founded and these firms initiated grand scale production in the sector starting with 1971.

If we want to talk about automotive sector, we must mention the first local production of Turkish car made in 1961 with the name "Revolution Car". Revolution car was actually a project that is still popular with a legendary story that was also used as a subject in various movies.

Until 1980s, the Turkish automobile sector followed a protective policy aimed to serve only to the local market but after 1990s, it followed a competition based policy with the main purpose determined as exportation.

There is more than one reason behind this chronologic increase observed in the automotive sector. These can be listed as increase in consumption arising from increase in wealth levels and a parallel increase in the logistic, development of transport infrastructure, shrinking of families and enhancement of individualization.



While sector's production capacity in 1963 was 11.112 units, currently this capacity reached to 1.749.5722 units. The most apparent increase in this capacity occurred during 2000s with the impact of Customs Union.

How do you see the future of automotive sector in our country and in the world?

There is more than one reason behind this chronologic increase observed in the automotive sector. These can be listed as increase in consumption arising from increase in wealth levels and a parallel increase in the logistic, development of transport infrastructure, shrinking of families and enhancement of individualization.

Managing to capture the 17th rank in the list of world's greatest economies as of 2016, Turkey ranked as 14th globally in the automotive production in parallel to the economic growth which was a higher rank than the general economies list.



If we examine the market structure, we see that 77% of the products are exported and 23% is sold in the domestic market. This means that most of the production capacity is reserved for exports and automotive sector ranks at the top in our exportation. However in spite of its success in the global automotive sector, more than half of the sales made in the Turkish automotive sector are made through importation.

I'm convinced that this trend will not change in near future because Turkish automotive sector is part of the global structure and at the same time, it has precedence in qualified work force and spare parts production

According to you, what kind of priorities must be determined for the Turkish automotive industry?

Since 1990s, Turkish automotive industry has seen a great leap and became the champion in our exports. For that reason, its most important priority should be to continue being champion in the exportation.

However in spite of this huge production success, we still do not own our own brand and model and we cannot show the same success in the supply of domestic inputs to the production band. For that reason, our priority in the sector must be to create our own brand and model and to maximize added value on the production band. Naturally we will need a strong Re-De structure for this.

How is the sector affected by technological developments?

Nowadays we are speaking about Industry 4.0. We left the concept of computerized machines and we are now Our company started its operation in 1981. Unsped is a company which have 41 shareholders, 47 customs brokers with carnet A and 225 customs brokers with carnet B. Unsped continues its operations with 7 areas, 44 branch offices and 1300 employees. UGM was rated with 9.01 (Group 1) at 2017 as a result of World Corporate Governance study done by SAHA. Our company aims to continue its activities for a long time in every condition with a sustainable corporate structure by continuously renewing and developing with a creative and constructive internal criticism in service understanding, infrastructure, human resources, technology, financial structure areas in order to provide services with the best standards to our national and international customers in the future.

using machines that could talk with each other based on artificial intelligence. The sector that enjoys the advantages of these technological developments to the maximum extent is the automotive sector. It's no surprise that we see vehicles in traffic which could park the car by themselves or follow the car in the front from a certain distance and use lane follow-up system. Recently we have even seen cars without drivers.

In my opinion, slowest development seen in automotive sector is related to motor technology. In a process of more than hundred years, irrespective of the developments made on the motors, motors are still using fossil

fuels. Although hybrid vehicles and electrical vehicles are launched to the market, they are not efficient enough to end the dominancy of cars using fossil fuels. For that reason, I think that most important developments will be seen in this area.

However all of these technological developments require comprehensive Re-De expenditures and they bring the threat of monopolization in the sector.



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ALBA KALIP VE OTOM. MAK. İML. SAN. VE TİC. LTD. ŞTİ.





Started its production activity in 1992, Alba Kalıp continues its activities within a total area of 30000 m² and a closed area of 20000 m² and performs mould, rod, ball joint, hydraulic group and wrought iron accessories production.

Differentiated itself by creating R&D department and use of its' technical background and recent technology in mould manufacturing. Alba Kalip has formed its own production systems. In addition to this, Alba can guatantee success by considering manufacturing as a Project and by 100% control of production from beginning to the end.

Alba Kalip works actively in domestic and abroad with more than 200 kinds of rods, ball joints and forged hydraulic parts that it produces and rapidly increases its product range by producing its own moulds.

Producing parts from 0,2 kg to 4 kg with different lengths and tolerances and with a production capacity of 800 tons per month, Alba Kalıp is a competitive forging company in the industry.

Focusing on customer satisfaction with the philosopy of perfection, Alba Kalıp is certified with IATF 16949–ISO 9001:2015 standards. Alba Kalıp closely follows its' customers and focuses on the solution, gives importance to total quality management and is constantly investing for rapid production with the competitive approach required by our era.





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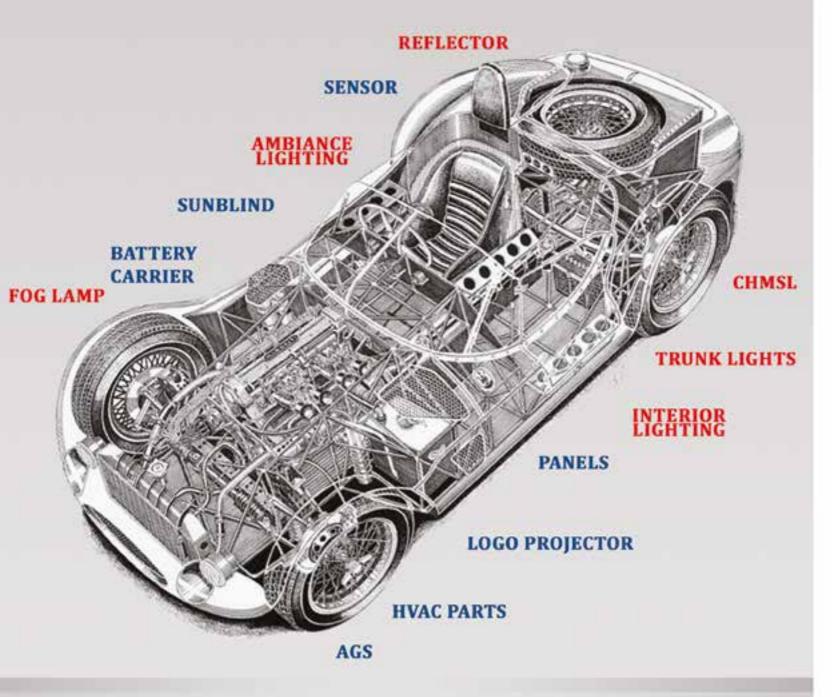






