

e-pa r o a

‘Erkurt Holding
is 46 years old!’

70

Interviews 03

08 News

Article 18

Mustafa Numan Ural
Antibiotics are the cure:
Doctor, write a prescription!

20 Erkurt Social Network

E-PAROLA,
Erkurt Holding A.Ş.
is a free publication.

Address:
Minareliçavuş Bursa OSB Mah.
Gri Cad. No: 38 Nilüfer / BURSA
T: (0224) 314 10 00
e-mail: e-parola@erkurtholding.com.tr
www.erkurtholding.com.tr

Concessionaire
Âli Kerem ALPTEMOÇİN
Preparation :
Erkurt Holding Communication Leadership

Greetings,

Ahead of our 46th anniversary in 2025, we had an interview with Mr Âli Kerem Alptemoçin, Chairman of the Board of Directors of E-Parola magazine.

Hello Mr Kerem. First of all, could you tell us a little bit about yourself for our friends who are new to the business and don't know you? When did you start Erkurt and what were the conditions at that time?

This year, Mr Mesut and I are completing our 27th year in the sector and at Erkurt. These 27 years, which passed in the blink of an eye, is actually a huge 27 years.



This is a huge 27 years that has witnessed a quarter of the age of our Republic, and has taught us how all global, regional and local positive and negative developments have affected our country, our sector and our companies. The period in which we started, as we know from Mr. Kurtcebe's eloquent narratives, was the beginning of the years when the 'produce what you can' era in automotive was over, quality and quality assurance were discussed after the 1970s and 1980s, contacts with foreigners increased, technical assistance agreements were made and partnerships with foreign companies were established.

What was the general outlook of the automotive industry in Turkey at that time?

In the 1990s, in order to get a job, you either had to sign a technical assistance agreement or establish a partnership with foreigners. Transferring technology was a prerequisite



for expanding our business. We, of course, did what was necessary. We signed technical assistance agreements with Rieter in 1992 and Sommer Alibert in 1993, and established the Rieter-Erkurt partnership in 1998 and the Novetud partnership in 2005.



Were these partnerships always in favour of the companies or...?

Some foreign partners of other companies in the automotive sector not only transferred technology to Turkish companies, but also provided them with scale and markets. In our case, the situation has been exactly the opposite, preventing us from growing through exports.

So how did this situation happen in the case of Erkurt?

These partnerships did not hinder our desire to gain an international identity; on the contrary, they fuelled it. Today we are present in Romania and Algeria. And we are there with our own will, our own knowledge and our own wrist. Maybe tomorrow we will be in other countries.



Erkurt, as a local supplier in our country, has always done what the market and the sector required.



The automotive sector grew in Turkey, and so did we; there were crises in the automotive sector, and so did we. In short, our ups and downs have always been dependent on the national economy.

In 2017, Erkurt Holding experienced a radical change, could you tell us a little about it?

In 2017, we sat down, worked, discussed and set a new target for our future. We said, 'We need to differentiate ourselves from Turkey's internal oscillation.' We said that we need to be able to distribute eggs in different baskets. We said that it is time to grow abroad and with abroad, and with this motive, we set the target of 'growth abroad



and with exports' in 2017. We were structured according to this target, and we managed to increase our exports, which were only 1% of our turnover in 2020, to 10% in 2024. It seems that it will be around 15% next year. Since early 2020, we have seen and continue to see how useful the new businesses we have developed abroad have been in the unfavourable trend developing in the world and in Turkey. **What is the general outlook of the automotive industry today and what do you think awaits us in this period?**

The economic fragility of our country, the recession observed in the European market, which is our biggest customer, the global commercial and political policies to be followed by the USA after Trump, and the future of electric vehicles... In short, we have a brand new era ahead of us. We need to read the threats and opportunities of this period very well.



I have lived through all the financial crises that have affected our country since the 1994 crisis. Each of them had similar or different aspects. Some had a global dimension, some had a local dimension. This time, the uncertainty we are in has both global, regional and local dimensions. You will remember that I described this situation as a Perfect Storm. We are right in the middle of that storm. However, this perfect storm, which has been increasing its intensity since 2020, will peak at some point and eventually slow down. But we, despite all the harshness of this perfect storm you are in, even if we are worn out from the struggle, even if our ship is damaged, we will always come out stronger, as we always do; together with the leader, the operator, the team member, the shift supervisor, and always.

In this case, we can say that the Being Global vision is a very appropriate goal. Everything that happens in the world really affects us as soon as possible, doesn't it?

Of course. Political and economic developments in America and Europe, and their reflections on our country and our companies are very important in determining our own policies. Because the world has truly become a global village today. With the extraordinary increase in the use of social media and the fact that it has become a part of our lives, we are informed about what is happening anywhere in the world on the issues we are interested in seconds later. Our eyes and ears are no longer focussed only on national developments.

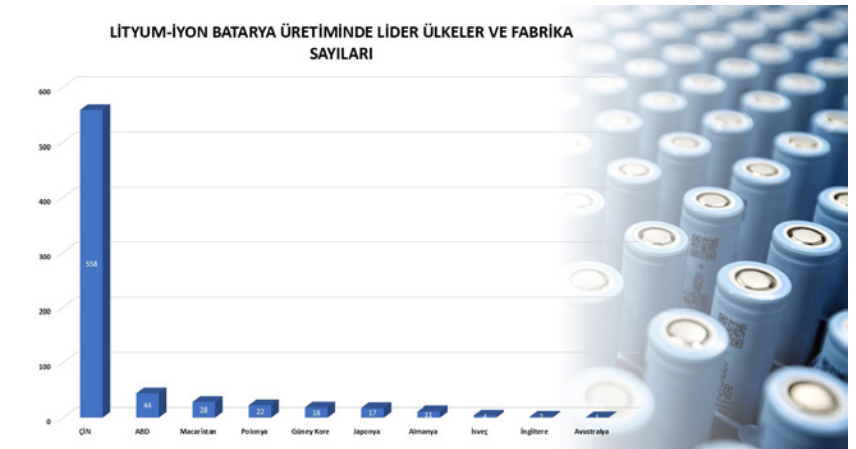


We have to hear the world.

Because the President changes in the USA, we immediately see the effect on the value of TL. In Germany, the Minister of Finance is dismissed, affecting our money markets. The new American president's trade struggle with China concerns both our country and our sector, and naturally us.

