SISTEM TEKNIK ISSUE
OCTOBER - NOVEMBER - DECEMBER 2021 ISSUE 6

INDUSTRIAL FURNACES

TECHNOLOGY NEWS

6 In Nitrocarburizing New Trend QPQ

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36 Fire Test Laboratory in Slovenia by Sistem Teknik

OUR SUCCESS CONTINUES INCREASING

Dear valuable readers,

We are here with the 6th issue of our magazine. In this issue, you will find many new technical topics like composite curing by infrared heating, nitro carburizing with new trend QPQ technology, teat treatment of copper tubes.

I hope some of this topics would be interesting for you.

In the mean time I would like to talk about some shipments we have done in the last 3 months.

We shipped, installed and commissioned the Isothermal Heat Treatment Plant we have made for Kaçmazlar company located at Konya.

Kaçmazlar is one of the biggest gear manufacturers in Turkey for heavy trucks and heavy machines. By this fully automated, continuous working heat treatment line, energy and labor costs have decreased about 30%.

Our second successful acceptance is Bell Type Copper Heat Treatment Furnace with Protective Atmosphere for a well-established for a well-established company manufacturing copper sheet coils. With the integrated protective atmosphere gas generator, operation cost decreased, product quality and capacity increased.

Our third successful shipment was the diaphragm spring heat treatment line for Automotive clutches. This is our industry 4.0 ready product that works without an operator asistance.

Fourth, we have finished all the tests of a special furnace that heats the titanium and very special alloy fasteners for aerospace industry. The parts that were heat treated in our factory passed all the comprehensive tests and analyzes successfully. It is ready to be transferred to an international company.

Our fifth successful shipment was to Canada, we produced and sent a fire resistance test furnace, which we get the order under the pandemic conditions without having any face to face contact. Acceptance tests was also made by online video and test results sharing.

In our sixth successful acceptance, large scale all metal vacuum brazing furnace for Aircraft Industry full filing all the difficult requirements of aviation industry and AMS2750-F standard.

On this occasion, I wish you health, peace and very successful business.

Mehmet Özdeşlik
Sistem Teknik A.Ş.
Group Chairman of the Board
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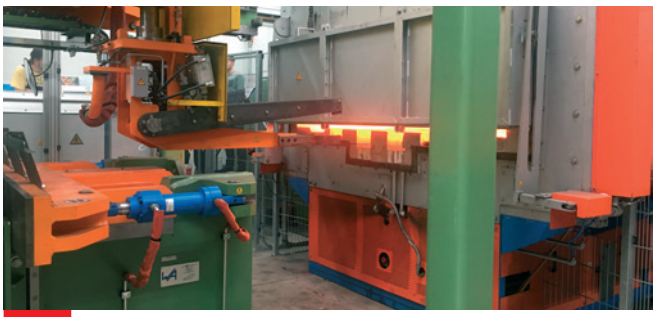

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INFRARED COMPOSITE PLATE CURING FURNACE

Alper KELEŞOĞLU - Technology Development and Innovation Manager

Today, most of the scientific researches in the aviation and automotive industry are directed to reduce the mass of the materials of the equipment used in such areas and to save fuel. In this direction, researchers examined various materials and especially focused on high-strength thermoset components. Although the thermoset components under consideration are basically in the class of composite materials, they have a skeleton structure in which organic-based plastic materials form the main phase and are strengthened by fibers. In order for the obtained composite components to reach the desired shape from the raw material, they must be subjected to a preheating process. Afterwards, the material reaches its final form after undergoing other shaping processes such as thermoforming and pressing. To give an example of the two shaping processes mentioned, composite materials have started to be preferred instead of aluminum alloys in the aviation sector in aircraft fan hoods, door frames, flight control panel and its intermediate equipment and many body chassis structural components. In the automobile industry, many hardware from battery carrier containers to door handles, from handbrake holding apparatus to vehicle chest cover are manufactured from composite materials. Our preheating furnace, which emerged as a result of our R&D project, is designed to be used in other sectors that need heat treatment in composite materials, especially in the aviation and automotive sectors.