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ANKA'nın akisleri standart dışı ürünlerden 3 kat daha dayanıklıdır. Ürünlerimiz, standart şartlarda kullanıldığında, standart olmayan tahrik millerine bir yolculuk sağlar.

ety of sale points around the World. We are providing services with more than 23 vehicle brands, to the 3 continents.

Our main productions: Drive shafts, Outer CV Joints, Inner CV Joints, Tripods, Axle Boots, Wheel Hubs.

ANKA's drive shafts are 3 times more durable than the non standard products. Our products can work smoothly 2 years or 100.000 kilometers when used in the standard conditions, comparing with non-standard drive shafts. ANKA drive shafts provide safely and economically journey to the humanity.

For more information, please may you visit our website.



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E-mail arikan@arikanautomotive.com

Arikan ist in der Produktion von mechanischen Hebesystemen eines der führenden internationalen Unternehmen in der Automobilindustrie. Angefangen im Jahr 1975 in einer Kleinen Werkstatt agiert der globale Zulieferer Arikan heute im Industriegebiet in Eskişehir von einem Areal von 30.000 m2 aus und arbeitet partnerschaftlich an Lösungen für führende OEMs wie Volvo, Fiat, Ford und Toyota.

Neben dem bestehenden beachtlichen Marktanteil im Segment der mechanischen Hebesysteme erweitert Ankan nun sein Portfolio um Schlüsselsysteme, deren Entwicklung es mit der gleichen Hingabe erfolgreich vorantreibt.

BAŞKURT MOTOR VE KABLO SANAYİ A.Ş.











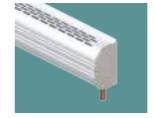




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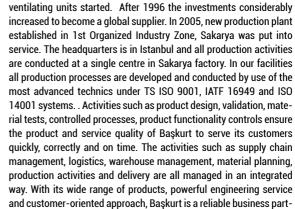












ner preferred by many national and international customers. Environmental friendly products and production activity combined with its highly talented employees, we hopefully look forward to the future.

Başkurt Motor ve Kablo Sanayi A.Ş. was established in 1966, Rami, Istanbul to manufacture cable, electrical assembly and heater motor for vehicles. In 1983, the production facilities moved to factory in Kağıthane. In the same year, the production of vehicle heater and

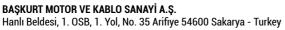












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assanhanil

Assan Hanil, one of Kibar Group's automotive companies was established in 1997 with the partnership of South Korean Seoyon E-Hwa, started production as an OEM Part Supplier in the automotive industry. Kibar Holding, which owns sixty percent of Assan Hanil, has 19 companies in 6 industries. Seoyon E-Hwa is a South Korean Holding company with 18 production facilities and 5 R&D centers across 8 countries.

It became one of the important suppliers of Ford Otosan as of 2005 while it was supplying parts only for Hyundai Assan in the early years of its establishment. In addition to production of important parts of an M2 Light Commercial Vehicle (H350), which is a joint project between Karsan and Hyundai Motor Company (HMC), Assan Hanil has added Isuzu and Honda to its customer portfolio.

With over one thousand specialized employees working in its plants covering a total area of 80 thousand m2 in three different locations; two in Kocaeli and one in Bursa, the company performs automation-based production activities with high technology.

Today, Assan Hanil is a supplier of driver and passenger seat as well as door panels, front and rear bumper, instrument panel, console, carpet, FEM Carrier, blow molding parts, glove box, various interior and exterior plastic components. Assan Hanil became one of 5 companies worldwide that design, develop and manufacture air suspension driver seat. Mass production of seat will start in September 2018.

Assan Hanil has been certified to the quality of its production with ISO 9001-2008, ISO/TS 16949, ISO 14001, ISO 27001, OHSAS 18001, Ford Q1 and Hyundai 4 Star Quality System Certificates. It conducts studies on innovative projects for weight reduction, cost optimization and quality enhancements in its R&D Center established in 2010. Assan Hanil has 40 intellectual property rights registered and another 20 in the application process.

TSI Aviation Seat, established in 2011 as a joint venture between Turkish Airlines (THY) and Assan Hanil, has been designing, producing, repairing and marketing all types of aircraft seats and supplying spare parts.







ÇEMTAŞ ÇELİK MAKİNA SANAYİ VE TİCARET A.Ş.







As an "Electric Arc Furnace based Special Steel Producer" Çemtaş is leading market by producing special steel as customer-driven, compliant with the norms EN, DIN, AISI, SAE, ASTM and special specifications with 200.000 tons/year melt shop and rolling mill capacity.

ÇEMTAŞ was been established on 27.01.1970 on a land of 101.000 m² in the Bursa Organized Industrial Zone by the merge of industrialists, businessmen, small craftsmen and public entrepreneurs of Bursa City. Çemtaş is a private company, 57% of which is belonged by BURSA CEMENT FACTORY and 43% is publicly held in Istanbul Stock Exchange Market since 1995.