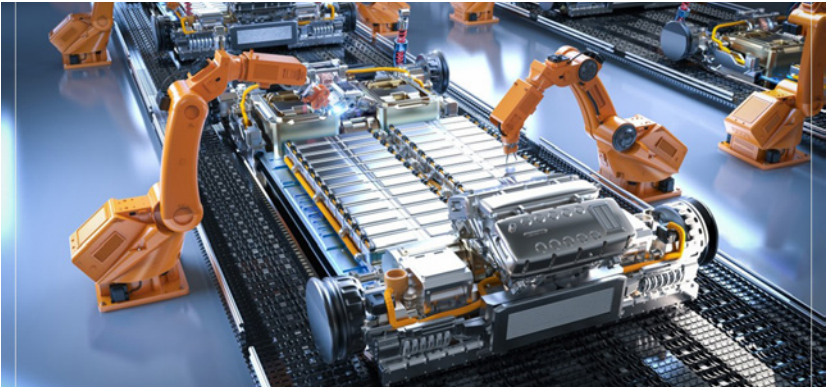
So, where are we in the change in the automotive industry? Or let's ask it like this, how do you read the recent changes in the automotive industry?

In addition to global dynamics, the automotive industry's own variables are also of vital importance for us. As you know, there has been a very serious conversion to electric vehicles in the world. The electric vehicle transformation, embraced by Western countries to eliminate the damage caused to the atmosphere by the use of fossil fuels, has become a transformation target wherever vehicles are produced. To this end, manufacturers started to develop new models one after the other and convert their existing production lines to electric vehicle production. Very serious new investments were made. We can say that this situation, pioneered by Tesla, has engulfed the whole world. The European Union has even taken this transformation outside the automotive sector with new specifications that will come into force in the coming years in order to reduce carbon emissions. However, in my opinion, the Western world made a very important strategic mistake and acted too hastily for this transformation.



Why?

If we look at the countries and the number of factories producing lithium ion batteries in the world; there is a huge difference between the total investment in China and the total investment in the rest of the world, which cannot be easily closed. When we look at the lithium reserves required for battery production, we see that 79 per cent of it is in Chile, Argentina, Bolivia and Australia. China has 8% of the world's



lithium reserves. When we look at this table, it is not possible to understand why the West is in such a hurry on a subject in which it has no strategic advantage, both due to the lack of lithium deposits and the very limited battery production.

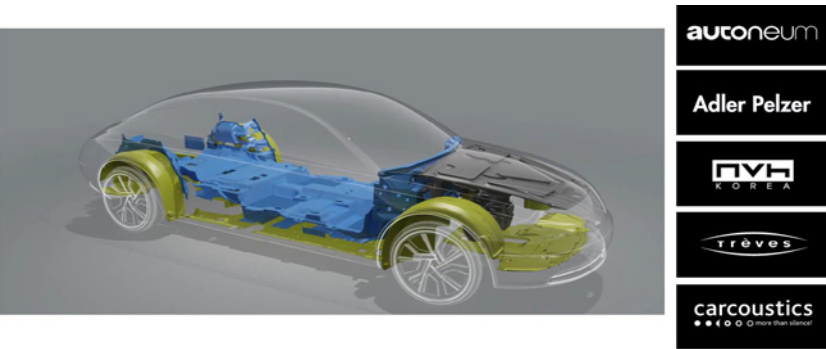
We are slowly starting to see that this calculation has been distorted, because electric vehicles produced in Europe and America cannot compete with Chinese electric vehicles in terms of cost. Chinese electric vehicles sold in Europe are 30-40 per cent cheaper than their European competitors. Moreover, scepticism about the quality of Chinese goods is no longer valid. If the governments do not change their insistence on electric vehicles and carbon footprint, it will be inevitable to close or move some factories in Europe, especially in high-cost countries such as Germany, England, France and Spain.

So how do you think this situation will be overcome? What are your predictions?

In this sense, in my opinion, the strongest candidates for shifting this production in Europe are Romania, Hungary and Serbia. While these countries feed the Central and Eastern



European markets, Morocco comes to the fore to feed the Western European market. Unfortunately, Turkey seems to be somewhat out of this pot at the moment. Although it is ahead of these countries with its high quality vehicle



production and developed sub-industry, it is seen as risky with its increasing costs and unstable economy.

How do you read the developments in the automotive supply industry?

The most decisive issue here is that Western vehicle manufacturers predominantly prefer well-established, multinational and multidisciplinary companies with high R&D capabilities. These companies have 40-50 factories around the world and are located close to vehicle production sites. However, these companies inevitably have high operational costs due to their very high turnover, the fact that they serve many different models in many locations, and the fact that they have tens of thousands of employees. Just as this situation brings Morocco, Serbia, Hungary and Romania to the forefront for vehicle production, it also puts companies like ours, which are more localised but whose production capability and quality have reached a certain stage, in the preference pot for the supplier industry in the coming period. You can imagine how great opportunities this situation harbours. I hope that the economic problems in our country will develop in accordance with the plan put forward by the government, and that inflation, interest rates, and the supply-demand balance will be stabilised, and that we, both OEMs and the supplier industry, will be able to make use of this opportunity that seems to be escaping at the moment.

Can you summarise the developments in our markets?



The fact that Europe, our main export market, has entered a recession due to its failure to grow for two consecutive quarters indicates a contraction in its main export market in the near future. Turkey is also in a recession. It is now well known that 2025 paints a negative picture for the real sector and industry. This means that the years 2025 and 2026 do not give us a positive impression in terms of sales figures. It is obvious that this troubled environment starting from 2020 will continue in this way until the end of 2026.

Beyond this outlook for the automotive sector and Europe, another issue that will seriously affect us is how the US under



Trump will affect world politics and the trade system. Trump will take office on 20 January. They are already giving many clues about what will happen after 20 January. The possible extra customs duties and tax rates to be imposed on the products of Chinese and European producers are likely to affect the conditions. This is an opportunity for outgoing production that is from Unites States to return to the United States to create a new world . But what happens afterwards? will lead to complications, of which, as a sector how we will be affected is still unclear.

In summary, there is a process full of opportunities and serious threats ahead of us, the shape of which is not yet clear.



As far as you mentioned, there is a really uncertain period ahead of us. As the Chairman of Erkurt Holding, how do you plan to manage this situation?

