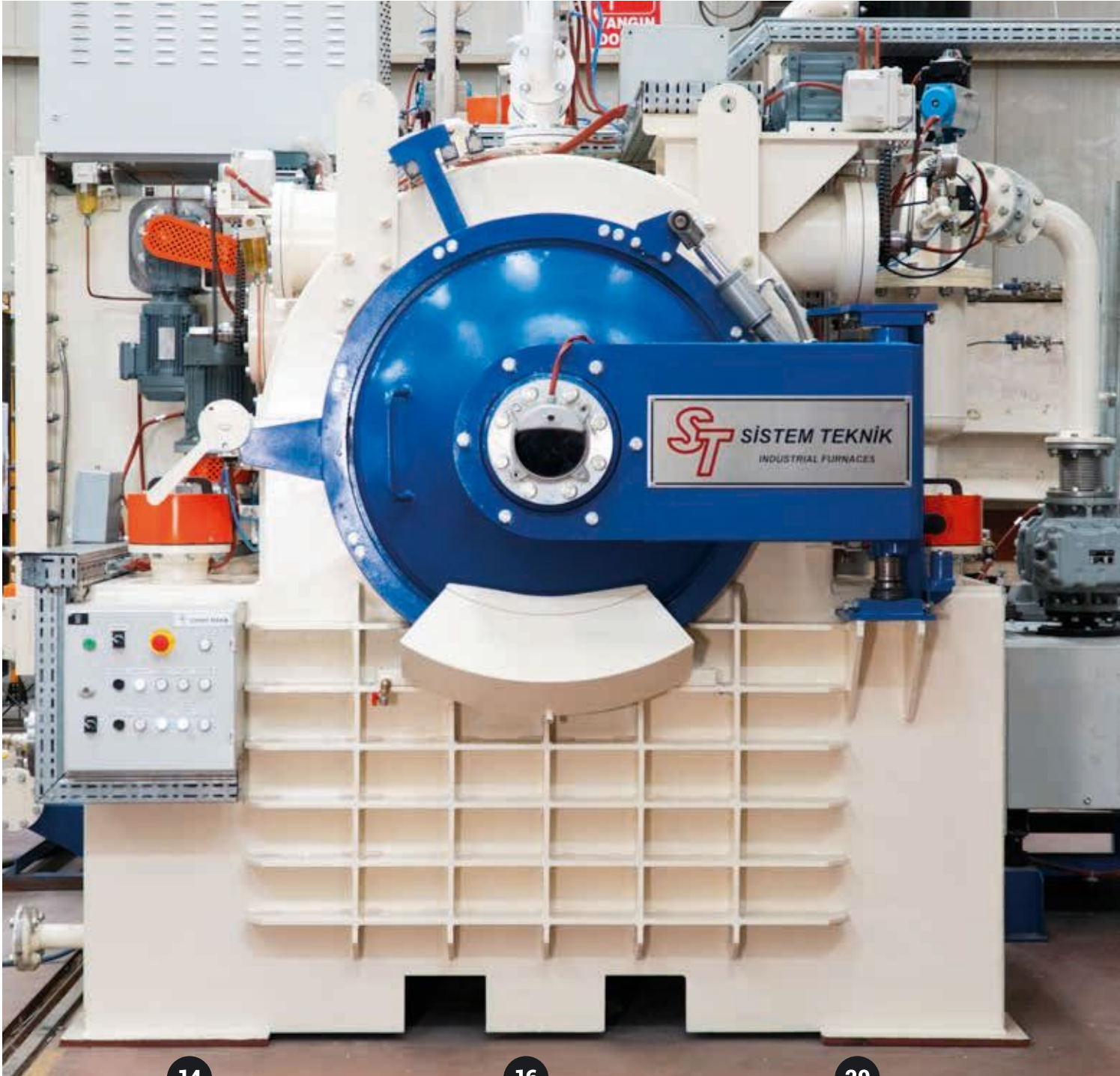


FURNACES

T E C H N O L O G Y N E W S



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We have achieved significant success in the projects carried out in the aviation sector.
.....

16

We have examined the high technology AIO LPC Furnaces for you.
.....

20

Service means undertaking issues as yours not as customers.
.....

"INDUSTRIAL TRANSFORMATION WITH "NEW NORMAL"

IN OUR NEW NORMAL, WE WANT TO SAY HELLO WITH A NEW BEGINNING...



Dear readers,

We are passing through an extraordinary period due to the Covid-19 outbreak. In these challenging days, our aim is to provide uninterrupted best service to our customers.

Whatever the challenge is, each extraordinary situation leads to new possibilities for transformation. In this context, I wish you good health and good adaptation to new conditions.

As Sistem Teknik Industrial Furnaces Group, we supply industrial heat treatment furnaces to automotive and aviation industries, fire test laboratories, as well as supply of service and spare parts and upgrading for existing furnaces.

In order to share our solutions, current trends and technologies about industrial furnaces we decided to publish a quarterly magazine called FURNACE NEWS.

In this magazine we want also to cover the ideas and thoughts of our customers, suppliers and other companies in industrial heating business. In this sense, we wish that this magazine would be useful for everybody in our industry.

Hereby, I would like to give brief information about our group and our services. The flagship of our group is Sistem Teknik Industrial Furnaces AS., which is focused on producing industrial furnaces for more than 40 years. We are producing state of the art furnaces in accordance to meet all the requirements of the latest standards.

While producing and developing these furnaces, we determine our basic criteria based on flexibility, agility and high overall equipment efficiency (OEE). We will share information about our new products we have developed through our magazine. Our R&D centre works extensively to increase the capabilities of our products and sensors for Heat treatment processes.

There are many existing furnaces and heat treatment equipment, which are still working since many years and they need maintenance and upgrading in accordance with new requirements. SARVION provides spare parts and service to almost all brands of furnaces and specialized on upgrading industrial furnaces.

Sistem Teknik Engineering Services AS. provide clean combustion solutions for drying applications for automotive, gypsum board, food drying and textile machines as a dealer of Honeywell Maxon since 1992.

3E Industrial Engineering, which has recently joined in our organization, is expert of software engineering for furnace automation. 3E have successful software programs such as special ERP for commercial and inhouse heat treaters which is successfully used in world wide reputable heat treater groups.

We want to share our projects, activities and outputs of our studies by this magazine with you. We are very happy to publish our first issue and hope that you would enjoy while reading.

If you have any recommendation to improve our magazine please do not hesitate to send mail to: mehmetozdeslik@sistemteknik.com.

I wish you all healthy and beautiful days!

Mehmet Özdeşlik
Sistem Teknik A.Ş.
Chairman of Board

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TRANSFORMATION IN SISTEM TEKNİK

The most important factor of development is the sincere desire for change in Sistem Teknik, where we have started the change process by drawing out our road map, the day is the day to think locally and act globally...

We have started Digital-Based Lean Transformation (DBLT) studies at Sistem Teknik in recent months. In this company, which is very open to change and development, Mr. Mehmet Özdeşlik's excitement for change has been one of the issues that most have affected me. He has wanted his company, which he has brought to the present day, to be an effective engineering company, as well as to have the production competence to compete with the world in terms of speed and cost. That desire is the key factor that has triggered the change.

Sistem Teknik is an excellent company in terms of technical engineering ability. Their design and innovation capabilities are extremely good, but when it comes to supply chain and production management processes, like many companies in our country, they are still in the process of searching for better. Another issue that makes me happy and motivated is that they accept this situation sincerely and therefore want to change. Is it not the precondition for change to accept the inadequacies of the current situation first? What else would be a reason for desire to change?

In our first meeting with the managers of company, we have clearly put our aim first, as 'lean and agile' and then 'comes digitalization'. We have set our priority as setting standards in all areas. Because as trying to

overlay technology on the existing system without being Leagile or catching the standards will only cause the error to be made faster.

Let the transformation begin with new concepts!

The transformation begins with the human. Educating people, persuading them to take part in transformation processes and ensuring broad participation are key requirements for change. In this context, we have achieved a very good conditions in Sistem Teknik and have completed our operational excellence trainings under the Lean/Agile theme with a serious training program. Even during the corona period, we conducted trainings on webinars without deceleration. Now, we are able to speak common language as a whole team. Concepts such as value, muda, flow entered our everyday lives.