As an "Electric Arc Furnace based Special Steel Producer" Çemtaş is leading market by producing special steel as customer-driven, compliant with the norms EN, DIN, AISI, SAE, ASTM and special specifications with 200.000 tons/year melt shop and rolling mill capacity. ÇEMTAŞ can produce more than 300 different steel qualities in different steel groups such as structural steels, carbon steels, bolts steels, case hardening steels, tempered steels, heat treating steels, cold work tool steels, boron steels, micro- alloyed steels, free cutting steels, stainless steels and spring steels. In addition to supplying special steel products to various customers and industries like; automotive parts and components manufacturers, machinery industry, defence industry, since 2011 ÇEMTAŞ has been supplying stabilizer bars directly to the production lines of many OEM companies such as DAIMLER as TIER-1 Supplier. ÇEMTAŞ has reached respectively a leading position in the Global Special Steel Market with its quality and continuous investments.



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steering towards technology

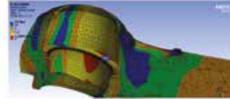




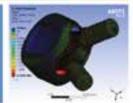
DITAS, having 40-years of prideful experience in steering and suspension parts production in automotive industry, is providing original high quality parts to the domestic and also international vehicle manufacturers. Ditas serves not only as a part producer, but also as a solution provider and business partner with R&D center for vehicle manufacturers.

DITAS, running its production with about 400 experienced and well trained employees in the facilities located at Nigde on a total area of 150,000 m2 of which 22.000 m2 is built-up, guarantees DITAS branded high quality products. DITAS can handle specific customer demands by making use of its design capability and test facility. Simulation tests under field conditions are available in the prototype test facility. Having integrated workshops, DITAS can produce all the major details internally by using modern and new machinery and equipment pool. DITAS also designs and improves its production lines and DITAS can produce moldings and tools needed for its production. Therefore the flexibility to design both products and their production helps satisfying specific needs of customers and also producing in large amounts by using robots and automation integrated systems.

DITAS serves not only passenger car and commercial vehicle manufacturers, but also the other sector vehicle manufacturers such as manufacturers of tractors, construction vehicles, military vehicles and railway vehicles. DITAS is producing control rods for helicopters, as well.







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- · Axial Elasticity Test System
- Sealing Test System with Climatic Chamber
- Passenger/Commercial Vehicle
 Wear Test System
- Rotation and Oscillation Torque Evaluation Test System
- · Corrosion Test System
- Vibration Test System
- · Water Jet Sealing Test System

Quality System Certificates

- IAFT 16949:2016 Quality Management Certificate
- ISO 14001:2015 Environmental System Certificate
- Ford Q1 Quality Certificate
- TSE Certificate





Production Capacity (Quantity/Year)

- 500,000 pcs Finished Goods
- 5.000.000 pcs Hot Forged Parts
- 20.000.000 pcs Cold Forged Parts
- 400.000 pcs Vulcanized Parts

Integrated Facility

- Die Manufacturing Workshop
- Hot Forging Workshop
- Cold Forging Workshop
- Vulcanization Workshop
- Heat Treatment Line
- · Surface Treatment Line
- · Machining Workshop
- Painting Workshop
- Assembly & Packaging Line













DORUK AUTOMATION AND SOFTWARE INC.







ProMANAGE is one of the leading Manufacturing Operations

Management System in the World which is being used by

hundreds of manufacturer for tens of years.





ProMANAGE enables the auto improvement of the operational excellence continuously and automatically. Together with data analytics, machine learning and AI supports of the system, users are able to analyze bottlenecks and weakness of the plant and focus to improve that areas continuously. AR glass style HMIs and escalated warning systems running on mobil applications are important and usefull tools to keep plant operations and performance up continuously.

ProMANAGE users have the significant power of continuous operational excellence, cost management, agility and competitiviness advantage which will enable them continue to be a pioneer.

ProMANAGE conforms to the MOM standards defined by MESA and ISA and also Smart Manufacturing and Industry 4.0 data management and user interface/supports consepts.

of Illinois.

Doruk Automation, Inc. is main company of ProMANAGE
Group of Companies and located in Istanbul , at Teknopark
Istanbul.

Doruk has hundred of R&D engineers from Computer Sciences, Electonics, Control technologies and Automation, Mechatronics, Industrial Engineerin disciplines working together. With the significant synergy between these disciplines, the best and most strong Smart Manufacturing solutions are being developed in Doruk continuously.

Also together with the experience and support of the more than several hundreds of pioneer industrial user companies, Smart Manufacturing solutions and supports are continuously being more and more improved and value gained to serve users' global competitiveness.



DORUK AUTOMATION AND SOFTWARE INC.

Teknopark İstanbul, Teknopark Bulvarı No: 1 C1 Blok Kat: 8 Ofis No: 1801-1802 Pendik 34906 Istanbul / TURKEY Phone: +90 (216) 504 02 55 Fax: +90 (216) 504 02 06 info@dorukotomasyon.com www.dorukotomasyon.com www.promanage.net ELATEK KAUÇUK SANAYİ TİCARET A.Ş.











Elatek has been producing rubber products since 1965 by Elatek Rubber Industry Trd. Corp., which was established in Bursa Alaşaroganizedindustrial region in 2002. Mainly serving as a Tier-1 supplier to automotive industry Elatek, designs and produces rubber compounds, rubber hoses, rubber-molded parts, blow-mouldedand thermoformed plastic pipes; cold formed, assembled metal pipes. Company produces components for Engine Cooling, Air Discharge, Air Intake, DPF, EGR and SCR Systems and Pressed Injection Products for FCA, Ford, VW, Audi, MAN, Porsche, Mercedes, Mercedes AMG, Bentley and other OEMs.

Elatek manufactures it's own rubber compounds in integrated

facilities based on area of 22,000 m^2 and tests the rubber compounds withadvanced technology in it's material and performance Laboratories. Elatek, which supports its customers with its engineering infrastructure, can also manufacture mouldsand gauges & fixtures by itself in it's tooling shop.

Elatek has developed the existing R & D Center in 2017 by taking state patents in order to improve its design capability and create different product alternatives. R & D Center carries out rubber mix and product development activities, material and finished product validation activities, mold and fixture designs in order to become a leading company in the sector.