Global political power struggles and macroeconomic



preferences of our country are not matters that we can manage. We will take measures according to the developments to the best of our wisdom and experience and position ourselves in the best possible way. We will strengthen our structure by utilising the limited resources at our disposal in the most effective way and achieve maximum efficiency. Because the only thing in our power is our own operational efficiency. The only thing we need to fight against difficulties is our efficiency, our belief in success, our unity and solidarity. We are working very intensively for this. We need to work even more intensively in the coming period. We will squeeze



the water out of the stone, so to speak. We will fight against every waste, every wasted resource. We will put our minds forward. We will develop and improve.

Well, what about 'being Erkurtlu'? What do you understand by being Erkurtlu and especially what should our friends who are just starting to work with us understand?

The main idea of being Erkurtlu is to produce. We produce and we accept being able to produce as a national duty. If we produce, we have done our duty. In addition to production, we do not focus on the costs incurred and their effects on profitability at the beginning of the business. We try to do what is necessary later. We act with enthusiasm and feelings. But now, our perspective on production has to change its shell. In a period when conditions have become so difficult, competition has increased so much, profitability has melted or even disappeared, this approach, which was correct in the past, is a luxury today. From now on, we have to act in a cost and profitability orientated manner when purchasing, producing and delivering work. We must act with calculation and data, not with our feelings and enthusiasm.

This does not mean that we will not attach as much importance to production as before. On the contrary, we will give much more importance. Because we are a production

- ✓ **Zero Work Accident,**
- ✓ **Zero Breakdown,**
- ✓ **Zero Return,**
- ✓ **Zero Scrap**

company. We will excel in production and all our processes. Production has to be our strongest muscle. Our goal for our businesses is clear and very clear: 0 Work Accident, 0 breakdown, 0 return, 0 scrap. Smart Planning for support units and all processes.

You are actually talking about a serious cultural change here, right?



Of course, this is a serious cultural change. Cultural changes can only be successful if the whole organisation accepts them. Firstly, a common language and target, and then standards should be set for each process. Firstly, non-standard activities should be identified and then all wastes should be prevented. Afterwards, standards should be developed

and improvement projects should be implemented. It is not that we do not do or know these things. But we do not do it systematically. It is also a fact that we have not been very successful in maintaining the progress made. Making the improvements made permanent and adopting an approach that will avoid deviations as a lifestyle is no longer an option but a necessity. This is what we call institutionalisation and management by processes. The conceptual discussions and activities initiated by Mr Mert in order to speak the same language, understand the same concepts and set an ideal standard for each process are very, very valuable for



us. Although progress has been made in the studies carried out so far, the lack of permanent results is perhaps due to the fact that we have not carried out such conceptual discussions sufficiently. Now, we have a very good tool at our disposal: IZCI Task Force. We need to use this tool well.



We will succeed in this work. Yes, we are struggling, we will struggle even more. Yes, we are working, we will work harder. Yes, we are busy, we will be busier. But together and always, we will succeed and we will plant our flag on our own Everest.

What would you like to say about Formfleks, the flagship of the holding?

Formfleks is our most important company and flagship. The success and profitability of Formfleks is the source of the continuity of Erkurt Holding. The Holding's ability to make new investments, our ability to organise abroad, and even the ability of our foundation to develop and continue its activities



are also related to the moral and financial health of Formfleks. Happily, all the leaders of Formfleks are aware of this situation. At this point, it is really very difficult to initiate the cultural change I mentioned in a company like Formfleks, which manufactures in many different disciplines and produces extremely complex parts, has managed to commission dozens of new projects in the last two years, and carries the uncertainties of the sector and the country on its back as well as its own internal dynamics. In this sense, I would like to thank Mr Mert Bekler for taking on this responsibility and successfully implementing our cultural change. And of course, I would like to thank Mr. Mert's



biggest supporter, the Executive Board, all the valuable employees of Formfleks, and all the valuable employees of Erkurt Holding, Bekalp Moulding and Bekalp Logistics, who have never stopped supporting Formfleks for its success.

Formfleks' appearance in the world league as our production brand should be a source of pride for both us and our country. The financial, legal and strategic development of Formfleks other than production is very important for the healthy growth of our companies. At this point, Erkurt Holding is the biggest power behind Formfleks with all its assets. This crisis we are in will eventually come to an end and we will start travelling in calm seas. At this point, Erkurt Holding will continue on its way in new countries and with new subsidiaries with the experience it has created and developed at the international level. On this occasion, although we see in advance that 2025 will be difficult, I wish that it will be auspicious for our companies, our sector and our country.

Thank you very much for taking the time to talk to us.

46TH ANNIVERSARY CELEBRATED

Celebrating our 46th anniversary, we held our year-end event on 7 December 2024 at Merinos Atatürk Congress and Culture Centre. Our event started with the opening speech of our Chairman of the Board of Directors Âli Kerem Alptemoçin.

At the event, we presented seniority awards to our employees who completed their 25th, 20th and 15th years. Our foundation students performed the guitar choir and the lyric choir with the theme of 'Millions of Atatürk', which were specially prepared for the event. The event ended with songs performed by our holding choir.



Watch







FORD OF EUROPE VISITED OUR GÖLCÜK BRANCH

On 19 November 2024, FoE Senior Purchasing Manager Henning Schmits, FoE Purchasing Manager Hasan Özçelik, FoE Body Interior Team Leader Yusuf Özduran, FoE Commodity Buyers Doğançan Ekin, Eda Çağalı and Samira Parsa and FoE Operational Buyer Kutlukhan Altuner from Ford visited our Gölcük Branch to see the technology level and production capabilities of our company and to get to know the Formfleks product range more closely.

Our visitors were welcomed by Formfleks team hosted by our Chairman of the Board of Directors Âli Kerem Alptemoçin and Vice Chairman of the Board of Directors & Formfleks Leader Mert Bekler, and after the meeting, they visited the plant.



FORMFLEKS GÖLCÜK BRANCH ADVANCES TOWARDS FORD Q1 TARGET WITH CONFIDENT STEPS

On 3 December 2024, our Chairman of the Board of Directors Âli Kerem Alptemoçin held an information meeting within the scope of Q1 studies in our Formfleks Gölcük Branch and pinned badges to our employees who showed outstanding performance.