Heating with Infrared

Infrared beams are in the wavelength range of 0.76 to 300 micrometers. The beams in this frequency range can effectively heat the surfaces they are in contact with, thanks to the high energy they carry. The beams emitting from infrared heaters can be absorbed, transmitted or reflected back on the material, as shown in Figure 1. In order to provide effective heat transfer, the material must absorb as much of the emitted beams as possible.

In the infrared furnace design, each of the infrared heater parameters given in Table 1 is taken into account. Types of infrared heaters that can be selected according to the targeted temperature and the effective wavelength range in the composite material to be treated are classified. Depending on the color of the composite material, the heater is further sub classified in order to achieve maximum heat transfer.

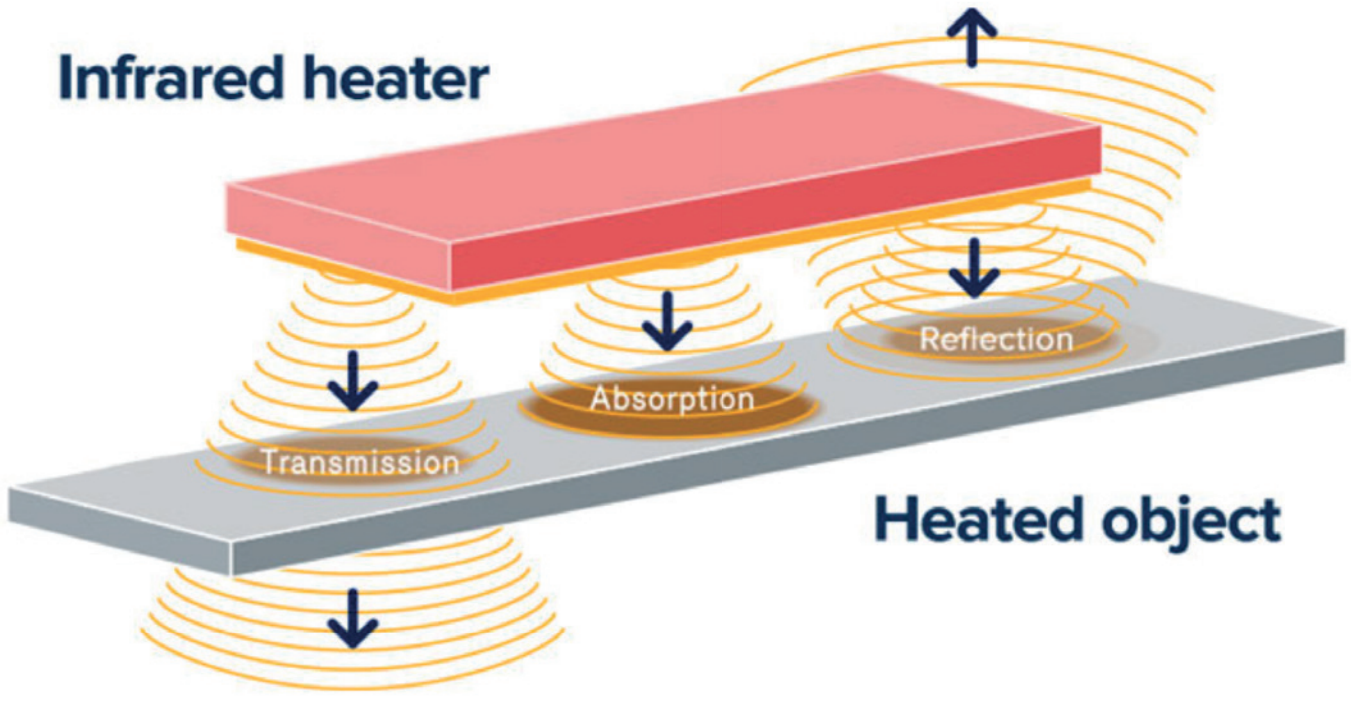

Figure 1- Infrared Beam and Material Interaction [1].