ELATEK KAUÇUK SAN. TİC. A.Ş. Alaşar Organize Sanayi Üçgül Sok. No:3 Osmangazi / Bursa

Phone: +90 (224) 261 12 30 Fax: +90 (224) 261 13 00 elatek@elatek.com.tr www.elatek.com.tr

EREN BALATACILIK SAN. VE TİC. A.Ş.





Eren Balata 1990 yılında Kemalpaşa/İzmir'de sürtünme malzemeleri amacıyla kurulmuş ve kurulduğu günden beri "sürekli gelişimi" hedeflemektedir. Üretim gamındaki ürünlerinde ECE.R.90 belgesi bulunan Eren Balata sahip olduğu ISO 9001, ISO TS 16949, ISO 14001 ve TSE 555 belgeleri ile kalite gelişimine verdiği önemi göstermektedir. Günümüz teknolojisinde araçlar oldukça gelişmiş fren sistemleri ile donatılmıştır. Eren Balata üretiminin her aşamasında fren balatasının bir emniyet parçası olduğu bilincindedir. 2005 yılında bugünkü üretim tesisine taşınan fırma, 2016 Şubat ayında tamamladığı ek yatırımlarla üretim hacmini katlayarak artırmayı öngörmüştür. Başta Dinomometre olmak üzere laboratuvarımız X-RAY Diffractometer (XRD), Thermo Gravimetric Analys (TGA), Laser Particule Sizer, Laboratuvar Mikser ve Presleri ile proses geliştirme ve test yeteneklerini oldukça ileri taşımıştır.







Eren Balata has been established with the purpose of friction material production in Kemalpaşa/İzmir in 1990 and since it was founded, it has continued production facilities with the vision which is aiming "continuous development". Eren Balata who has got the ECE.R.90 certificate all its products shows the importance of quality developments with its certificates as ISO 9001, ISO 16949, ISO 14001 and TSE 555.: In our present technology, the vehicles are equipped with considerably developped brake systems. Eren Balata works with the consciousness at its every production step that the friction material is the safety equipment. It has been moved in present production establishment in 2005 and it has envisaged to increase its production volume with supplemantal investment which has been completed in February in 2016. Our laboratory has considerably moved forward to its process development and test abilities with initially DY-NOMOMETER, X-RAY DIFFRACTOMETER (XRD), THERMO GRAVIMETRIC ANALYS (TGA), LASER PARTICULE SIZER, laboratory mixers and press.







EREN BALATACILIK SAN. VE TİC. A.Ş. KOSBI 13. Sok. NO: 6 Kemalpaşa/İzmir

Tel: 0 (232) 877 04 12 Faks: 0 (232) 877 05 86 www.erenbalata.com.tr



FORMPLAST YALITIM BANTLARI İNŞ.SAN. VE TİC. LTD.ŞTİ.







Since 1991, Formplast has been importing semi-finished insulation materials and adhesive tapes, laminating, cutting, forming and moulding them in its own premises in accordance with technical requirements of its customers to produce all kinds dust,

water, heat and noise resistance parts as well as light weight, high-impact resistance EPP parts.

While the plant located in Kocaeli – Gebze is mainly managing 2D die cut and kiss cut sealing, insulation and adhesive operations, the other plant located in Bilecik - Bozüyük is managing EPP, PUR injection, thermoform as well as 2D cutting operations. With its newly founded Acoustic Laboratory Formplast is able to provide sound absorption coefficient reports to its customers in a short time and can also serve external companies in this manner.



Formplast mainly produces parts for automotive, white appliances, heating-cooling-ventilation, industrial kitchen, civil construction, ship building, packaging, advertising, and electrics & electronics sectors. Any product produced by Formplast

is a result of diligent and meticulous work, and its quality is approved by international quality certificates.

Formplast, as being 90% project based working company, operates with a project management culture and discipline in line with IATF 16949: 2016 standards which covers all kind of industrial area. Our team provides initial part design, prototyping, mould design, production, initial sample presentation and approval, packaging and transportation processes by considering all technical requirements of the customer.



FORMPLAST YALITIM BANTLARI İNŞ.SAN. VE TİC. LTD.ŞTİ. GEPOSB Gebze Plastikçiler Organize Sanayi Bölgesi Atatürk Bulvarı No - 7 Gebze / Kocaeli

Phone: +90 (262) 751 45 15 Fax: +90 (262) 751 45 11 kurumsal@formplastyalitim.com www.formplastyalitim.com



GREEN Chemicals AŞ













GREEN Chemicals is a multi-partnered company established in 1995. Providing service for;

- Water Treatment (WET-Treat®)
- Waste Water Treatment (WASTE-Treat®)
- Metal Surface Treatment (MET-Treat®)
- · Oil & Gas Technologies (OIL-Treat®)
- Adhesives (GREEN ADH-Tech®)
- · Mining Technologies (MINE-Treat®)
- Geothermal Technologies (GEO-Treat®)
- Engineering Areas

Operating nationally and internationally, GREEN Chemicals is a leader company always displaying continuous growth and high performance. Our offices are located in Turkey, Europe, UK, Brasil, Africa, Iran, Russia, Middle East and Azerbaijan. GREEN Chemicals exports to 35 different countries.

With a strong R&D unit supported by universities and international firms represented by the company as well as its local and foreign engineers trained at doctorate level; our expert teams closely follow up new technology. GREEN Chemicals reserves 6% of the revenue to R&D activities. Within this direction, our high quality environmentally-friendly products designed by our expert teams are introduced to the industry through reliable and economic services by means of our engineers whose first priority is customer satisfaction.

GREEN Chemicals has;

- 12000 m² factory & office area
- · 50000 ton/year production capacity
- · 7000 pallet capacity

Our purposes are;

- To keep a close watch on newest technology and to use it in our processes,
- To decrease input cost of companies prioritizing / increasing the quality at the same time,
- · To protect process life and provide long life,
- To maximize process efficiency, minimizing operating cost at the same time.

GREEN Chemicals has adopted a principle to provide the best services to the industry in the most economic manner by means of both its own expert team as well as national and international dealer chain composed of 300 people.