Watch



FORMFLEKS ROMANIA Q1 CERTIFICATION WORKS STARTED!

The Q1 certificate, which is expected to be held by Ford suppliers in the automotive sector, expresses the preferred supplier status. Q1 is an integrated management system that includes Quality, Environment, Occupational Health and Safety and Ford customer special requests. Q1, which is called 'Ford Quality System', is an indispensable prerequisite for supplier industries to maintain their existing business relations with Ford and to take part in new projects. For this reason, our Formfleks Romania factory, established in Craiova, Romania, informed all its employees with an organisation that it has started working to obtain the Q1 certificate, which will bring it to the status of preferred supplier by raising the quality bar one step higher.

On 29 November 2024, with the participation of our entire management team and employees, the importance of having the Q1 certificate was conveyed to all our employees and their awareness was raised. Our employees who signed the totems with the Q1 logo, in a sense, demonstrated that they will make their best efforts to obtain this certificate and their belief in obtaining the certificate.

We wish our team, who set out with the slogan 'ONE DREAM ONE TEAM', success in their journey and wish them a process full of 0 Work Accidents and 0 Waste.



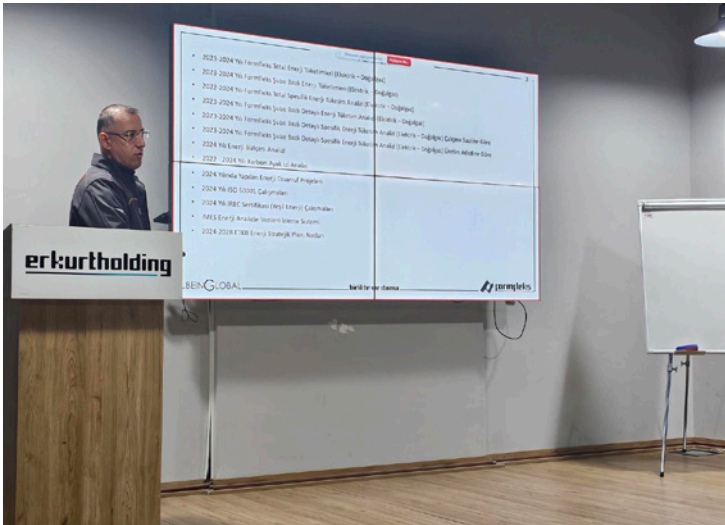
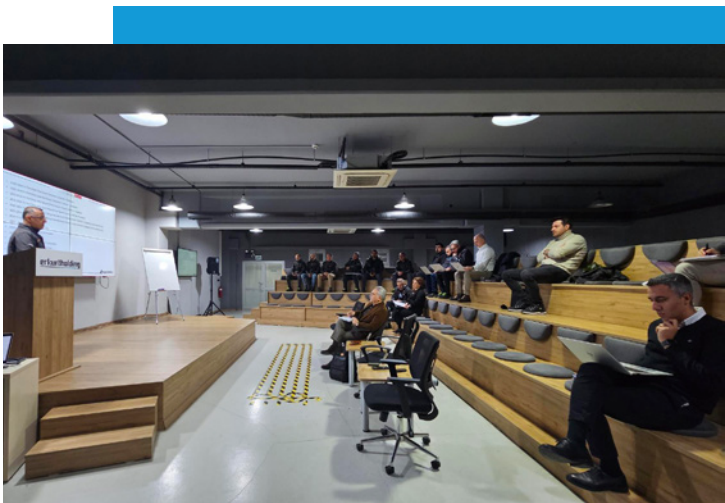
ENERGY TASK FORCE MEETING

On 25.11.2024, an Energy Management Task Force meeting was held with the participation of all branch Factory Leaders, Department Leaders and Maintenance Team Members of Formfleks.

At the meeting, both the general energy (electricity, natural gas) consumption of Formfleks and factory-based consumption were analysed. In addition, energy unit price analyses, energy saving projects, energy budget, the point reached in carbon footprint and the studies carried out in this context were mentioned.

In addition, the 2025 energy market assessment and studies to be carried out on the basis of the points that need to be improved, the points reached in the integration of the energy monitoring system IFS, studies on renewable energy sources and studies on the zero carbon target were also discussed at this meeting.

In addition, specific energy consumption analyses and efficiency issues specific to the factories were examined, line-based or equipment-based studies were planned in the factories within the scope of 2025, and in line with our future goals, the implementation of the Energy Captain application specific to the factories and the development of energy saving awareness were also discussed at this meeting.



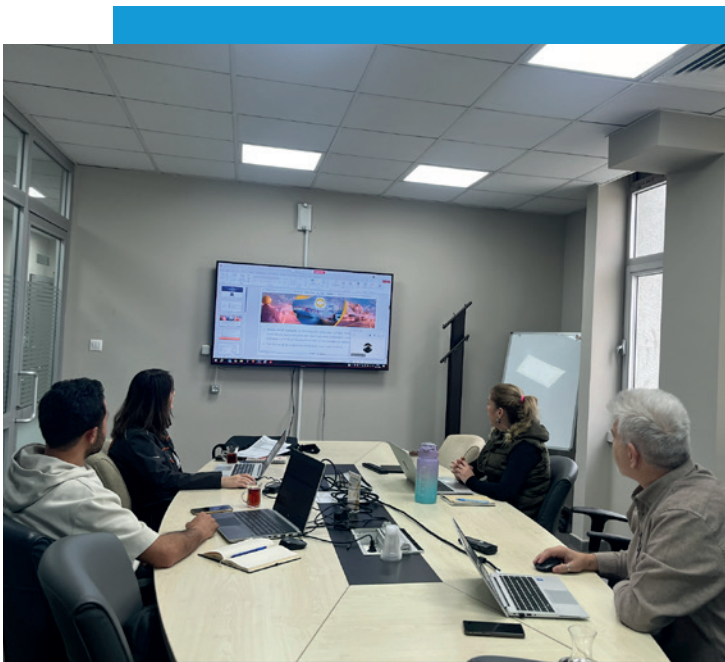
FORMFLEKS 'HOME OF POLYURETHANE' VISIT

On 03.12.2024, Formfleks R&D Leader brahim Aydın, Formfleks Maintenance Leader (Bursa Factories) İbrahim Akbayır, Formfleks R&D Team Member (Patent) Öznur İskender and Formfleks R&D Team Member Sena Arslan from our Formfleks company paid a visit to the Home of Polyurethane facility of Evonik Turkey in order to increase our competencies within the scope of 'Polyurethane System Development Power' and attended the 'Polyurethane Chemistry, Moulding and Laboratory Techniques' training given by Mr. Uğurcan İyidir within the scope of the programme. They attended the 'Polyurethane Chemistry, Moulding and Laboratory Techniques' training given by Mr. Uğurcan İyidir.