We have determined a road map

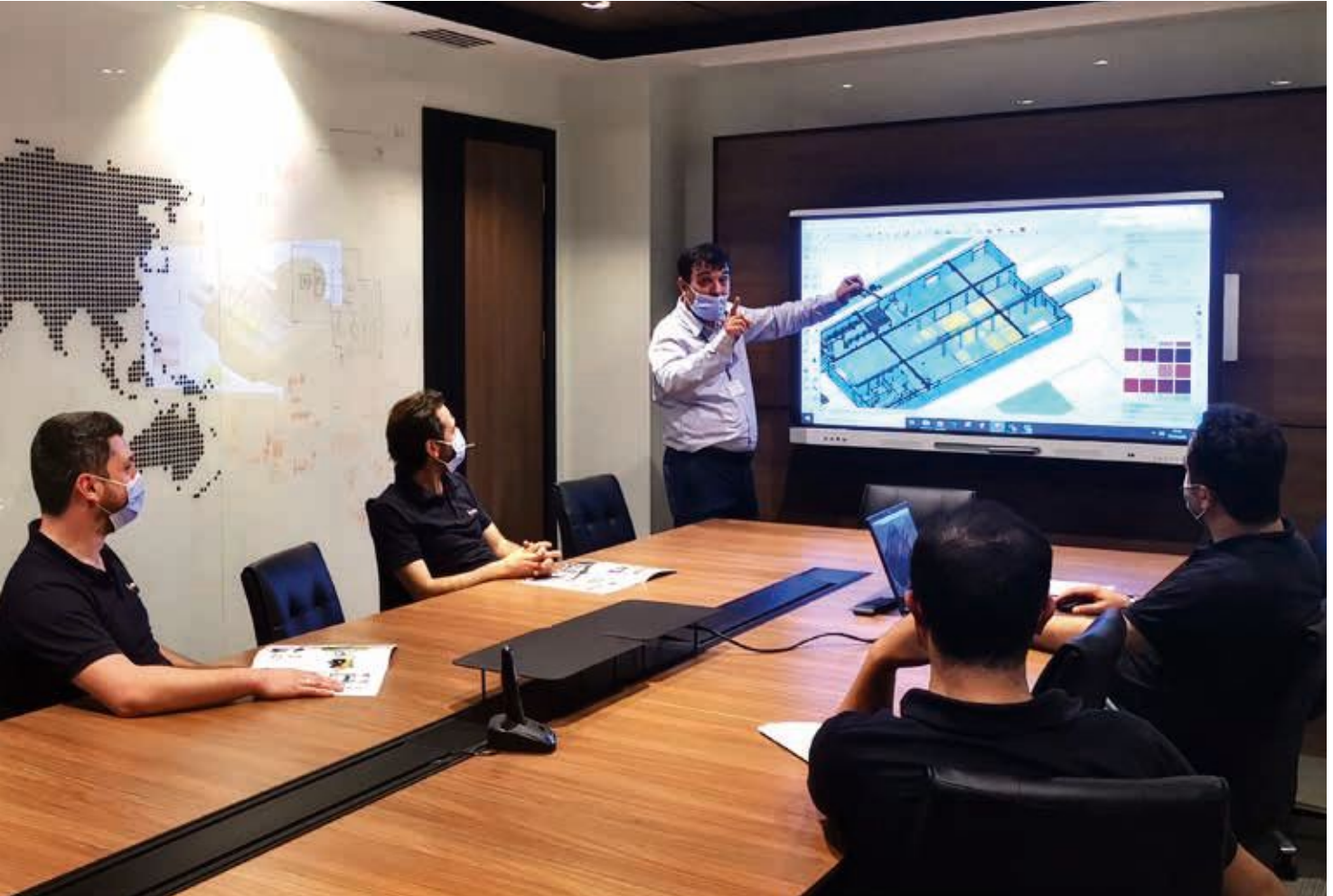
The strength of competition in the manufacturing industry comes from being 'fast'. In today's world, where quality and cost are hygiene factors, if you can be more innovative and faster than your competitors, you can be noticed and take orders. In this environment, where technology has developed so rapidly and the speed of information transformation has reached the level of months, we have set our roadmap in Sistem Teknik under three main headings: Fast product development, efficient



production and agile supply chain. During the product development process, we have started commissioning a number of applications, mainly 'concurrent engineering' applications. We have made important decisions to quickly and accurately understand customer expectations, move from Silo-style approach to Matrix configuration, develop modular product concept and provide technological infrastructure to support this process. We expect to reach the trio of standards, competencies and technology required for speed at near future.

Productivity will increase with "Focused Factory" Motto

As with many businesses, there are plenty of improvement opportunities at Sistem Teknik, too. Lack of flow in manufacturing and using push system instead of pull have been the main reasons of this situation. In this sense, we have decided to divide



“

“Strategic cooperation with suppliers, focusing on competency and effective information sharing are now the main agenda items in the current conditions where ‘supply chains’, not businesses, are competing.”

the products into segments, manage each segment with a focus factory approach, design the products modular and assemble the products at the customer location. If we can, and I believe we can, we will be able to respond to customer expectations with incredible speed. To support this process, we have decided to separate material preparation and assembly lines, discard all unnecessary items in the factory, and even restore the layout to fit the flow by

demolishing the walls. Isn't that the change? Destroy and rebuild it!

Think locally and act globally!

The supply chain is becoming increasingly important. Strategic cooperation with suppliers, focusing on competency and effective information sharing are now the main agenda items in the current conditions where ‘supply chains’, not businesses, are competing. Sistem Teknik has already started to give some jobs to



Dr. Lütfi APİLIOĞULLARI

Lean Office

In the meeting with the managers of Sistem Teknik, we have clearly put our aim first, ‘lean and agile’ and then ‘digitalization’. We have set our priority as setting standards in all areas.

sub-contractors under its control, actually making a start in this sense of technique. However, we have expanded the scope together. I feel like that we're going to think locally and act globally. Why should we send iron to the other side of the world when we can have it done there?

In short, Sistem Teknik is my new adventure. I love change and institutions that want to change. As it is said, ‘the one whose today and tomorrow are the same is in loss’.

SILVAN INDUSTRY SHOWS ITS POWER IN THE GLOBAL MARKET WITH ITS STRONG STRATEGIES

Silvan Sanayi, one of the leading and experienced steel casting factories, continues its production without sacrificing quality with its export network which is expanding day by day. In addition to the belief in teamwork, the adaptation to new technology by saving the culture of the company makes it step forward especially in the Covid-19 process.

Silvan Sanayi, which is embracing continuous development with the values it save, achieves its global success thanks to efficiency it provides in its production strategy. In our interview with Ömer Faruk Kaya, who is Silvan Sanayi Heat Treatment Chief, we can see how this success has been achieved as a result of hard work and diligence. As Furnace News team, now we give Ömer Faruk Kaya the floor to learn more about Silvan Sanayi's activities and goals. Enjoy this interview!

As a well-established company, you have grown successfully over the years. What are the main factors you adopt as a company policy that is effective in this growth?

The primary factor of the company policy implemented by Silvan Sanayi is to sustain the vision and mission of our uncle Sebahattin Mollaoğlu and our father Tekin Mollaoğlu, who are the founders, by saving the company culture and values. Since our founding date in 1957, it has been our constant goal to know the value of the efforts and experience gained by our elders and to adapt them to today's conditions by using the latest technologies. Since the first years of its establishment, Silvan Sanayi has adopted superior product quality, competitiveness, meticulous service consciousness and honestly working principles,



◀ **Ömer Faruk KAYA**
Silvan Sanayi A.Ş.
Heat Treatment Chef

which are the basic conditions of gaining a solid place in global market. Another factor that contributes to our success is our belief in teamwork. In order for teamwork to give a good result, it is essential that you have the right organization. Over the years, we have established the organization in accordance with this policy and laid the foundations of healthy growth. Even if you have investment power, if your team and employees are not prepared for this investment, you can find yourself somewhere far away from the tar-

get at the point you have set off. We have believed in team work; we have ensured that our team receives internal and external vocational training-education, we are aware of the importance of internal communication in firm and we have worked hard together to achieve pre-planned goals. As a result of this action, manufacturing, sales-marketing and finance departments, which work in harmony, have reached the level that will ensure customer and supplier satisfaction in the best way. Another important main factor is

that we always adopt the principle of working with expert consulting companies and equipment manufacturers within the possibilities we have. Achieving knowledge and quality service, and benefiting from them have also contributed to our successful growth.

Will there be a change in your production strategy in "new normal"?

I believe that the challenging days we live will make a rapid change in the perspective of conscious companies towards production. This period will be difficult for companies whose production processes are inefficient and continue to do business with pre-epidemic methods. The most important criteria for us is to provide suitable working conditions to protect the health of our employees. Thanks to this way of thinking, you also ensure that production activities continue without disruption.

What is the most effective reason in choosing Sistem Teknik?

Our working history with Sistem Teknik goes back to the 1980s. Considering the heavy working and strict competition conditions of the casting profession, Silvan's main expectation from an equipment has remained valid in every period, being durability, efficiency and strong after-sales technical support. In those years, the possibility to supply the equipment locally was very limited and therefore Silvan generally had to choose the equipment of foreign origin. Sistem Teknik filled an important gap at that time. Sistem Teknik has continued to be the preference of Silvan in our investments from past to present, with maintaining its line and succeeding in adapting current technologies to its products. Especially in our new facility established in Dilovası İmes OSB, it has made significantly contributions to the establishment of a modern facility by bringing special solutions to our demands related to product processes.

Finally, could you tell us about your goals next year in the hope of leaving behind the effects of this challenging process due to Covid-19?

First of all, we aim to increase the number of our customers in different sectors in order to compensate for the turnover loss in 2020. For this reason, we have already needed to revise our marketing strategy for the next year. Although we do not have any problems in our current supplier portfolio, we think that we need to optimize in the supply chain in order to reduce potential risks and increase our competitiveness. In line with these goals, to spend the next year more efficiently; we plan to meet our organization deficiencies by the end of the year, to carry out process optimization works for cast parts in the production range, to continue internal and external training without interruption and to shed light on financing needs by completing 2021 target and budget studies with internal departments.



"Sistem Teknik has continued to be the preference of Silvan in our investments from past to present, with maintaining its line and succeeding in adapting current technologies to its products."

The criteria that Silvan Sanayi prioritizes in the selection of industrial furnaces;

- Homogeneity (having passed TUS test within minimum tolerances)
- In-furnace atmosphere control
- Having technical capability to implement Quench operations
- Ease of tracking and traceability
- Practical usage options
- Loading capacity
- Cost efficiency
- Lifetime of auxiliary equipment
- Working performance at high temperatures



▲ Silvan Sanayi produces alloy steel castings that are resistant to heat and abrasion. It produces especially for the cement industry, rolling cylinders, mining and crusher industries.

SUCCESS OF ÇİMTAŞ PRECISION BEYOND LIMITS

Çimtaş Group has a significant place in the sector with its contribution to the country's economy. Çimtaş Precision Machining is a part of this group and has continued its investments in this extraordinary period, and aims to move both our country and Çimtaş to further points.

In the first issue of our Furnace News magazine, we host Çimtaş, one of the leading brands in its sector, with its 47 years of success. Çimtaş Group, working with an annual production and manufacturing capacity of 320 thousand tons and contributing to the country's employment, is an ENKA institution. It has 7 production facilities in total, 6 in Turkey and 1 in China. It is a successful group company that sends its products to 50 different points of the world with its success that goes beyond the borders of the country. Over 650 thousand tons of steel structure, mechanical and electrical installation works are also carried out which include infrastructure and superstructure projects, power plants, industrial facilities, pipelines and refineries and petro-chemical and including chemical plants in Turkey and abroad. Our pleasant conversation with Cem Uçar, a Heat Treatment Technician who continues to work within Çimtaş Precision Machining, proves once again that this success is not a coincidence. Expressing that they have been receiving services from Sistem Teknik for 8 years, Uçar adds that it is an effective partner in solving problems beyond the understanding of the supplier and these services bring success. In our interview where we get information about the operation and works of Çimtaş Precision Machining, we give Cem Uçar the floor now. Enjoy this interview!

We would like to briefly introduce you to our readers. Can we get brief information about your company?