All our products are produced in our factory that has ISO 9001, ISO 14001, ISO 18001, TS 16949, QUALICOAT, Halal, Kosher, NSF certificates.

GREEN Chemicals is awarded as the most successful chemical company in 2015.



















GREEN Chemicals A.Ş.TOSB OSB 2. Cad No:7 Şekerpınar Çayırova / Kocaeli

Tel: 0 (262) 781 80 00 Faks: 0 (262) 781 80 70 green@green-chemicals.com www.green-chemicals.com

GÜÇSAN PLASTİK KALIP METAL SAN. VE TİC. A.Ş.











We have been serving plastic parts and tools to our local and global customers mainly in automotive since 1967 with 4 production plant located in Gebze, Kocaeli.

Core Business:

- Injection: Interior, Exterior, Engine Plastic Components with 70 IMM (60T-1500T), 2K Bi-injection (650T)
- · Assembly: Plastic Welding (Ultrasonic & Vibration), Tampo-print, Cleanroom, Poka-Yoke, Hot Melt, Laser Marking
- Tooling: Plastic Injection Mold, Control Fixture, Assembly Jig with fully automatization

Customers:

- Main OEM: Toyota (UK, France, Turkey, S. Africa, Russia, Poland), Ford (Turkey, Brasil, Russia), Daimler, Otokar, MAN
- Main Tier 1: Mann Hummel, Yazaki, Cummins, Boshoku, Valeo, TI Automotive, Sumitomo

Products:

- Interior: Dash board panel, Instrument panel, Air registers, Speaker Covers, Glove Box, Cup holder, Scuff plate, Door panels, Seat track covers
- Exterior: Fog lamp covers, Bumper Retainers, Door handles, Door frame garnish
- Engine & Underhood: Intake manifold, Fuel filter parts, Cable channels, Relay boxes, Engine Covers, Battery Covers











GÜÇSAN PLASTİK KALIP METAL SAN. VE TİC. A.Ş. GEPOSB, Atatürk Blv. 12. Sk 41400 Gebze/ Kocaeli – Turkey

Phone : +90 (262) 751 18 01 Fax : +90 (262) 751 18 89 info@gucsanplastics.com www.gucsanplastics.com









Founded in 1963, Kardeş Elektrik, one of the leader manufacturers in Turkey for more than 50+ years is located in Yassiören, Amavutköy/ Istanbul and employs 220 people.

With its rich portfolio of more than 500 types of MEGA automotive carbon brushes and over 160 types of MEGA brush holders, Kardeş Elektrik is a leading company in its field not only in Turkey, but also in over 20+ countries, exporting mainly



in Europe, Russia, Middle East and North Africa. Export share continues to increase with expansion of carbon brush holder program, while meeting highest quality standards using top quality raw material.

Our customers rely on our quality as much as our expertise of over 50+ years in excelling carbon brushes and brush holders. Kardeş Elektrik also manufactures Kraus&Naimer rotary switches for electrical switch cabinets and Cable lugs for professional hand tools. In addition, Kardeş Elektrik distributes following brands in Turkey and the Middle East: Hellermann Tyton Cables ties &accessories, Iboco wiring ducts, Cembre professional hand tools & marking printing systems and Efen NH fuses & switchgears.







MAPA'S PATENTED TECHNOLOGY

WEAR **ADJUSTING** CLUTCH



11-15 SEPTEMBER 2018 **AUTOMECHANIKA FRANKFURT** HALL: 4/BOOTH B-30

DOUBLE LIFETIME / EASY INSTALLATION SUPERIOR DRIVER COMFORT OVER THE ENTIRE CLUTCH LIFECYCLE

Awarded for innovation by Automechanika Frankfurt, our patented Wear Adjusting Clutch (WAC) is designed, manufactured and tested exclusively at MAPA facilities. The WAC boasts double the lifetime of traditional dry clutches, significantly reducing waste and providing superior driver comfort over the entire clutch life cycle. Installing the WAC requires no special tools or manuals, creating added value for customers.









ENGAGE.



KAREL KALIP SANAYİ A.Ş.

BEYOND THE TOOLING

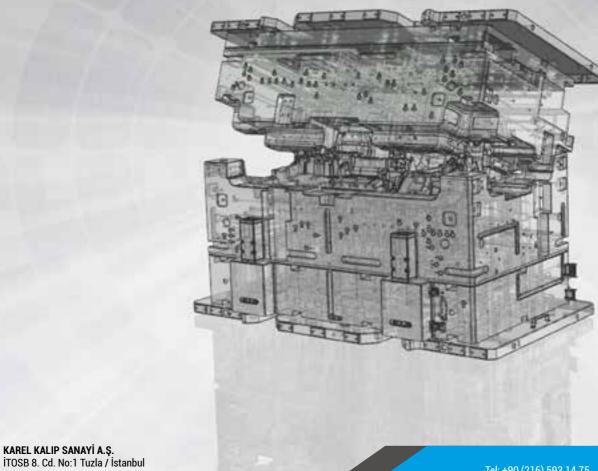
TOOLING IN TURKEY

Experience for 24 years in plastic injection tools

KARELKALIP

%100 AUTOMOTIVE ORIENTED

- Competitive in Bumper, IP, Fender, Door Panel, Interior parts, Lighting parts
- · R&D center for innovation studies
- . Try-out center
- · Solution partner in Automotive Lightweight



Tel: +90 (216) 593 14 75 Faks: +90 (216) 593 14 84 info@karelkalip.com.tr www.karelkalip.com.tr







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NET BORU SANAYİ VE DIŞ TİCARET KOLL. ŞTİ.





Net Boru is a leading double wall copper coated steel tube manufacturer for the automotive industry, offering products with high-quality corrosion resistance in the brake lines, fuel lines and power steering systems of vehicle.

We ensure our commitment to our customers through our state of art technology and knowhow in manufacturing double wall copper coated steel tubes.