ISO 28000 SUPPLY CHAIN SECURITY MANAGEMENT SYSTEM TRAINING

Our ISO 28000 Supply Chain and Security Management System Training was held on 18.11.2024 and 22.11.2024 with the participation of 16 different process owners under the training of Ceyhan Aydın, our Sustainable Erkurt Holding Management and Manufacturing Systems Leader.



FORMFLEKS ISO 28000 AUDIT

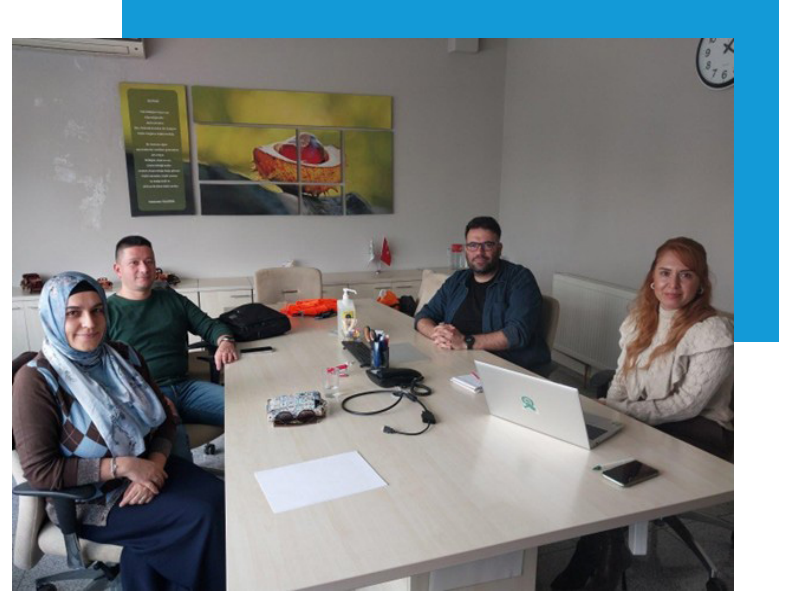
Between 02.12.2024 - 03.12.2024, ISO 28000 Supply Chain Security Certification audit was carried out by IRCLASS certification company with the participation of Chief Auditor Mr. K. Doraiswamy.

The audit, in which Formfleks Cemre Branch and Holding units were audited, was successfully completed.



PROVINCIAL ENVIRONMENT DIRECTORATE INSPECTIONS

On 24.10.2024, the Integrated Audit conducted by Kocaeli Provincial Directorate of Environment at Gölcük Branch and on 19.11.24, the Risk Audit conducted by Bursa Provincial Directorate of Environment at Taysan Branch were successfully completed.



OCCUPATIONAL SAFETY AWARENESS MEETINGS

On 10.12.2024, our Formfleks Occupational Safety Coordinator Zeki Özay held the 3rd session of the Occupational Safety Awareness meetings in our Formfleks Gölcük Branch, attended by our field employees.

In the trainings, our 0 Occupational Accident target was conveyed to our new employees and information was shared about the problems that may occur in the field.



R&D CENTRE SCIENTIFIC PUBLICATIONS IN 2024

Scientific publication titled 'Production of Composite Materials for Improving Vehicle NVH Performance and Investigation of Their Properties' was presented at the '5th International Bursa Scientific Research Congress'.

Scientific publication titled 'Recycling of Plastic Wastes as Granules and Fibres' was published in 'National Research Journal of Environmental Sciences'.

Scientific publication titled 'Investigation of Acoustic and Mechanical Strength Performance of Noise Shield Parts of Heavy Duty Vehicles such as Trucks, Trucks, etc.' was published in 'Journal of Advanced Research in Natural and Applied Sciences'.

The scientific publication titled 'Investigation of Thermal and Acoustic Performance of Hybrid Composites Developed for Use in Cabin Insulation of Heavy Duty Vehicles' has been accepted for publication in 'Journal of Materials and Mechatronics'.

5TH INTERNATIONAL BURSA SCIENTIFIC RESEARCHS CONGRESS

ARAÇ NVH PERFORMANSININ İYİLEŞTİRİLMESİ İÇİN KOMPOZİT MALZEMELERİN ÜRETİMİ VE ÖZELLİKLERİNİN İNCELENMESİ

FABRICATION OF COMPOSITE MATERIALS FOR IMPROVING NVH PERFORMANCE OF VEHICLE AND EXAMINATION OF FEATURES

Bilge ÖZTÜRK

Bursa Teknik Üniversitesi, Mühendislik ve Doğa Bilimleri Fakültesi, Kimya Mühendisliği Bölümü,
ORCID NO: 0009-0002-5486-7980

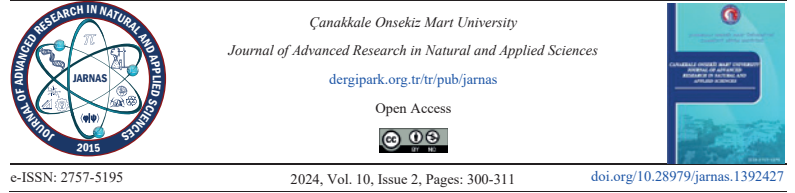
Assoc. Prof. Dr. Derya ÜNLÜ

Bursa Teknik Üniversitesi, Mühendislik ve Doğa Bilimleri Fakültesi, Kimya Mühendisliği Bölümü,
ORCID NO: 0000-0001-5240-5876