First of all, I wish you success in the publishing life of Furnace News. If I



Cem UÇAR
Çimtaş Hassas
Pro-processing Technician

need to introduce myself briefly, I was born in 1980 in Kocaeli. I am married and have two children. I started my business life 22 years ago at Çimtaş Çelik, a subsidiary of ENKA Group, and worked as a heat treatment technician at various locations. I have been working in the same field since 2013 and continue my studies within Çimtaş Precision Machining. During the time of working, I have worked on putting into practice and applying many heat

treatment processes. For the last 5 years, we have been making the heat treatment process of special materials under vacuum. Çimtaş Precision Machining was established in Bursa Free Trade Zone in 2013 and has successfully announced its name to the world with its professional working system since its establishment. Çimtaş and its subsidiaries engineer and fabricate pressure vessels, heat recovery steam generators, storage tanks, steel structures, steel bridges, steel wind towers, wind turbine rotor & stators, oil and chemical tankers, offshore platforms, powerships, piping systems for power, oil, gas and chemical industries, process skids and modules, turbine auxiliary systems, combustion casings, end covers and liners for gas turbines, cold and hot formed pipe fitting components according to ASME, AISC, API, AS 9100, AWS, ISO and EN standards.

You make high standard heat treatment applications. In which products do you use automation of NADCAP and AMS2750 pyrometry applications?

This automation is used in our vacuum furnace which is Class 1, operating at max 2400 ° F (1315 ° C), has a usage area of 1550x1475x2210 mm and has a 4500 kg capacity and 2 bar cooling power.

Which products and services of Sistem Teknik do you get?

We have been cooperating with


Sistem Teknik for 8 years. We use natural gas heating, car-bottom furnace and vacuum furnaces products.

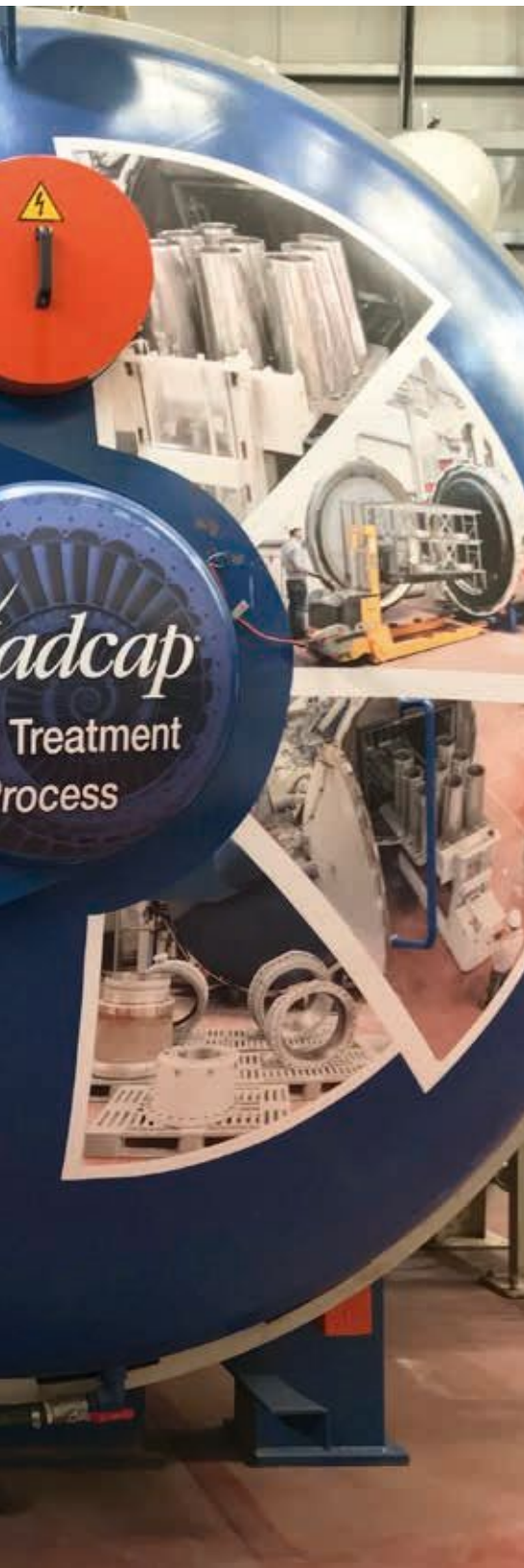
What are your thoughts on the after sales services of Sistem Teknik?

We have not had any major problems with Sistem Teknik ovens within 8 years. We receive timely and effective answers to routine service. Due to this approach that Sistem Teknik has shown, we see it not only as a supplier, but also as a right partner for us. Hereby I would like to thank all Sistem Teknik employees for their successful work and good results.

Finally, could you tell us about your goals next year in the hope of leaving behind the effects of this challenging process due to Covid-19?

We hope that this challenging process for our country will end in a healthy way and many sectors that have suffered, will regain their former power. In order to prevent this process from disrupting the country's economy, I think that we should create opportunities for the economy by analyzing the current situation correctly. As Çimtaş, we aim to make breakthroughs in which we will get more shares from the sector we are in. We are working with full force to move both our country and Çimtaş further.

Çimtaş Precision Machining has been cooperating with Sistem Teknik for 8 years and it is still continuing. 



EXPERT LOOK AT REACTION TO FIRE AND RESISTANCE TESTS; EFFECTIS ERA EURASIA

Efectis Era Eurasia, Turkey's first accredited full range fire reaction and fire resistance test laboratory, successfully makes its name mark not only in Turkey but abroad, with over 70 years of sectoral experience. The firm, which performs risk assessments by measuring the fire performance of systems and structures by expert staff, continues to work online in the Covid-19 process.

Efectis Era Avrasya, avoiding unexpected problems with tests and analyzes, prevents the loss of its customers in terms of both material and time. It continues its systematic operation with the use of correct infrastructure and periodic maintenance. Our interview with Efectis Era Eurasia Lab Manager Ali Bayraktar shows once again how great the company has achieved. Now it the time to get to know Efectis Era Eurasia more closely... We give the floor to Ali Bayraktar, Enjoy this interview

Can we get information briefly about your company?

Efectis Era Eurasia, Turkey's first accredited fully comprehensive reaction to fire and fire resistance test laboratory, is also authorized to mark construction materials CE under the regulation of 305/2011/ EU Construction Materials (CPR) as an EU approved organization. In addition, we serve as a test laboratory and certification body authorized by the relevant institutions of many of the Middle Eastern countries where we serve extensively. Another very important area for us is our fire-engine services. When talking about fire safety in buildings, the first things that come to mind are fire detection, suppression and extinguishing systems. These systems are, of course, necessary but will be used in case of a fire. However, the main purpose should be to design and construct the building in a safe way against fire, especially in build-



Ali BAYRAKTAR
Efectis Era Eurasian
Lab Manager

ings with high risk of loss of life and property such as industrial facilities, hangars, hotels, hospitals, and to make regular checks while the building is in use.

However, the main purpose should be to design and construct the building in a safe way against fire, especially in buildings with high risk of loss of life and property such as industrial facilities, hangars, hotels, hospitals, and to make regular checks while the building is in use. As Efectis Era Eurasia with 70 years of fire safety expertise of Efectis Group (France - Netherlands) of which we are a member, we provide fire engineering services such as fire and smoke propagation modeling, structural fire behavior analysis, fire risk assessments and architectural, electrical and mechanical applications of existing buildings. We offer

inspection services in accordance with national and international regulations with our authorized personnel and in an accredited manner.

How have you set a strategy for this challenging process that we've gone through with Covid-19? How do you think this process affects you and your sector?

Since we are an accredited test laboratory and the EU Approved Documentation Agency, risk analysis is a topic that we pay always attention. Even before Covid-19 cases in Turkey of being announced, in all campuses of Efectis Holding (Turkey, France, the Netherlands, UK) emergency plan has been prepared and has been started to implement. Since our company provides international services, of course, it is negatively affected by the process,

like every other firm. However, we have immediately implemented the required tools that we have needed to minimize this effect. We have prioritized our employees' avoidance of contact and ensuring their safety. For this reason, we enabled each employee to carry out the testing and certification processes online by commissioning the home working system. When there are tests that we need to perform in our company, only our staff, who are required for the test, have come to our lab and completed the process. Since our customers could not physically participate in the tests, we have shared the test images instantly. In the audits during the certification process, the audits were carried out online as permitted by the relevant regulations. After normalization, the process continues where it remains with additional controls. Because of that the flights are closed, it is not possible for us to produce solutions for our customers who are essential to come from abroad to install what the test sample is. Despite everything, we continue where we have left off after a period of 1-2 months with a correct planning. Unfortunately, there are many companies in our sector that are indirectly affected. We hope everything will return to its original state as soon as possible.

In this period where digitalization is increasing day by day, analysis and reporting systems are also gaining importance, especially in businesses that perform high-ability tests like you. Can we get information about the software you use in your furnaces?

Each method in fire tests has its own specific conditions and calculations. Therefore, the appropriate software is needed related to these conditions. The software of the test furnaces is completely related to the control of the furnace, in addition to this, we also use the calculation methods of which we have made the softwares. Test furnaces are controlled by SCADA software which is reorganized

according to our needs and the needs of the relevant test method by Sistem Teknik. In the SCADA software, data related to instantaneous furnace temperatures, furnace pressure, oxygen level and other measurement sensors we specially request are received and these are automatically recorded in the system as raw data in the format how we prefer. As an accredited test laboratory, the data obtained from all of our measuring devices are subject to end-to-end calibration. For this reason, the SCADA software that reads the data from the measuring device is included in the calibration. We have designed all the data we read in SCADA so that can send and read virtual data without the need for PLC software of an external calibration laboratory. This provides us convenience during calibration. Other software we use are designed specifically for testing, apart from the furnace control.

Which feature of Sistem Teknik do you think demonstrates the difference in the sector?

While there was not any company producing fire-resistant furnaces in Turkey, we came across Sistem Teknik. Efectis' knowledge about fire testing over 70 years and the knowledge of industrial furnaces of Sistem Teknik were combined and Turkey's first fire resistance test furnace was produced. Because it was a test

furnace, a very sensitive work was carried out. That furnace is still used in our laboratory. We owe this to the support provided by Sistem Teknik as after sales services. We see Sistem Teknik not only as a furnace manufacturer, but as a partner - a solution partner. In the following years, they continue to serve us with constantly renewed technological solutions in our purpose-oriented special furnace projects. This flexibility that they bring to us allows us to make sure that they will come up with a solution on all projects.