Net Boru produces with its own technology high-quality corrosion and high-pressure resistance tubes with over 40 years of experience.

We supply products to leader firms in global automotive sector from our location in İstanbul-Tuzla Free Trade Zone.

As a result of our R&D studies we have introduced a new brake tube to the market which is about 40% lighter than the standard brake tubes.

Net Boru has analyzed the market requirements ideally for many years, determined the potentials, having high experience on ma-



chine production and became the preference of global automobile producers.

Net Boru aims to put in to practice its Investment Project for the sake of being among the leader firms in the sector, realizing its current, ongoing and potential projects, meeting the market potential by using its market and production experience.

Net Boru will be participating at the Automechanica Frankfurt exhibition. Please visit us in Hall 6.2 D92.



NET BORU SANAYİ VE DIŞ TİCARET KOLL. ŞTİ.

Aydınlı Serbest Bölge Mahallesi Kurşun Caddesi No:9/102 Tuzla / İstanbul

Phone: +90 (216) 394 89 00 Fax: +90 (216) 394 89 05 info@netboru.com www.netboru.com

PECHOM ENDUSTRI VE MAKINE TICARET A.S.





PechoM, which offers guaranteed acoustic solutions, was incorporated in early 2018 with the registration of the brand in 2016. With the completion of the company, PechoM A.S. continues its services. Noise Controlling applications are also applied on many areas such as automotive, transportation, energy, defense industry sectors, on the other hand production lines, transformers, test and control rooms, and oil / natural gas pipe lines. We as PechoM, perform successful noise controlling applications with class 1 sound analyzer, acoustic finite element analyze software, acoustic camera and our know – how based on our experience.

To get support for noise problems in your company: www.pechom.com.tr









PECHOM ENDUSTRI VE MAKINE TICARET A.S.

ULUTEK Teknoloji Gelistirme Bolgesi Kat:1 No:933 / 139 Uludag Universitesi Gorukle Kampusu Universite 1. Cadde Nilufer, Bursa / Turkiye

Phone: +90 (224) 442 85 70 pechom@pechom.com.tr www.pechom.com.tr





ÖZTÜRK ENDÜSTRİYEL PLASTİK KALIP METAL SAN. VE TİC. LTD. ŞTİ.

ÖZTÜRK











Ismail Öztürk, Feridun Öztürk

Ihr Spezialist für Spritzgusswerkzeuge und Kunststoffteile im **Bereich Automotive!**

- > 1992 Gündung in Velbert / BRD als Familienunternehmen.
- 2008 Aufbau des türkischen Werks in Manisa Türkei.
- > 2018 Ausbau 12 500 m² und Betreuung von unserem Competence Center Deutschland.
- Tätigkeiten: Formenbau, Kunststoffverarbeitung, Metallund Kunststoff- Bearbeitung, Montage.
- Kommunikation auf Deutsch und Englisch.
- > 25-jährige Erfahrung in der Branche ermöglicht es uns, einen umfassenden Service anzubieten,von der Konstruktion über die Werkzeugherstellung, bis hin zum fertigen Teil.
- Zertifizierung nach IATF 16949

Your specialist for injection molds and plastic parts in the automotive sector!

- > 1992 founding in Velbert / Germany as a family
- 2008 Construction of the Turkish plant in Manisa -Turkey.
- > 2018 expansion of the Turkish plant on 12 500 m² surface and support from our Competence Center
- Activities: Mold making, plastic injection, metal and plastics processing, assembly.
- Communication in English and German.
- 25 years experience in the sector enabling us to offer an all-inclusive service from design to tooling up to the finished part.
- > IATF 16949 Certification

ÖZTÜRK ENDÜSTRİYEL PLASTİK KALIP METAL SAN. VE TİC. LTD. ŞTİ. Öztürk Manisa +90 (0) 236 213 07 10 - sales@ozturk-manisa.com **Competence Center Germany**

+49 (0) 171 3109142 competence-center@ozturk-manisa.com

www.ozturk-manisa.com

SARIGÖZOĞLU HİDROLİK MAKİNA VE KALIP SAN. VE TİC. A.Ş.





In 1957, Sarıgözoğlu established by İsmail Sarıgözoglu in İzmir, Turkey. Sarıgözoğlu serves to leaders of the automotive sector such as Ford, Mercedes, Tofaş, BMW with the experience and knowledge. Sarıgözoğlu built new plants in Manisa (1976), Aksaray (1999) and Bursa (2009).

Currently, Sarigözoglu is working on business segment of stampings and die manufacturing with its 4 plants in 3 different locations with 1.015 employees and continues with making investment.

Sarigözoğlu is a supplier in automotive industry which produces from chassis parts to big outer skin panel parts called cosmetics of a car, and assembling of these parts by robotic welding systems.

Even though Sarigözoğlu produces mainly for automotive industry, but also produces white goods parts, especially inner and outer combi parts to Bosch in Turkey, France, Germany and UK.

Sarıgözoglu has a customer based business culture and proceed each tool production as a project mentality.

A project begins with feasibility studies and simulations, then continues with production planning and finishes production with try-outs under press; includes also pattern manufacturing.

Sarıgözoğlu meets its domestic and foreign customer expectations with its quality ISO 9001, ISO TS 16949, ISO 14001 and Q1 Award.

Sarigözoglu keeping human values above all, is a socially responsible company which gives scholarship to students and also emphasizes on internal and external employee training opportunities. Recently an educationa I facility was established, aimed at employment of technical personnel with employment guarantee, within its own facilities.





SARIGÖZOĞLU HİDROLİK MAKİNA VE KALIP SAN. VE TİC. A.Ş. Organize Sanayi Bölgesi 2.Kısım Mustafa Kemal Bulvarı No:7 45030 Yunusemre / Manisa

Tel: +90 (236) 233 70 50 Faks: +90 (236) 233 70 47 info@sarigozoglu.com.tr www.sarigozoglu.com.tr



PLUS TOOLING









Plus Tooling was founded in 1977 as a stamping tool designing & manufacturing company for automotive industry. It has 40 years of experiences by working with OEMs, such as Renault, Toyota, Honda, Fiat, Hyundai.