Özet

NVH (Noise, Vibration and Harshness) araç içinde gürültü ve titreşimi engellemek için kullanılan otomotiv sektörü terimidir. Yoldan (kaynak) gelen sesi ikinci ortama (araç içi) aktarmayan NVH parçaları, üretimi oldukça kolay fakat bir o kadar isteri fazla olan bir prosestir. NVH malzemesi olarak keçe, poliüretan, kauçuk, termoplastik olefin (TPO) gibi malzemeler kullanılır. Bu parçalardan araç içi seslerin kişi tarafından minimum seviyede duyulmasını sağlamaları talep edilir. Bu, sesin absorpsiyonu veya iletilmesi ile sağlanır. Genelleme yapılırsa malzemenin rijit olması düşük frekanslarda absorpsiyonunun daha iyi çıkacağı anlamına gelmektedir. Gözenekli olması ise yüksek frekansta yutum katsayısının daha iyi olacağına belirtisidir. Düşük frekans aralığı 0-500 Hz iken yüksek frekans aralığı 500-6300 Hz'tir. Yol sesi, çevre sesi, motor sesi yüksek ses frekans aralığında bulunur. NVH malzemelerinden biri olan keçe bu çalışmanın ana malzemesidir. Keçe elyafın işlenmiş halidir. Araç içerisinde motor boşluklarında, tavanlarda, kaput altında kullanılan keçe sektörde vazgeçilmez bir malzeme haline gelmiştir. Keçe malzemesinin boşluklu yapısı ses yutum özelliğinde artışa sebep olur. Ucuz, bozunur ve işlenebilirliği kolay olan keçeler gün geçtikçe önem kazanmaktadır. Ayrıca keçe üretiminde atıklarında değerlendirildiği bu süreçler sayesinde, atık oranını düşürme ve atıkları ürüne dönüştürme imkânları her geçen gün artmaktadır. Küresel otomotiv endüstrisi bu sayede yeşil teknolojiyle daha fazla ilgili hale gelmektedir. Otomotiv endüstrisinin bir sektörü olarak NVH sektörü de aynı yolu izlemektedir. Bu çalışmada geri dönüşmüş malzemelerden yapılan keçe üzerine hibrit bir polimer esaslı ara katman (polimerik film) eklenerek NVH malzemesi olarak kullanılan keçe ses ve mekanik özellik geliştirilmesi amaçlanmıştır. Bu amaçla, PVA ana polimer matris üzerine, $Mg(OH)_2$, Al_2O_3 , barit ve taş suyu katkı maddeleri eklenmiştir. Hibrit malzemenin üretimi çözültiden döküm ve solvent buharlaştırma yöntemi ile

875



Ağır Hizmet Araçlarının Gürültü Kalkanı Parçasının Akustik ve Mekanik Dayanım Performansının İncelenmesi

İbrahim Aydın¹, Sena Arslan², Merve Çalışkan Akduman³, Dilara Çay⁴, Öznur İskender⁵
^{1,2,3,4,5}Formfleks Otomotiv Yan Sanayi ve Ticaret A.Ş., Bursa, Türkiye

Makale Tarihiçesi
Gönderim: 17 Kasım 2023
Kabul: 30 Ocak 2024
Yayın: 25 Haziran 2024
Araştırma Makalesi

Anahtar Kelimeler – Akustik, gürültü kalkanı, kompozit, mekanik dayanım, yalıtım malzemesi

Investigation of Acoustic and Mechanical Strength Performance of the Noise Shield Part of Heavy-Duty Vehicles

^{1,2,3,4,5}Formfleks Otomotiv Yan Sanayi ve Ticaret A.Ş., Bursa, Türkiye

Abstract – The motor compartment is the primary source of noise production in heavy-duty vehicles such as trucks and trailers due to the heat and sound generated. A noise shield is positioned in close proximity as insulation material to isolate these effects. This study specifically focuses on the use of insulation materials as a noise shield in heavy-duty vehicles. The lower layer addressing the structure producing heat and sound includes rock wool. The upper layer, responsible for enhancing strength and acoustic performance, consists of various materials, such as PP/GF, GF/EP, GF/PET, Carbon/EP, phenolic felt, and PE film as an adhesive material. These materials have been carefully selected to ensure optimal performance and meet the highest quality standards. Composite sandwich structures were created using these materials in a flat mold at a temperature of 190°C and a pressure of 110 bars. The acoustic performance of these structures was compared by measuring their sound absorption coefficients in an impedance tube. Upon examining the results of the acoustic performance tests, it was determined that Composition 1, including PP/GF, PE film, and rock wool between the two outer layers, had the sound absorption coefficient (α) closest to 1. To investigate the impact of thickness on both acoustic performance and strength, acoustic performance, and 3-point bending tests were conducted on samples produced with the best-performing material composition 1 at thicknesses of 10 mm, 20 mm, and 30 mm. The data obtained showed that as the thickness increased, so did the sound absorption capacity and bending strength.

Keywords – Acoustic, composite, insulation material, mechanical strength, noise shield

¹ibrahim.aydin@ff-rd.com; ²sena.arslan@ff-rd.com; ³merve.akduman@ff-rd.com; ⁴dilara.cay@ff-rd.com; ⁵oznur.iskender@ff-rd.com (Corresponding Author)



Ulusal Çevre Bilimleri Araştırma Dergisi, Sayı 7(3): 31-35 (2024)
(Orijinal Makale)

Plastik Atıkların Granül ve Elyaf Olarak Geri Dönüşümü

Öznur İskender^{1*}, Sena Arslan Atmaca²

¹ Formfleks Otomotiv A.Ş., Bursa, Türkiye
² Formfleks Otomotiv A.Ş., Bursa, Türkiye

E-Posta: oznur.iskender@ff-rd.com, sena.arslan@ff-rd.com

Gönderim 03.06.2024; Kabul 24.06.2024

Özet: 21. yüzyıl itibarıyla, insanlık tarihinin en yüksek plastik tüketim seviyesine ulaşmıştır. Kullandığımız plastik ürünler biyolojik olarak parçalanabilir ürünler değildir, dolayısıyla doğada çözünmezler. Bu nedenle plastik atıklar küresel plastik kirliliğine neden olmaktadır. Son yıllarda plastik kirliliği büyük ölçüde gündeme gelmiştir. Bu nedenle bilim çevreleri plastik kirliliği ve atık yönetimi konularına daha fazla ilgi göstermektedir. Son yıllarda yapılan çalışmalar ve araştırmalar, atık yönetiminin günlük hayatta etkili bir şekilde gerçekleştirilebileceğini ortaya koymaktadır. Plastik tüketiminin en fazla gerçekleştiği yerlerden biri olan ofis ortamlarında etkin bir plastik atık yönetimi uygulanabilir. Bu çalışmada, plastik atıkların seri üretim sistemlerinde işlenmek üzere granül ve elyaf olarak geri dönüşümü başarıyla gerçekleştirilmiştir. Plastik geri dönüşümü için öncelikle yatırım gereklilikleri belirlenmiştir. Sonuç olarak, NPV (Net Bugünkü Değer) ve Maksimum Pişmanlık Değeri yöntemlerinin entegre kullanımıyla gerçekleştirilen bir karar verme metoduyla en uygun yatırım seçilmiş ve gerçekleştirilmiştir. Ardından, granül ve lif elde etme işlemi uygulanmıştır. Bu çalışma, plastik geri dönüşümünün çevreye ve ekonomiye nasıl yardımcı olduğunu göstermektedir.