Can you briefly summarize the contributions of periodic maintenance to your company?

Periodic maintenance plays a critical role in the life and performance of a furnace. Especially if it's used in a test lab. This allows us to avoid an unexpected failure during the test. Because the failure of the furnace at the time of the test leads to a very serious time and material loss for our customers. Fire tests are costly and long-term studies. The whole process has to start from the beginning, as an interrupted-half finished test sample cannot be reused. Especially since the samples coming from abroad are produced specially for the test, a failure experienced during the test can cause irreversible problems. The only way to avoid this is to use the correct sub-structure and periodic maintenance.



▲ Efectis's knowledge about fire testing over 70 years and the knowledge of industrial furnaces of Sistem Teknik were combined and Turkey's first fire resistance test furnace was produced.

REMARKABLE INNOVATIONS FOR FUTURE AT VOESTALPINE HPM

Voestalpine Group, which increases its efficiency in its production strategies with its innovative structure every day, builds its motto on the need for its customers to grow as well. Adopting digitalization, the company continues its effectiveness in the global market with its new, normally effective strategies.

We share the happiness of introducing you to an innovative company in the first issue of Furnace News. voestalpine High Performance Metal A.Ş. sees sustainability at the center of development. The voestalpine Group, which successfully continues its production by determining the trends of the industry, provides services in many different industrial areas from energy to aviation, automotive to construction. We have had an enjoyable interview with Sakine Ülker, the Director of Material Processes, to get to know the voestalpine Group, which has been in cooperation with Sistem Teknik for more than 20 years. We have talked about the long-term cooperation with Sistem Teknik and the production strategies in the "new normal" determined by voestalpine Group.

As a well-established company, you have grown successfully over the years. What are the key factors you have adopted as company policy that are effective in this growth?

This point of view is naturally based on the motto "If you want to grow and be continuous, your custom-



▲ Sakine ÜLKER
voestalpine HPM A.Ş.
Director of Material Processes

ers must grow and be continuous." That's how we work. In fact, the rest is a cause-to-end product. If you change your customers to your partner, your all activities have to be customer focused. Efficient and successful management of human resources, correct supply chain, innovation, and lean business management processes, and operational excellence will continue to be the distinctive conditions of today's

business world. We can say that this focus has carried us to today.

Will there be a change in your "new normal" manufacturing strategy?

Of course. In fact, in the last two months, we've been rapidly involved in the process of digitization, which is slowly moving in the form of waves coming from the bottom. We've taken steps depending on this, followed up making systems, reporting, web customer access, etc. online. The new normal has increased this usage area, and it has a big impact to break past habits. We will continue this process that we started before the epidemic even more concentrated. We believe that for simplicity, traceability and operational excellence, all possibilities of the digital world should be used and adapted to production / sales processes.

How many years have you been serving from Sistem Teknik? What kind of products and services do you use?

We have been in contact with Sistem Teknik for more than 20 years based on good communication and cooperation.



voestalpine HPM AE provides services in many different industrial areas, from energy to aviation, from automotive to construction.

Sistem Teknik is the manufacturer of the first hardening furnace produced in Turkey, nitriding furnace and direct heating tempering furnace and many other heat treatment equipment of us, also our partner in the meaning of maintenance. In addition, furnace molybdenum, ceramic, etc. spare parts, heat exchanger systems, hopper etc. We also receive all kinds of services and support for revisions from Sistem Teknik.

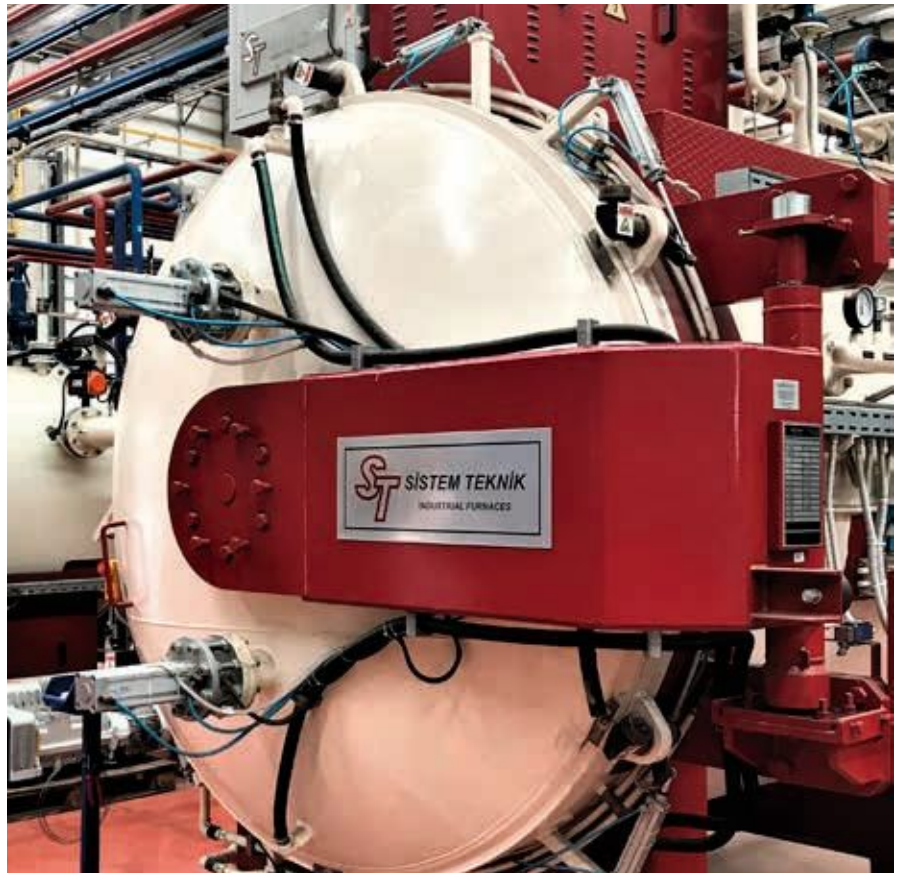
In this context, we would like to hear from you the importance of the service you receive from Sistem Teknik in the operation of your company.

When we commissioned the first vacuum furnace branded Sistem Teknik, Turkey had met recently with vacuum heat treatment technology. The leverage of this cooperation is the harmony of the future perspectives of the two companies and the strategic innovation approaches and moves that are frequently mentioned today, date back 20 years.

Our country's industry has the power and ability to achieve much greater success with its technology, production skills and capacity and trained human resources. I see Sistem Teknik as one of the keystones of this development.

Finally, could you tell us about your goals next year in the hope of leaving behind the effects of this challenging process due to Covid-19?

As Voestalpine HPM A.S. we are part of a large and powerful holding worldwide. In the management of this worldwide crisis process, we have planned and implemented all our steps by saying "our focus is human health". Thanks to the decisions and precautions taken early, even during the most intense period of the epidemic, our businesses have continued to operate and serve uninterruptedly. Considering the effects of the pandemic on the individual



and society, our first-priority approach to the health of our employees and our environment has helped us to provide the environment of trust that is most needed. We have created sustainable business models in the long term so that the current conditions do not turn into an economic crisis. We have had the

opportunity to test and develop our digital talents in difficult and unique conditions.

We believe that our country and the world have the knowledge to overcome this crisis period, and as voestalpine, we will be the carrier of the exit by developing, learning and getting stronger from this process.

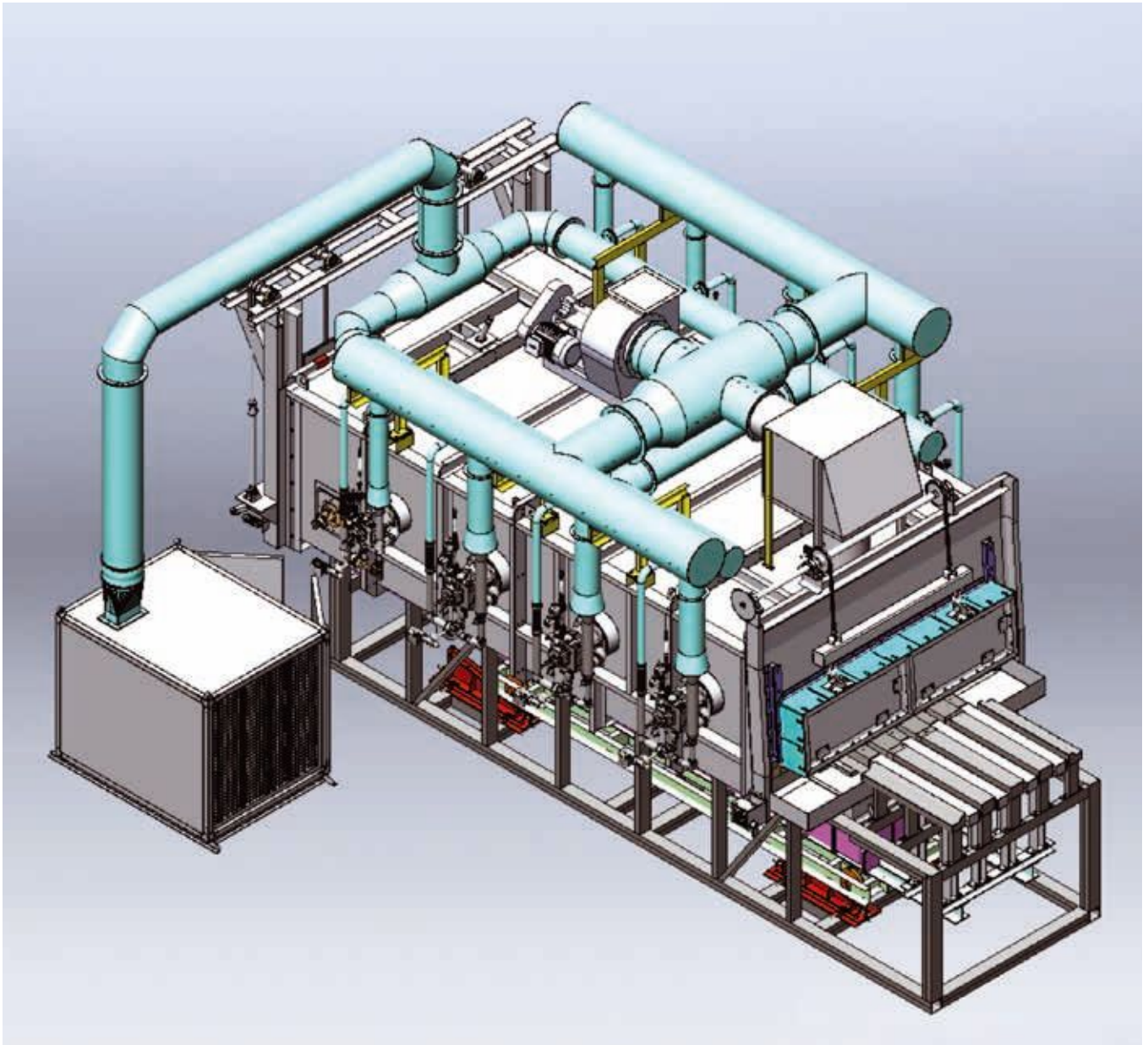


"In the management of this worldwide crisis process, we have planned and implemented all our steps by saying "our focus is human health".