Plus Tooling is located in Bursa Turkey. Today it serves in stamping die manufacturing field with its annual 300.000 hours working capacity, 6.000 m² production facility investment and implementation of all required processes for tool manufacturing as well as the powerfulness on capability and capacity of product design.

Tooling experiences particularly for the following;

- · Aluminum heat shield parts
- · High strength steel parts
- Patchwork and laser welded parts
- · Multi-layer material parts.

Business plans are based on providing the customer satisfaction on supplying high quality tools, on-time delivery performance and competitiveness on quotations.

Plus Tooling is able to fulfill its clients expectations via possessed tool designing & manufacturing experiences and know-how by using softwares such as Autoform, Catia, Cimatron, Tebis and by having wide range of latest technology machine park.









PLUS TOOLING Çalı Sanayi Bölgesi Beyaz Cadde No:11 16235 Nilüfer / Bursa — Turkey

Phone: +90 (224) 482 20 40 Fax: +90 (224) 482 35 31 info@plustooling.com www.plustooling.com

TAILOR-MADE SOLUTIONS IN AUTOMOTIVE SEALING SYSTEMS





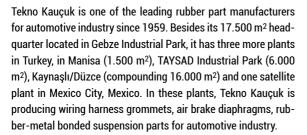












Tekno Kaucuk is exporting 70% of its production to well-known global companies such as Audi, Bentley, Knorr Bremse, Porsche, Seat, Skoda, ThyssenKrupp, Volkswagen, Wabco, ZF etc. Its vision is "being the leading product and technology manufacturer in our core businesses by establishing innovation, speed and





flexibility". Thanks to its advanced technical infrastructure and expert human assets, Tekno Kaucuk is serving its customers not only with production but also with compound development, design and testing.



TEKNO KAUÇUK SANAYİİ A.Ş.

Merkez Fabrika: Gebze Organize Sanayi Bölgesi İhsan Dede Caddesi Doğan Lastik Fabrikası No: 126 41480 Gebze-Kocaeli

Tel: +90 (262) 999 21 00 Faks: +90 (262) 751 05 70 info@teknokaucuk.com.tr www.teknokaucuk.com.tr TT ÇELİKYAY A.Ş.









Kurulduğu 1965 yılından günümüze yaprak yay üretimi konusunda sektöründe öncü olmuş TT Çelikyay Türkiye de dahil olmak üzere toplam dört ülkede AFM Pazar lideri olmasının gururunu yaşamaktadır. Q1 sertifikası ile başta FORD olmak üzere, BMC, OTOKAR ve ISUZU gibi ağır vasıta üreticilerinin önemli tedarikçisi konumundadır. Elli yılın üzerindeki tecrübesiyle Avrupa nın en fazla ürün çeşidine sahip fabrikası konumunda olup bu gücünü üretiminin %55 ni 45 ülkeye ihracat yaparak her geçen gün dünya pazarında pozisyonu güçlendirmektedir. TT Çelikyay IATF 16949, OHSAS 18001, ISO 14001, belgeleri ile tüm süreçlerinde kaliteyi ön planda tutmaktadır.

TT Celikyay, being a pioneer in the production of leaf spring since it was established in 1965, is proud of being the AFM leader in total of four countries including Turkey. The company as a FORD Q1 compliant, is a very important supplier of OEMS such as FORD mainly and BMC, OTOKAR and ISUZU as well. With more than 50 years of experience in the industry, the company has the largest product range in Europe, 55% of the production is exported to 45 countries, strengthening its power and position in the world market day by day. TT Celikyay has been certified with IATF 16949, OHSAS 18001, ISO 14001 certifications and managing its activities in a quality-oriented approach in all its processes.



SEGER SES VE ELEKTRİKLİ GEREÇLER SANAYİ AŞ





Güvenliğin Sesi Seger Korna

Bursa'da 1981 yılında bir aile şirketi olarak kurulan Seger Korna, 37 yıllık deneyimi ve yüksek kalitesiyle otomotiv yan sanayi sektöründe başarıyla hizmet veriyor.

Yılda 15 milyon korna üretim kapasitesi ile elektrikli ve havalı korna üretiminde Türkiye sınırlarını aşarak bir dünya markası haline gelen Seger Korna yüksek kaliteli ses gücüyle, binek araçlarda Tesla, Renault, Dacia, Audi, Volkswagen, Nissan, Honda ve ağır vasıtalarda DAF, Mercedes, Otokar, Temsa ve Karsan gibi dünyanın önemli otomobil markalarının tercihi olmuştur.

Bugün Türkiye ve Çin'de faaliyet gösteren 2 fabrikada 370 çalışanı ile ürün tasarımının yanı sıra korna üretimi için gerekli tüm iş süreçlerini tasarlama, geliştirme ve üretme kapasitesine sahip olan Seger Korna, Amerika, Avrupa, Afrika ve Asya'da dünyanın 70'den fazla ülkesine satış yapmaktadır.

2017 yılında iç ve dış piyasaya 11 milyon adet korna üreten Seger Korna, Güney Amerika'dan Rusya'ya, Ortadoğu'dan Uzakdoğu'ya kadar OEM ve yenileme pazarında söz sahibi olan global bir markadır.

Üretim ve kalite standardıyla insana, çevreye ve doğaya saygılı kornalar üreten Seger standartlara uymayan, merdiven altı üretim nedeniyle rahatsızlık veren, gürültü kirliliği yaratan kornaların trafikte ve hayatımızda yol açtığı olumsuzlukları engellemeyi sektörel bir sorumluluk olarak görmektedir.

Detaylı bilgi için: www.seger.com

The sound of safety: Seger Horn

Established in 1981 in Bursa / Turkey as a family business corporation, Seger Horn provides its high quality services successfully with its 37 year worth of experience in the automotive supply industry.