For the final heater selection, the radiant efficiency of the heater is evaluated by considering the energy efficiency. Radiant efficiency is an indicator of how much of the heat energy provided by the infrared heater can be transferred efficiently, depending on the distance between the material and the heater [3]. Finally, the physical durability of the heater is evaluated according to the operating conditions.

Parameter	Metal Sheated	Quartz Tube	Halogen Lamp	Catalytic	Flat Panel	Ceramic
Radiant Efficiency (%)	56	61	86	80	88	96
Effective Wavelength Range (µm)	2,5-3	1,6-1,9	1-1,2	2-5	2,5-6	2-10
Physical Durability	High	Low	Very Low	High	Medium	Medium
Heating/ Cooling Response Time	Slow	Fast	Very Fast	Very Slow	Slow	Slow
Maximum Temperature (°F)	1400	1600	4000	800	1600	1300
Color Sensitivity	Low	Low	High	Low	Low	Low

Table 1-General Information of Infrared Heaters [2].

Composite Plate Curing Furnace

For the composite plate curing furnace, the parameters of the infrared heaters given under the infrared heating heading have been examined in detail. As a result of the evaluation, it was concluded that ceramic infrared heaters are ideal for the application. In order to increase the radiant efficiency, concave shaped ceramic heaters were used instead of the flat ceramic heaters given in Figure 2. Concave heaters have been preferred due to their ability to focus the effective heat transfer area between the material and the heater, compared to flat shaped heaters due to their structure. It is aimed to further increase the thermal power that will reach the material by including the reflectors with high reflection coefficient given in Figure 3 in order to send the reflected beams back onto the material.

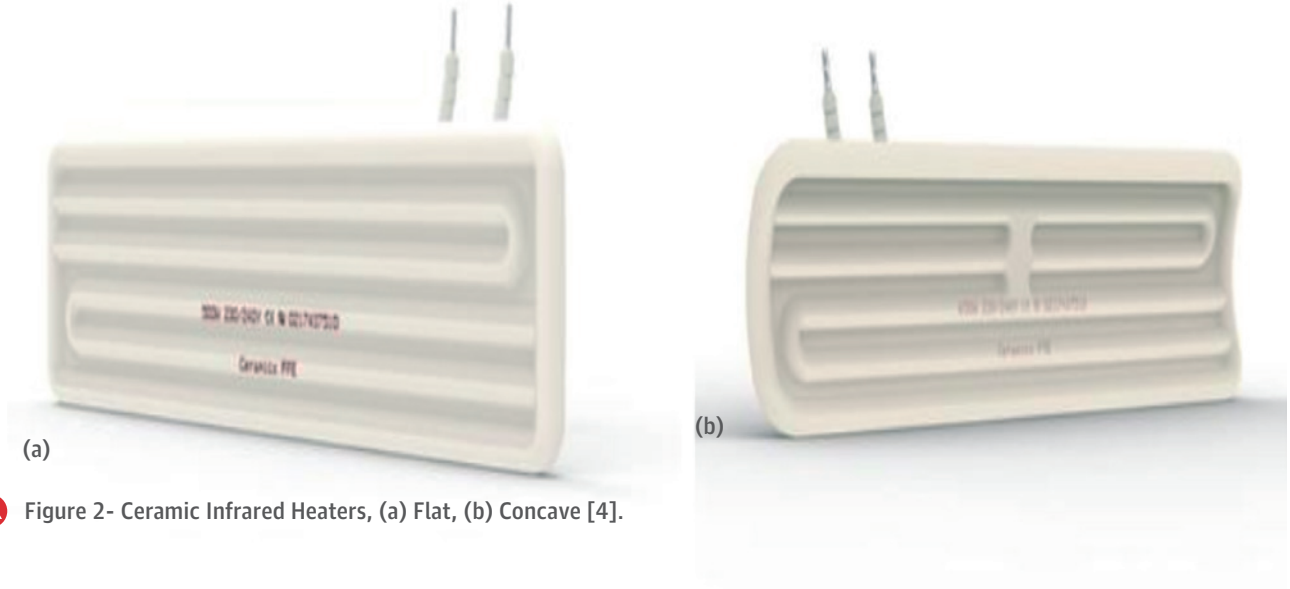

Figure 2- Ceramic Infrared Heaters, (a) Flat, (b) Concave [4].