RUSSIA PASSENGER!

You know what is the most effective way to stand out from your competitors? Let's give the answer immediately; Working with Sistem Teknik. The order of our manufacturer customer in Russia is one of the best examples of this.



The production of the leaf spring hardening furnace with 3 tons / hour heating capacity, ordered by the customer of Sistem Teknik, the leaf spring manufacturer in Russia, has been completed and the test phase has started. Within the scope of the project, the manufacturer company is prepar-

ing to come to the fore in the sector by leaving its competitors behind with the furnace heating system that will be tested and shipped in July.

In the system, which has flame-free burning feature, high energy efficiency, heating is provided with self-recuperative burners, the

system automatically switches to flameless burning mode when the furnace goes above 850 ° C and there is no open flame in the furnace. In this way, the system, which provides high homogeneity and low flue gas and NOx emissions, is available both economically and eco-friendly.

Our products that are developed in our R&D center enable us to produce **innovative and reliable solutions** for the lubrication requirements of all sectors where industrial furnaces are being used.

Martempering
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Fast
Quenching Oils

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Oils

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SUCCESS OF THE AVIATION SECTOR IS IN THE SKIES!

Sistem Teknik, which has achieved significant success in the projects carried out in the aviation sector, has completed the installation of the All-Metal vertical vacuum heat treatment furnace ordered.

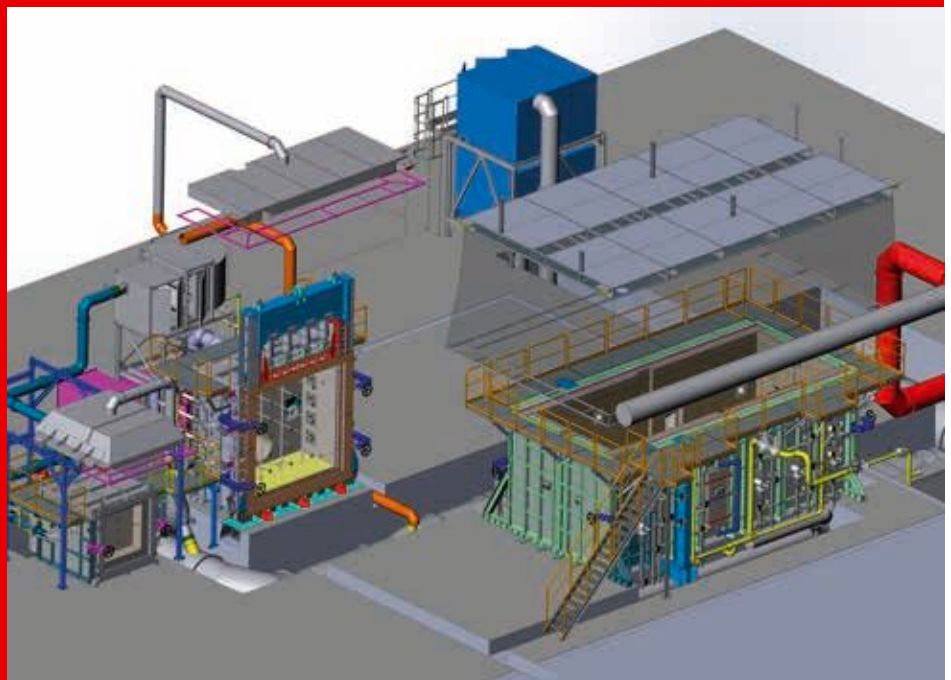
The shipment and installation of the All-Metal vertical vacuum heat treatment furnace, ordered by the customer of Sistem Teknik, operating in the aviation sector, have been carried out. The furnace, which is loaded vertically and is specially sized according to the customer's part dimensions, can reach a vacuum level of 10-6 mbar and a process temperature of 1.350 °C. Argon or nitrogen can be chosen as the cooling gas. The furnace offers a smooth heat treatment in terms of process control and result with full compliance with AMS 2750-E and NADCAP standards.



DUBAI ATTACK BY SISTEM TEKNIK

Sistem Teknik, which has achieved worldwide success with its production, has signed a cooperation for the fire test laboratory to be established in Dubai this time.

Sistem Teknik has added a new project to its working portfolio recently. The shipment of the first phase of the order for the Fire Test Furnaces consisting of 3 phases belonging to the fire test laboratory to be established in Dubai has been completed. The details of the project include the following information: The project includes 1 indicator, 1 vertical, 1 combi oven, gas cleaning and smoke collection systems. The combi furnace is one of the largest in its field with its useful volume and test area. This furnace also has 22 MegaWatt installed heating power.





Gaskets / Sealing Materials
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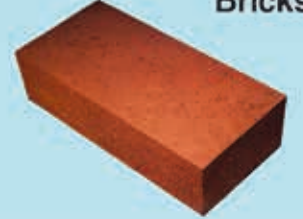
- JM™ Bricks
- TJM™ Bricks
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- Superwool® Plus
- Superwool® HT



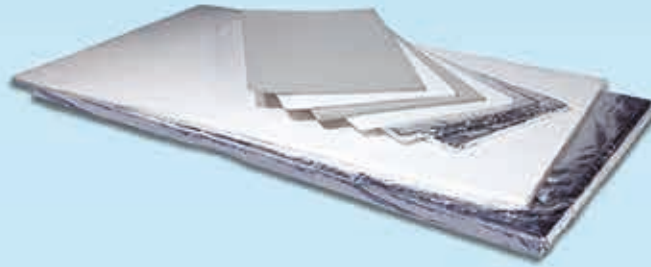
Isolmos Insulating Bricks



Pyro-Bloc® Modules



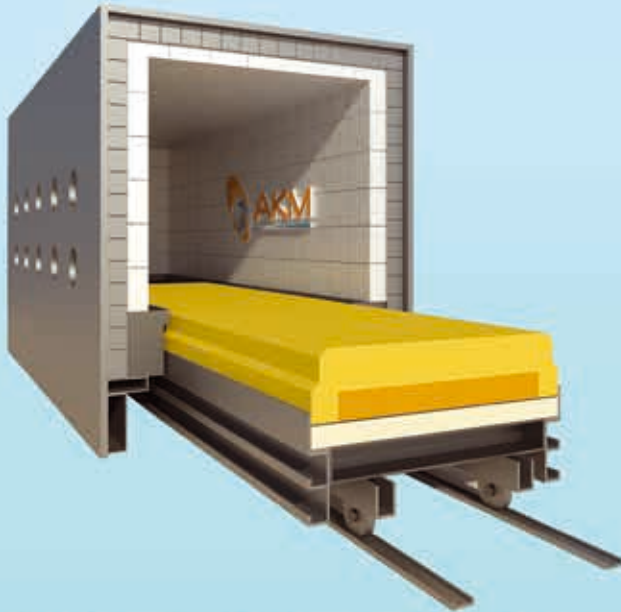
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Anchors



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UNI-PUMP RF-60, UNI-PUMP RF-65, UNI-PUMP ML-69C

Insulating Monolithic Refractories

UNI-PUMP RF 45L, UNI-CAST LW-60G, UNI-CAST LW-80G

Billet Annealing Furnace IFB Application



Reheating Furnace Pyro-Bloc® Application



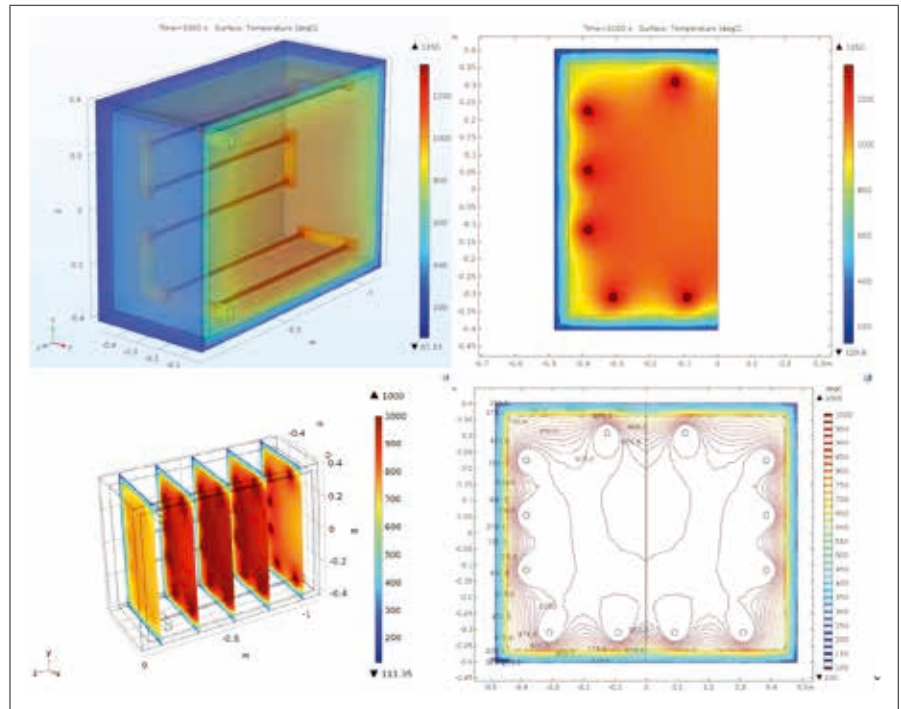
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AIO (ALL IN ONE) VACUUM FURNACES WITH INTENSIVE ANALYSIS AND TEST SYSTEM

Do you know that you can save time with AIO LPC Furnaces, which bear Sistem Teknik's signature, with high energy efficiency? We have examined the high technology AIO LPC Furnaces for you that give repeatable results at the end of each process.