Anahtar Kelimeler: Plastik geri dönüşümü, yeşil teknoloji, plastik elyaf, plastik granül, plastik atık.

Recycling of Plastic Waste as Granules and Fiber

Received 03.06.2024; Accepted 24.06.2024

Abstract: In the 21st century, humanity has reached the highest level of plastic consumption in history. These plastic products are not biodegradable and therefore do not decompose in nature, causing global plastic pollution. Recently, plastic pollution has garnered significant attention, leading the scientific community to focus on plastic pollution and waste management. Studies have shown that effective waste management can be implemented in daily life with appropriate actions. One of the major consumers of plastic is the office environment, where efficient plastic waste management can be realized. This study successfully demonstrates the recycling of plastic waste into granules and fiber for use in mass production systems. The necessary investments for plastic recycling were determined, and the optimal investment was selected using the Net Present Value (NPV) and maximum regret value methods. Subsequently, the processes for obtaining granules and fibers were carried out. This study highlights the environmental and economic benefits of recycling plastic.

Key Words: Plastic recycling, green technology, plastic fibre, plastic granules, plastic waste.

GİRİŞ

Monomerler karbon, hidrojen, oksijen, nitrojen ve diğer organik veya inorganik elementler gibi petrokimyasalların oluşturduğu basit yapılardır. Plastik, monomerlerin bağlarının kırılması ve polimer adı verilen uzun zincirli yapılara dönüştürülmesi ile sentezlenen malzemeleri ifade eder [1]. İlk plastik polimerin 20. yüzyılın başlarında icat edilmesinden bu yana, plastik polimerlerin gelişimi ve çeşitliliği sürekli olarak artmıştır [2]. Günümüzde plastikler, başta ambalaj sektörü olmak üzere beyaz eşya, otomotiv, yapı, elektronik ve medikal gibi çeşitli endüstrilerde önemli bir rol oynamaktadır. Buna bağlı olarak da sektörün gerekliliklerine uygun farklı özelliklerde plastikler kullanılmaktadır. Kullanım oranına göre en yaygın plastikler, PP (polipropilen) %19, LD&LLD-PE (düşük yoğunluklu ve doğrusal düşük yoğunluklu polietilen) %17, PVC (polivinil klorür) %13, HD-PE (yüksek yoğunluklu polietilen) %12, PETE (polietilen tereftalat) %7, PS & EPS (polistiren ve genleşmiş polistiren) %7, PUR (poliüretan) %6 ve PC (polikarbonat) ve PMMA (polimetil metakrilat) gibi diğer plastikler %19 şeklindedir [3].

Plastik ürünlerin yaygın kullanımına paralel olarak küresel plastik kirliliği de gün geçtikçe önemli düzeyde artmaya başlamıştır. Plastik kirliliği, plastik ürünlerin çeşitli boyutlarda (mikro, mezo veya makro) birikmesini içermekte ve tüm ekosistem taksonlarını olumsuz etkilemektedir [4-5]. Küresel bir

*İlgili E-posta / Corresponding E-mail: oznur.iskender@ff-rd.com (ORCID: 0009-0007-0858-6201)

SCIENCE CENTRE STUDENTS VISITED OUR FOUNDATION

On 15.11.2024, we carried out an exciting activity with our guests from our science centre.

We opened the doors of the automotive industry with car modelling with waste felts and many other activities that bring together recycling materials and creativity.

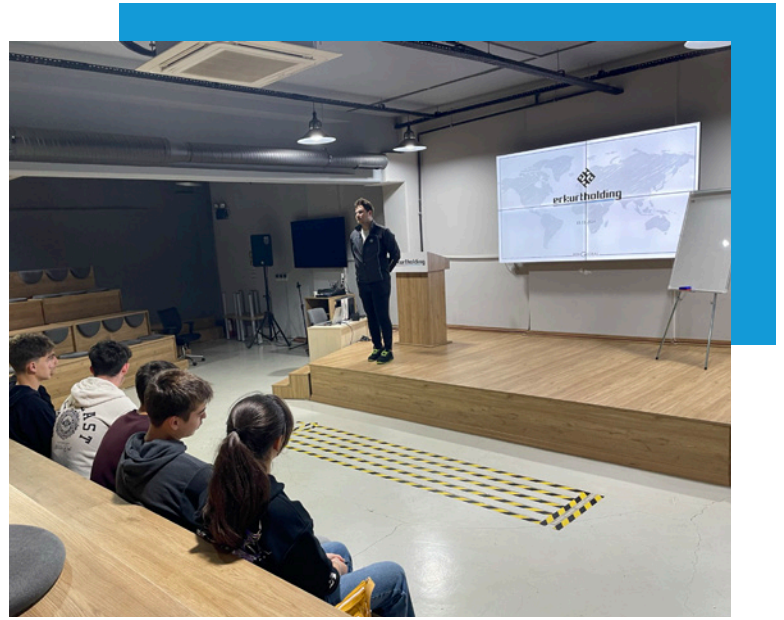
Our students experienced the importance of sustainability and design-oriented thinking by having fun and learning. While designing their own car models from waste materials, they discovered the power of problem solving and teamwork.

With the drama activity, they had the opportunity to get to know the dynamics of the sector closely by acting out different professional roles in the automotive sector.

This activity increased their motivation to become future engineers, designers and entrepreneurs.

Our Foundation will continue to host such inspiring events where young people can learn science and technology through experience. 'We are discovering tomorrow's leaders today.'