With its production capacity of 15 million horns annually, Seger Horn's reputation has transcended Turkey to make it a renowned brand worldwide in the production of electric and air horns and the company has become the brand of preference amongst global passenger car manufacturers such as Tesla, Renault, Dacia, Audi, Volkswagen, Nissan, and heavy vehicle producers such as DAF, Mercedes, Otokar, Temsa, and Karsan.

Today, with the capability of development and implementation of all the processes required for horn manufacturing as well as product design in its two production facilities located in Turkey and China with a total of 370 employees, Seger Horn sells its products to over 70 countries around the world in the Americas, Europe, Africa and Asia.

Having produced 11 million horns in total for both foreign and domestic markets in 2017, Seger Horn is a global brand that has a strong presence in the OEM and renewal markets ranging from South America to Russia, and from the Middle East to the Far East.

All SEGER horns undergo international quality and vehicle compatibility tests. Manufacturing horns that respect human well-being, the environment and nature through its production line and quality standards, Seger, deems it a sectorial responsibility to prevent the negativities we have come to face in traffic and in our daily lives elicited as a result of under the counter manufacturing or manufacturing that fails to meet the standards.

For more detailed information: www.seger.com









Facebook.com/segerkorna

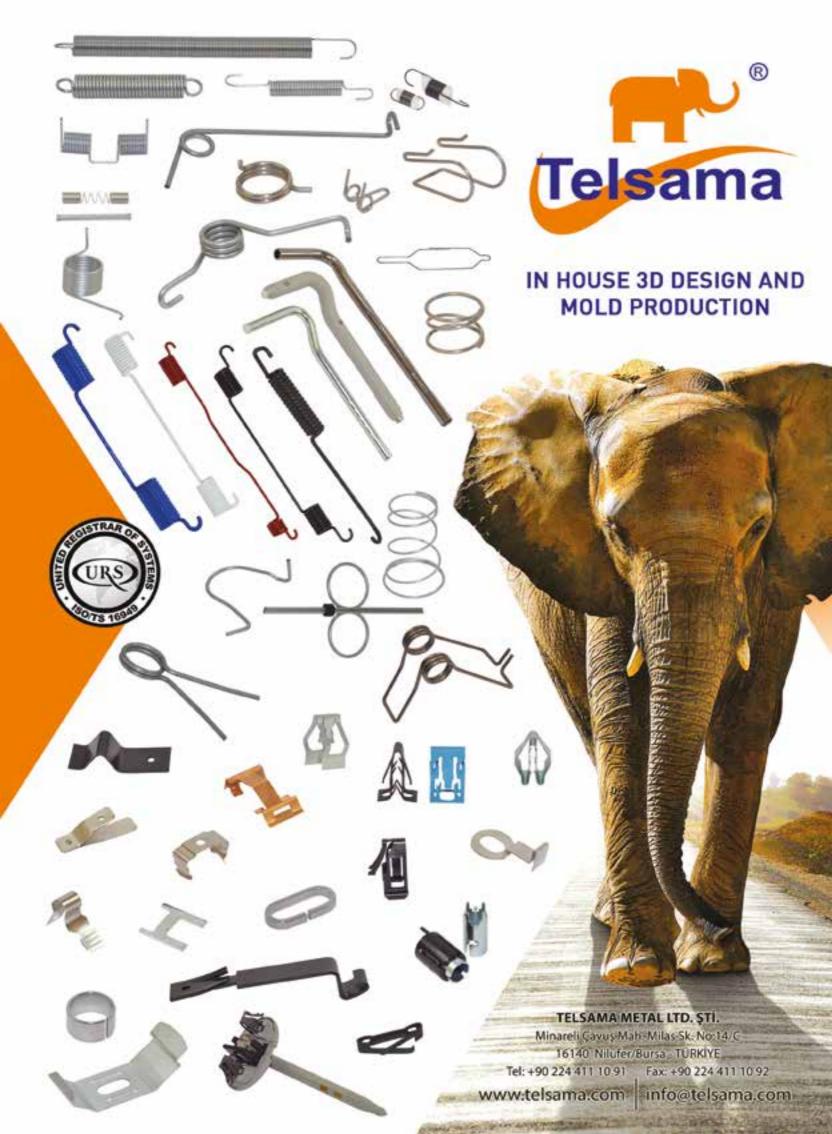
Instagram.com/segerkorna

Twitter.com/segerkorna

Youtube.com/segerkorna

SEGER SES VE ELEKTRİKLİ GEREÇLER SANAYİ AŞ

Demirtaş Organize Sanayi Bölgesi Mustafa Karaer Cad. No.22 Bursa 16369 TURKIYE Tel: +90 (224) 261 03 11 Faks: +90 (224) 261 03 17 info@seger.com www.seger.com



SPECIAL ISSUE

TEKNOFORM BAĞLANTI ELEMANLARI SAN. VE TİC. A.Ş.





Our Company

TEKNOFORM was established in 2011 in Istanbul gathering a team of experts who have the know-how, knowledge and experience of over 20 years on cold forging engineering and production.

Our company is equipped with all in house process such as cold forging and secondary operations, heat treatment, tooling and design and a quality laboratory which is constructed according to the requirements of the automotive industry and a hardware which can totally take under control the manufactured parts' dimensional and hardness values.

Production capacity reaching up to 3500 tons which means 50 millions of special cold formed fasteners

TEKNOFORM quality policy focuses on post sale customer satisfaction, target-oriented and method-based planning organizational structure in accordance with the essential principles of ISO/TS 16949 Quality Management System in every phase of the production.

Main Customers

VW Group, Porsche, Bosch, Keller&Kalmbach, ZF, Dresselhaus, Bufab, Isringhausen, Ficosa, TrelleborgVibracoustic, Teknorot, Teknik Malzeme

Product Range

Special cold formed parts, Ball Joints, Wheel Bolts and Nuts, Bushes, High Quality Fasteners (Hexagon, Flange and Inbus Bolts, Single and Double Sequin Bolts, Studs)



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