There are many kinds of heat treatment techniques which allow to get better quality for certain kind of steel. With developing technology, these techniques require specialization for the usage area. Especially, aviation and defence industry have a certain criterion which demands special experience on this field. Sistem Teknik Industrial Furnaces comes to the fore on that kind of applications, specialized with the processes which includes vacuum. As a result of the R&D researches which are also granted by TÜBİTAK, Sistem Teknik has introduced the new kind of vacuum furnaces called AIO and has added them to its product range. This vacuum furnace allows to make annealing, tempering, austempering, martempering, gas hardening, oil hardening and also low pressure carburizing inside it. The useful dimensions change from 300x500x300 mm to 900x1500x900 mm. Depending



on the useful dimensions, the total material handling capacity also changes from 80 kg to 1000 kg. The working temperature range of the furnace is between 800° - 1300°C and the maximum temperature can

be achieved with this furnace is 1350°C. With patterned distribution of the graphite heating elements, the temperature homogeneity could be achieved as $\pm 5^\circ\text{C}$ for empty furnace. With this ability, the furnace can be classified as Class II furnace with regard to AMS 2750 standard. This situation is verified with both numerical and experimental studies as illustrated below.

The hot zone temperature of the furnace is controlled by S Type thermocouples and the workpiece temperature can be monitored by multiple N type thermocouples in order to make controlled heat treatment. The workpiece can be cooled by either with gas or with oil. The gas cooling can be done up to 6 bar (Abs.) with nitrogen and argon. The

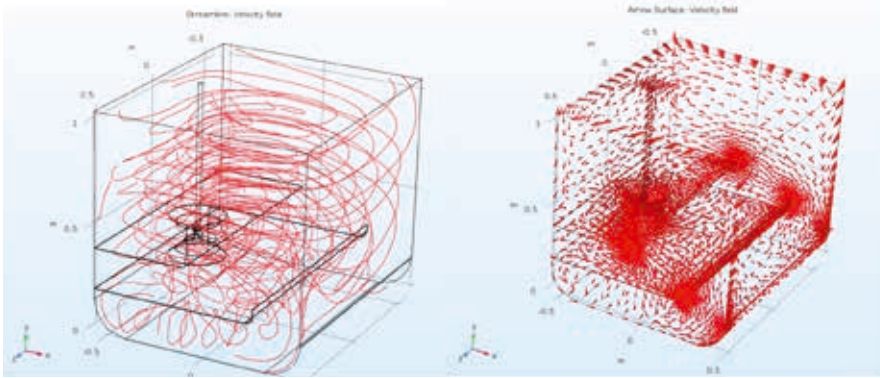


Technology For Fire Resistance Tests

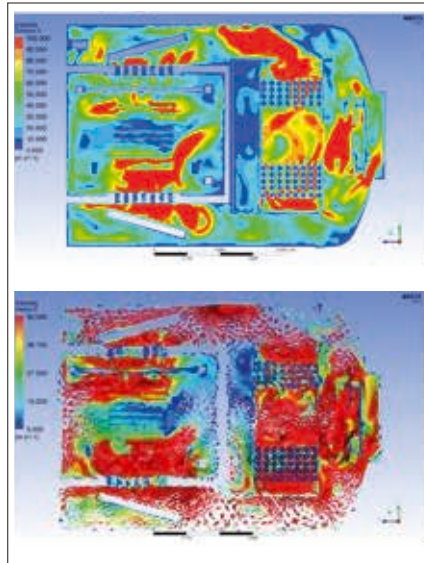
Capable of:

ISO 834, BS EN 1363-1
Hydrocarbon, RWS, HCM
and unconventional curves



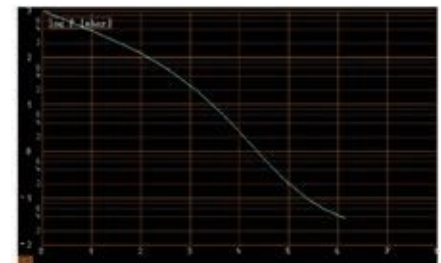
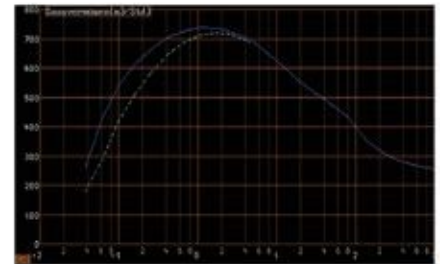


empty furnace can be cooled down with nitrogen in less than 25 minutes. With the directional circulation of inert gas inside the furnace with 45 kW circulation fan, homogenous cooling can be achieved. However, the heat transfer coefficient for gas quenching is not enough for hardening process of the thick workpieces. In these cases, AIO furnace offers oil quenching. Thanks to the high heat transfer coefficient supplied by the oil quenching, the workpiece whose thickness is higher than 20 mm can be hardened. The circulation of gas and oil are carefully designed with the help of CFD simulations as shown below. We can list the critical points as follows; the opening angle for gas quenching, the area of openings on the hot-zone, the CFC insulation thickness, the workpiece pattern plan inside the hot-zone, cooling



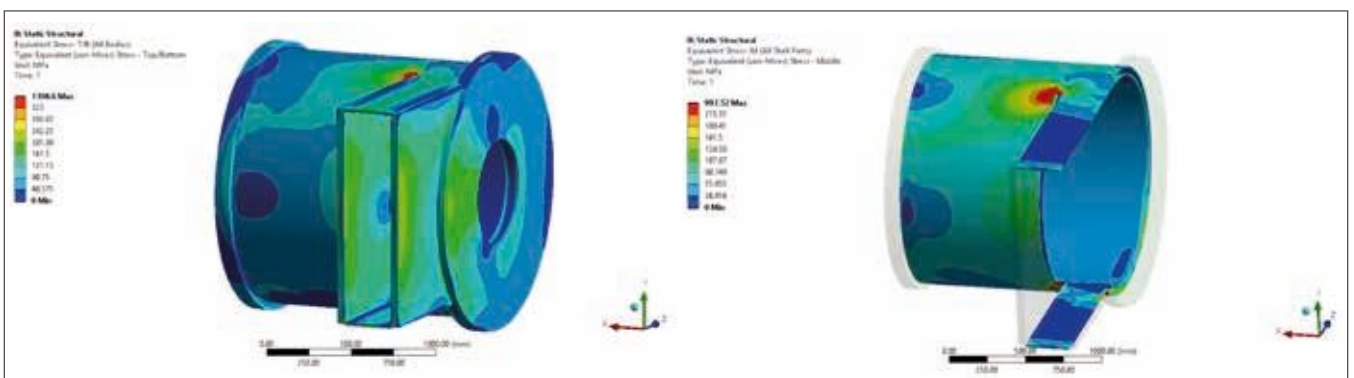
heat exchanger and circulation fan parameters are critical points. In CFD simulation these variables are changed and parametric studies are still being done to find the optimum solution. In the circumstances of oil quenching, the oil

height, circulator blade design and the router plate geometry are the critical points. To achieve maximum agitation and thus, maximum cooling effect, these parameters also considered in the CFD studies. The maximum vacuum value for the furnace is 5×10^{-2} mbar and the time for to catch the vacuum is less than 30 minutes for dry and clean furnace. The leak rate of the furnace is below 5×10^{-3} mbar.L/s. For example, the required time to achieve 5×10^{-2} mbar in 300x500x300 empty dry and clean furnace are simulated. The results show that with proper vacuum equipment, the resulting time equals nearly 6 minutes.



“ The maximum vacuum value for the oven is 5×10^{-2} mbar and the vacuum capture time is recorded in less than 30 minutes for dry and clean ovens.

Furnace chamber is also designed by using static analysis. The static analysis is performed to provide the maximal safety during the process. The welding points and the thickness of the furnace chamber are carefully calculated and certified.





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THE AIM OF SISTEM TEKNIK IS TO RECEIVE THE PERFECTION IN AFTER SALES SERVICES

We are expanding our focus point through our adaptation to rapidly developing technology. We work not only on production and design but also on distribution and after sales services with non-compromise in the quality.

Economic and technological developments in the world quickly turn country markets into world markets, which puts businesses in an increasingly competitive environment. The consciousness level of the consumers increases day by day. Products that create more value not only in design and production but also in distribution and after sales services are effective in the product choice of the consumers. Today, it is a known fact that the distribution and after-sales service quality of a product play a key role in the purchasing decisions of consumers.

After-sales services emerge as efforts to identify any problems that may arise during product use and to provide solutions for them. Our department continues its activities directly under our Board of Management. The services we provide with our After-Sales Services Department stand out as our most important characteristic for the permanence of our brand and creating loyal customers.

7/24 Technical Service

As Sistem Teknik Industrial Furnaces, we provide 7/24 Technical Service.

Our key indicator in our services is the quality perceived by the customer. We know that it is a very important factor for our customers to continue to benefit from the furnaces after the service provided.



Vacuum pump is a very important device used in every sector. Using the right vacuum pump system in your factory or production facility saves a lot of additional costs.

As toRRvaC, our business approach is first to identify the problems and needs, to find the vacuum pump and system suitable for our customers, and then to integrate the system into your production facility. The critical point here is to determine the right vacuum pump system for your needs.

ToRRvac is an authorized sales and service points all over Turkey of Agilent, Pv, brands such as Ulvac.

Having a high level of expertise in maintenance, repair and service services, toRRvaC serves its customers with a "full service concept". Some of the services we provide:

- Vacuum pump maintenance, repair and installation
- Vacuum system design
- Equipment supply
- Leak detection with helium detector
- Creating process prescriptions and system control by performing gas analysis
- Maintenance, repair and calibration of helium detectors

We also provide services to world-wide known brands such as Edwards, Leybold, Ulvac, Pfeiffer, Busch, Inficon.