We would like to thank Mr Fatih Aliyazıcıoğlu, Science and Technology Branch Manager of Bursa Metropolitan Municipality, Elvan Şen Yılmaz, Emirhan Yılmaz, Özlem Yosun and Adil Şengüzel for their participation and contributions.





Mustafa Numan Ural
Workplace Physician

ANTIBIOTICS ARE THE CURE: DOCTOR WRITE A PRESCRIPTION!



Turkey ranks first in Europe in terms of the amount of antibiotics per capita. Antibiotics account for 35 per cent of total drug expenditures in Turkey. The reasons for this are the lack of awareness of the society about the harms of uncontrolled use of antibiotics in the past and easy access to medication.

Infectious diseases are caused by various microorganisms such as bacteria, viruses, fungi and parasites. Antibiotics are effective and must be used only in the treatment of infectious diseases caused by bacteria. They are ineffective in infections caused by viruses, fungi or parasites. The use of antibiotics in every infectious disease is an example of misuse. I have said that antibiotics are medicines used in the treatment of infections caused by bacteria and have very successful results, but only if they are used in accordance with the physician's recommendation and in the appropriate dose and duration. Otherwise, in addition to being ineffective in treatment, they can invite many serious health problems.

One of the most important problems caused by the indiscriminate use of antibiotics is that bacteria develop resistance to the antibiotic. The loss of an antibiotic's ability to kill or stop the growth of a certain bacterium means that the bacterium has developed resistance to that antibiotic. This problem can cause the disease to last longer or even be fatal. In addition, infections caused by resistant bacteria may require the use of more expensive antibiotics with more side effects. Antibiotics do not belong to the group of antipyretics, painkillers and anti-fever medicines. In addition, fever can be a symptom of an infection in the body. However, not every fever may be a sign of infection, and not every infection may be caused by bacteria.

Translated with DeepL.com (free version)

Upper respiratory tract infections are among the infectious diseases for which antibiotics are used most intensively and perhaps most inappropriately all over the world. Autumn and winter months are the peak months for upper respiratory tract infections. The 8-10 different viruses that cause colds and at least 10 different subtypes of each of them and seasonal

influenza viruses are responsible for 80-85 per cent of all upper respiratory tract infections that occur during this period. Therefore, it is clear that antibiotics will have no effect and are not necessary in upper respiratory tract infections caused by viruses in this period. However, despite this, it is a fact that antibiotics are included in one out of every three prescriptions in autumn and winter.

After the COVID-19 pandemic, viruses that cause upper respiratory tract infections such as influenza A, RSV and Rhino virus have gained importance again. We can say that influenza infection usually increases in November and December. However, influenza B is more common in our country, especially in February and March. COVID-19 is also encountered and this situation is much more common in people who are not vaccinated.



Is there a need for preventive antibiotic treatment against secondary infections that may develop after the flu? Generally, physicians prescribe antibiotics for flu and colds with such a justification. However, there is no scientific basis and evidence for this thinking and practice. On the contrary, scientific studies show that the use of antibiotics in flu and colds does not prevent subsequent bacterial infections. In fact, it is even known that it is harmful, as more resistant microbes develop in such an infection and are more resistant to antibiotic treatment.

Should it be accompanied by vitamins?

Some antibiotics, such as chloramphenicol, which used to be used frequently, affect the absorption of B vitamins, especially vitamin B12. Therefore, it used to be recommended to take vitamins with the treatment of these antibiotics. However, such vitamin support is not necessary for antibiotics (penicillin, cefalosporin, quinolone, etc.) that are frequently prescribed today. However, the antibiotic cefoperazone, which is used against nosocomial infections, can cause vitamin K deficiency in long-term use (more than 2 weeks). Due to vitamin K deficiency, deterioration in the body's bleeding stopping mechanisms and especially gastric bleeding may occur. Therefore, vitamin K supplementation is recommended for patients using this antibiotic.

Harm of using the wrong antibiotic

It should be known that antibiotics are not innocent drugs and have side effects when used incorrectly. We can list the problems caused by indiscriminate antibiotic intake as follows:

STOP



1. It can cause serious allergic reactions: These allergic reactions can develop as a mild itching or skin rash, or they can be severe enough to result in death.
2. It may impair liver function: These side effects can be monitored by blood tests called liver function tests. In patients with underlying liver disease, an antibiotic that will be metabolised in the liver is avoided.
3. It can cause kidney failure: They can have toxic effects on the kidneys and trigger organ failure. At least one in five cases of acute renal failure is caused by medication.
4. It can cause antibiotic-associated diarrhoea: Normally, there are more than 400 different types of bacteria in the intestine, which do not cause disease but are beneficial. The use of antibiotics causes the bacteria in this normal flora to die and thus creates an environment for the growth of opportunistic bacteria, which can lead to diarrhoea. Even bloody diarrhoea mimicking dysentery may develop.
5. It may cause obesity: Recent studies have shown that obesity is more common in those who use antibiotics more frequently, especially in infancy and childhood.
6. It can damage the intestinal system: Apart from

diarrhoea Among the digestive system side effects that can be seen is nausea, Symptoms such as vomiting and abdominal pain may also be observed.

7. Do not use antibiotics indiscriminately unless your doctor has recommended it. For example, antibiotics are not effective in viral diseases such as colds and flu.
8. Do not apply because it is good for a health problem that a relative uses with the same symptoms.
9. Take the full dose recommended by your doctor for the recommended time. For example, do not take it for longer than recommended by your doctor or interrupt it because you feel better. Interrupting treatment or skipping doses causes bacteria to develop resistance. As a result, the treatment fails and the disease recurs.

Bibliography::

<https://www.saglik.gov.tr/>

<https://www.klimik.org.tr/>

You are the editor of this page! Send your photos and videos to the WhatsApp line of our communication team and we will add a new one to our happy family picture.



WhatsApp İletişim Hattı:
0 538 054 84 76



Our Formfleks Romania team celebrated the birthday of our Factory Leader Murat Önen with a surprise event. Our employees, wearing traditional Romanian clothes, presented gifts on behalf of all their friends, and the 'sense of being a team' that emerged was very nice.



together & forever

BEINGLOBAL



Erkurt Holding

Minareliçavuş Bursa OSB Mah. Gri Cad. No:38 16159 Nilüfer / Bursa
T: +90 (224) 314 10 00 - F: +90 (224) 243 30 90