The vacuum pumps and helium detectors that are used in the production facilities of Sistem Teknik, Tüpraş, THY, Tubitak, Roketsan, Algida, Arçelik, Schneider, Best Transformatör, Valeo, Vastaş Vana which are ones of the biggest firms in Turkey, are under assurance of ToRRvac.



For this, we keep in close contact with our customers and periodically check the condition of our furnaces. In our service, we inspect the root cause of the malfunction, and give detailed feedback and reports to our customers about the status of the furnace performance for the future. In this context, we provide our services as a department that constantly improves itself and improves solution-oriented strategies with the information which we receive from our customers for predictive maintenance.

"We provide solutions with our revision and service"

I would like to give you an example from a revision which we have made this year.

We have been informed by our customer operating in the aviation industry since 2013 in Bursa Free Trade Zone that the furnace has not passed the vacuum test in the Vacuum Leak Tests which are performed in our Horizontal Vacuum Heat Treatment and Brazing Furnace. The service, we have provided based on our customer's Vacuum Leak Test request, has been given and a leakage in the sealing elements was detected by our technical team; the seals have been required to be changed. The relative materials have been supplied immediately and the changing issue have been completed quickly. However, it has been noticed that removing the sealing has not been sufficient.

As a result of the detailed investigation we have performed, it has been understood that the Hot Zone has



FOR SERVICE PERFECTION;

It is obviously known that the "customer" is the most important reason for the existence of a business. Businesses can only create customer loyalty by providing excellent customer service. However, it may not always be possible to provide a perfect service. This is because the service is provided by "people". We are aware that it is difficult to achieve a certain standard in people's behavior and attitudes. For this, we adopt the importance and method of providing perfect service for all our employees and service organization. We work hard in training and field activities to achieve perfection.

been damaged due to the melting of the material in the furnace. The melted material has been caused excessive contamination in the furnace. Therefore, in order not to aggrieve our customer, who will be inspected in the near future, our team has supplied the materials in the fastest way. They have made the furnace ready for inspection by changing the resistances, insula-

tion plates and ceramics. After all revisions and works, our furnace has passed TUS, SAT and leak rate tests in accordance with AMS2750 standards. Then, NAD-CAP inspection, which is vital for our customer, has also ended without any problem.

Service means undertaking issues as yours not as customers:

As a result of the revision and service; efficiency has been increased and unnecessary energy consumption has been prevented. The "thank you" e-mail that we received from our customers is our greatest source of motivation. From the point of view "Service is a heartily work"; we do not believe that any activity that is not carried out from the heart will have the desired results.



In our service, we inspect the root cause of the malfunction, and give detailed feedback and reports to our customers about the status of the furnace performance.

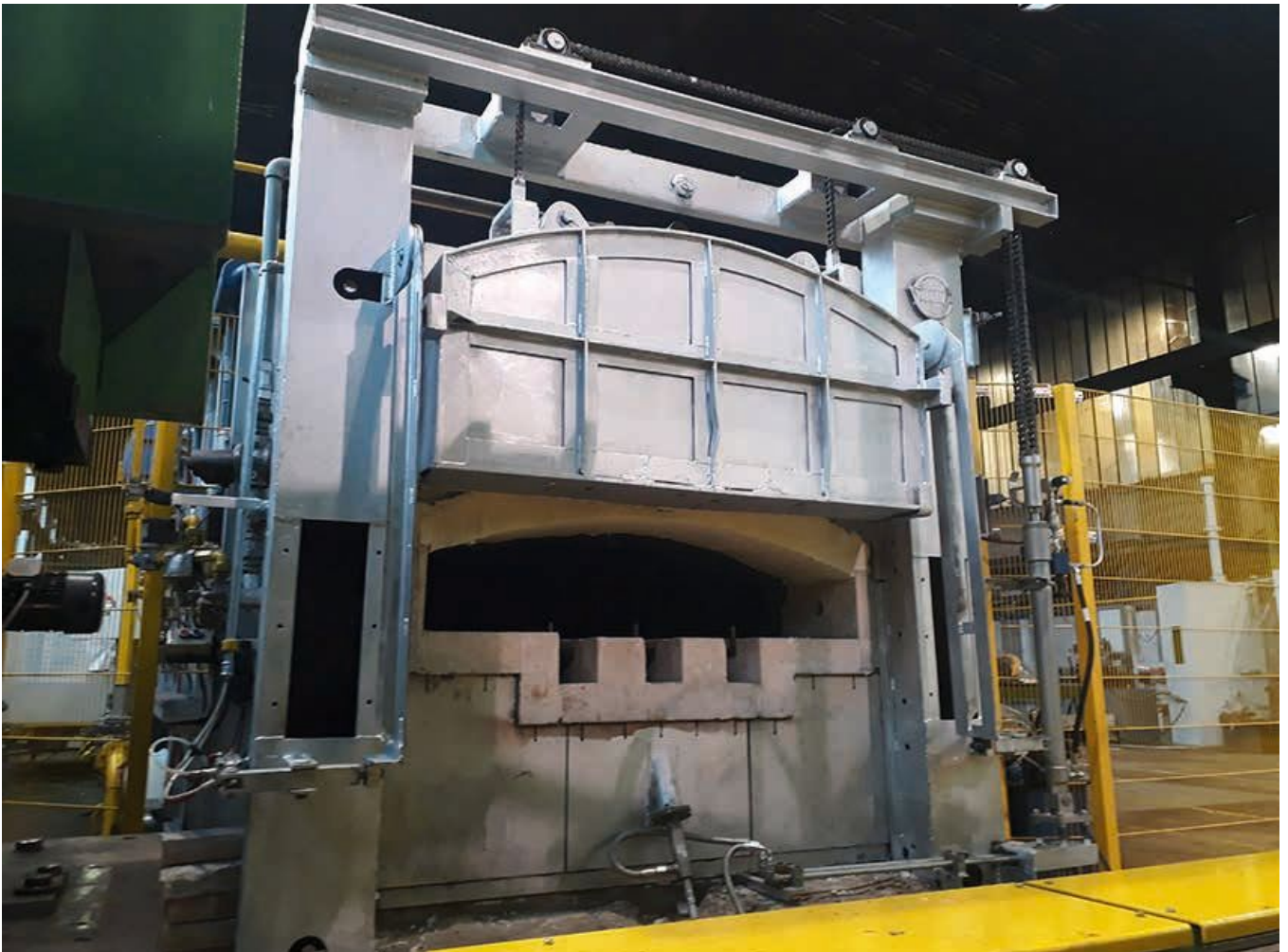
Vacuum Technology for Aviation



Meeting your heat treatment requirements,
in compliance with **AMS2750-E** and **NADCAP** standards.

WITH FURNACE MODERNIZATION, **SARVION** INCREASES THE EFFICIENCY OF ITS CUSTOMERS

With the fact that there is a strong team and quality working system behind every success, we have examined all the details of the furnace modernization works carried out by Sarvion.



Sarvion conducts modernization and upgrading of existing furnaces successfully. The base of this success is 40 years of furnace experience, customer minded team on mechanics, electric and software. In the past year Sarvion accomplished many furnace modernization and upgrading projects according to new norms and requirements in Germany, Russia, Netherland, UK and Turkey. Environmental emission standards,

facility and equipment safety requirements, the importance of energy efficiency and CE marking old furnaces became more and more important nowadays. With successful upgrading of old furnaces our Customers gain competitive advantage without new furnace investment. As an example one of our customer in Germany has gained big advantage in many aspects as a result of a renovation done by Sarvion on a very

old heat treatment line. Our customer produces parts for the automotive industry. As a result of the firm's renovation investment, the return on investment can be summarized as follows;

1- Energy Efficiency;

Considering that the furnace temperature is above 900°C and that the material which is carried on the walking beam was constantly loaded by an operator through the open



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door, a considerable amount of heat was being lost all the time.

The door system and the walking beam at exit were completely re-designed according to robot operation and sealed fully with hydraulic system and pneumatic clamps. By this way, the door opens and closes quickly only when the material is ready. After the door is closed, the door is locked with pneumatic pressure systems to prevent heat losses. As a result of the revision, energy consumption reduced 5%.

2- Increased production capacity;

Material unloading with robot and new software integration with the equipment in the system, increased production capacity considerably, this also leads to decrease of energy consumption per unit piece.

3- Quality increase;

With the pyrometer added to the furnace unloading system, the part temperature has been measured one by one inside the furnace. This also increased efficiency while decreasing decarburization. In addition, after forming operations, the part temperature was measured again before hardening, and the parts that are not at the proper temperature were separated to assure the quality of the product.

4- Decrease in NOx emissions;

In terms of the environment, flue gas emissions are also very important and mandatory to fulfill new requirements. Due to the heat losses before renovation, the furnace was heated up to higher temperatures than necessary. By preventing door heat losses, the oven operating temperature was lowered by 30 °C, thus reducing NOx emissions as well as decarb.

5- Decrease in labor costs;

Another gain of our customer was that, the operators working in heavy conditions in front of the furnace and the press were moved to more

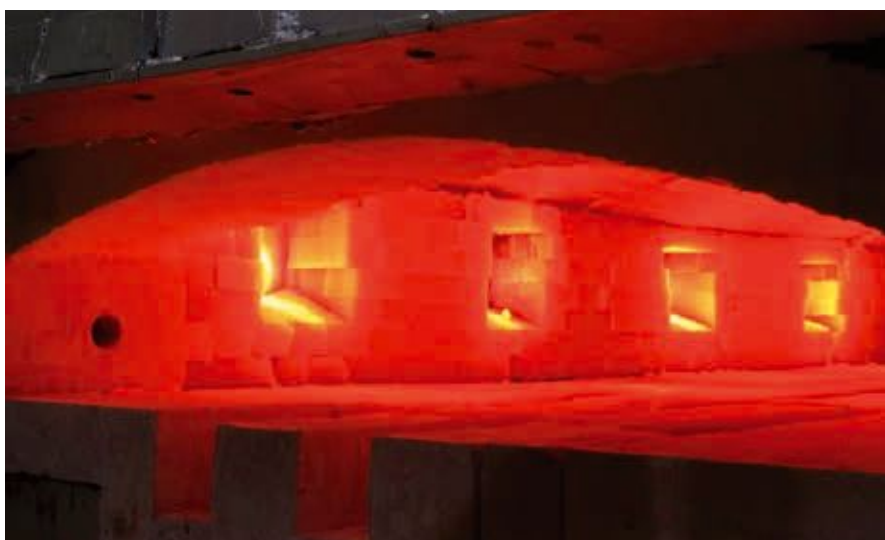


comfortable jobs as a result of the replacing the operators working in unloading region with 24/7 shifts. On the other hand production losses due to operator shortages have been eliminated and production costs per unit have been reduced.

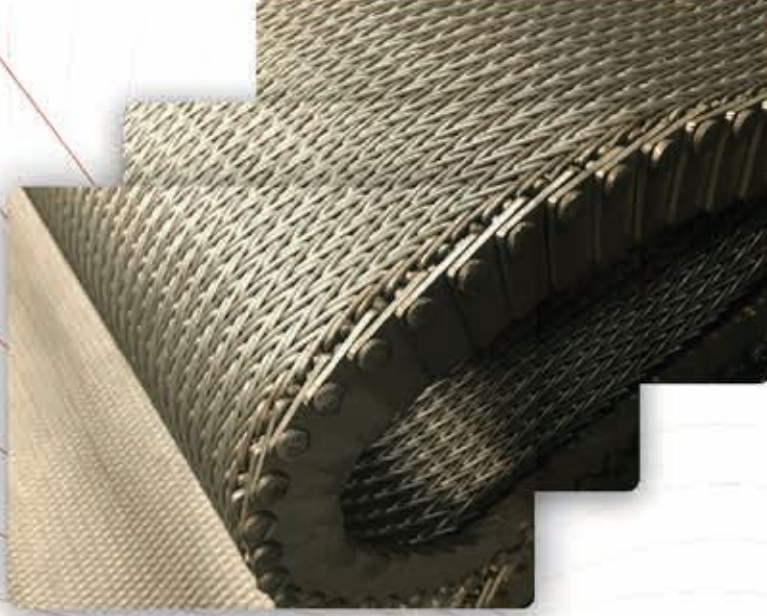
As a result, customer and employee satisfaction was achieved highly. With production increase, labor cost reduction, increased OEE. By investing on your old furnaces you can get more than you would imagine with Sarvion expertise.



"By furnace modernization with Sarvion, you can increase quality, production capacity and energy efficiency; while decreasing production costs and NOx emissions."



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WE BELIEVE IN IMPORTANCE OF VOCATIONAL & TECHNICAL EDUCATION FOR FUTURE OF INDUSTRY

We proudly say that Mehmet Özdeşlik is the biggest supporter of Hatice Bayraktar Vocational and Technical Anatolian High School, which is the education center of brilliant talented young people. What has been done? Are young people and teachers satisfied with the support provided? We have asked; School Manager Kadir Yalçın has explained it sincerely.



Hatice Bayraktar Vocational and Technical Anatolian High School, which provides education in the field of machinery and information technologies is one of the most valuable educational institutions of our country. The institution, which supports the individual development of young people and contributes to the employment of the country, has been providing training since 2007. The high school, which has many advantages due to its location in the Organized Industrial Zone, currently has 500 students, 42 teachers and 4 management staff. One of the biggest supporters of the Anatolian High School, whose foundations were laid in 2006 by Bayraktar Holding Board Chairman İzzet Bayraktar, is Mehmet Özdeşlik, Chairman of Board of Sistem Teknik A.Ş. Kadir Yalçın, the director of Anatolian High School, has explained this support, the current situation of the successful school and of course more for our magazine readers. School principal Yalçın has started his words as fol-

lows: "The vast majority of our students study in the CNC and Industrial Mold branches of the machine technology field. In the field of informatics, our students receive training in Database Programming."

A first in school history!

Kadir Yalçın has emphasized that it is very important for Sistem Teknik to provide internship opportunities especially to senior students; "With Sistem Teknik, we collaborated on improving the physical environment of our school, encouraging successful students, and taking precautions in line with the COVID-19 outbreak," he has said. Yalçın has stated that Mehmet Özdeşlik has visited the school in the 2018-2019 academic year; "He has stated that he could give scholarships to our successful students in the meetings and in line with this idea, he has given scholarships to 12 students, which is a first in the history of our school. This idea is a factor in motivating our students for success" and has expressed his

happiness. Stating that thanks to Mr. Özdeşlik at that time, the teachers' room has been also renovated and 1000 face shields have been donated to the school against the Covid-19 epidemic, School Director Kadir Yalçın has continued his words as follows: "The gains of the support given to our successful students are quite high. This has been effective in choosing our school for successful 8th grade students who are in the transition period to secondary education. Our teachers are happy that the teachers' room has been renovated and made to meet every need of our teachers. Undoubtedly, all these studies will reflect positively on the educational activities in our school."

Intern students under the supervision of teachers

Students who also have the opportunity to do internships at Sistem Teknik company are kept under constant supervision by Anatolian High School's coordinator teachers. The experienced educator expresses the opinions of the teachers as follows; "Our coordinator teachers express their satisfaction for the support which Sistem Teknik provides to our intern students. Our teachers who have come to our school during the seminar period can not hide their astonishment when they see the renovated teachers' room and express that they are happy with the value given to them. Teachers from other schools also mentions that there is no other example in Turkey as beautiful as the renovated teachers room that we have."

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and
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THE LEADER IN THE SECTOR OF THE FIRE RESISTANCE TEST FURNACES: SISTEM TEKNIK

As Sistem Teknik, we remain our leadership in the fire resistance test furnaces in the sector through effective P&D work (production and development). We always carry out our tests, record reports and offer our customers more preferable and quality products with our desire to achieve better.

Sistem Teknik, in the field of fire test furnaces, we remain our leadership in this sector and we continue our P&D studies without slowing down in order to catch the better. In order to provide long-lasting and durable products to our customers, we carry out dozens of tests in our factory in accordance with international standards. In our endless journey of development, we always lead the sector with the aim of "reaching the better". So then, what do these tests include? In this article, in which we examine the fire resistance test furnaces, let's first give a quick glance over what the fire resistance test furnaces are and where they are used.

As Sistem Teknik, in the field of fire test furnaces, we remain our leadership in this sector and we continue our P&D studies without slowing down in order to catch the better. In order to provide long-lasting and durable products to our customers, we carry out dozens of tests in our factory in accordance with international standards. In our end-



ST Fire Test Furnace (Denmark)



ST Fire Test Furnace (Holland)



ST Fire Test Furnace (Germany)



ST Fire Test Furnace (France)

less journey of development, we always lead the sector with the aim of "reaching the better". So then, what do these tests include? In this article, in which we examine the fire resistance test furnaces, let's first give a quick glance over what the fire resistance test furnaces are and where

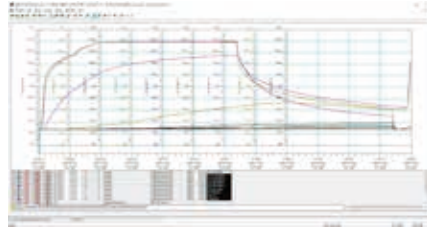
they are used. Furnaces designed to perform fire resistance and smoke leakage tests on vertical and horizontal planes of walls, floors, doors, windows, beam columns and similar building components and building materials can be defined as fire resistance test furnaces. As it is known,



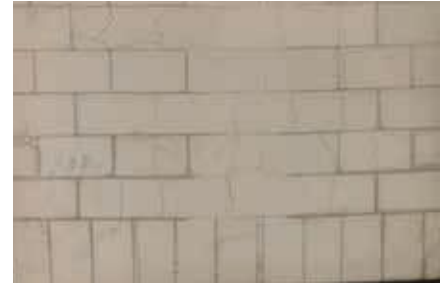
Door Test



Wall Panel Test



Refractor Brick Test



obtaining a certificate of conformity from these laboratories has become compulsory for every manufacturer that produces the above mentioned products on the way to standardization. These furnaces have also made important contributions to the product development activities of the manufacturers in the sector. Sistem Teknik Fire Furnaces, which have international certificates, conformity with standards and design up to the customer request, are the choice of many fire test laboratories in more than 10 countries. High temperature resistant refractory bricks and concrete are two of the main components used in the production of these furnaces. Fire test furnaces operate under high temperature and hard conditions. The main problems encountered for these furnaces are sudden temperature increase or thermal shock depending on the cooling. Due to these situations, cracks are seen in refractory bricks or concretes, and deformations occur. For this reason, in order to minimize these problems and to determine more durable materials or applications, our factory carry out various tests in accordance with international standards with our P&D and Quality Departments. In these tests, the working conditions of the furnaces are simulated at a realistic scale, and the resistance of the products and applications, which are used, are measured and recorded by reporting. These test results and reports are a kind of passport of the product and export operations are done based on these results.

A vital step to reach the better: Our tests!

Dozens of tests have been carried

out in our company in order to improve our applications together with our products and they are still being done. According to the experience gained from these tests, we aim to keep being the leader in the sector and to lead it. Tests of materials supplied from many domestic and foreign companies were carried out with the test furnaces and assemblies which we have created in our company. We aim to be the first choice of customers by providing quality with the right product and-right application.

Our test methods to achieve the perfect result

In order to carry out the tests shown below, the insulation section of the fire test furnaces has been assembled exactly in the module. Then, thermocouple holes have been drilled at certain intervals from the heat-treated surface of the refractory material, and the temperature changes of the material have been observed with the recorder from these points. The insulation performance of the materials has been measured by drawing the graphics. These prepared test modules have been tested with a furnace at an average temperature of 1200 °C. The results have been recorded by putting many tests such as long

waiting at the same temperature, slow cooling, fast cooling. Different tests have been applied to the test modules which have previously given good results and the change in the results has been observed. As for the deformed materials, tests have been done by applying coating to the surfaces which are prepared with different mixtures. The application of the bricks has been changed and its effect on the result has been observed. The photos of these tests are given below. As a result, these tests strengthen our ability to produce more accurate, preferable and quality products for the customer. It is a fact that development is a boundless phenomenon. As Sistem Teknik, we continue down the road without getting tired and slowing down with our motto, "continuous development." Thanks to our commitment for studying and our principles, we always aim to achieve better.



Refractor Concrete Test





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