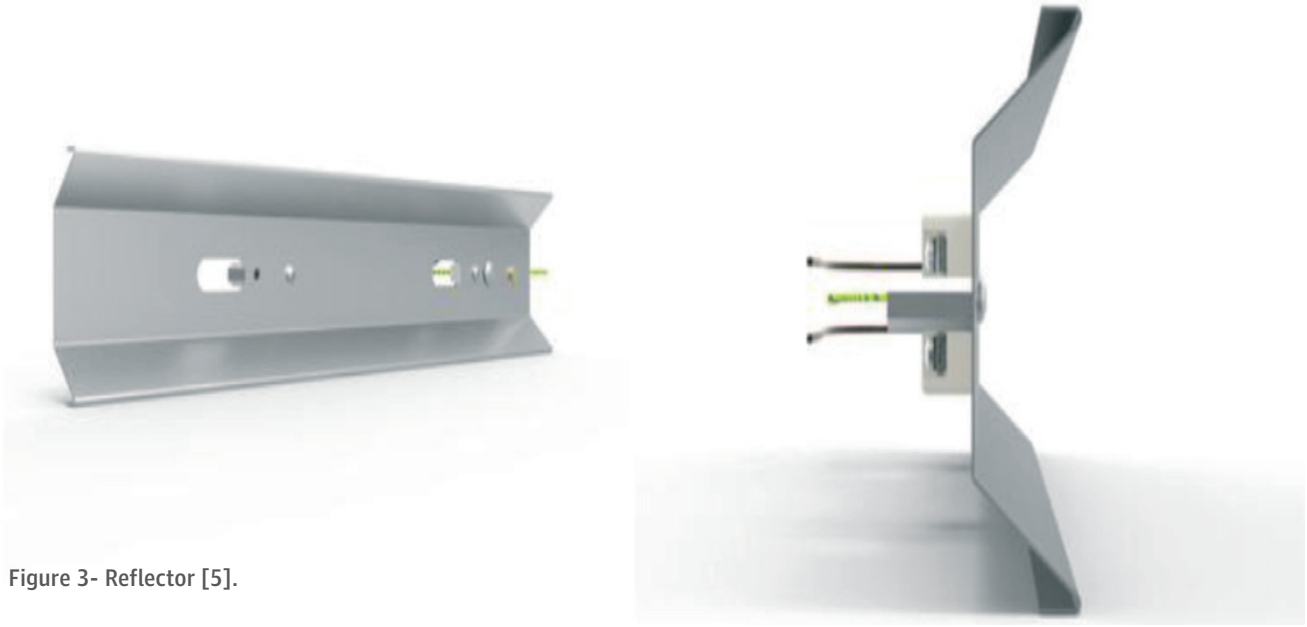

Figure 3- Reflector [5].

Hoods were added to the inlet and outlet sections of the furnace for the elimination of toxic gases released during the curing of the material, and a filter unit was included in the furnace for the filtration of the gases drawn from the hoods, making the discharged air suitable for the working conditions of the place in accordance with the occupational health and safety rules. In this context, the infrared furnace produced as a result of our R&D activities is given in Figure 4.

Figure 4- Infrared Furnace.

The thermal camera image of the material which is subjected to the curing process in the infrared furnace is given in Figure 5.

As seen in Figure 5, the temperature homogeneity values on the plate coming out of the furnace confirm the calculation, simulation and design activities.

Advantages of Sistem Teknik Infrared Composite Curing Ovens Compared to Their Equivalents

There are many international companies that use infrared heating technology. However, the preheating furnace that emerged as a result of our R&D activities is a first for our country and the advantages and similarities it has when compared to the furnace owned by a company operating in the automotive sector are summarized in the table below.

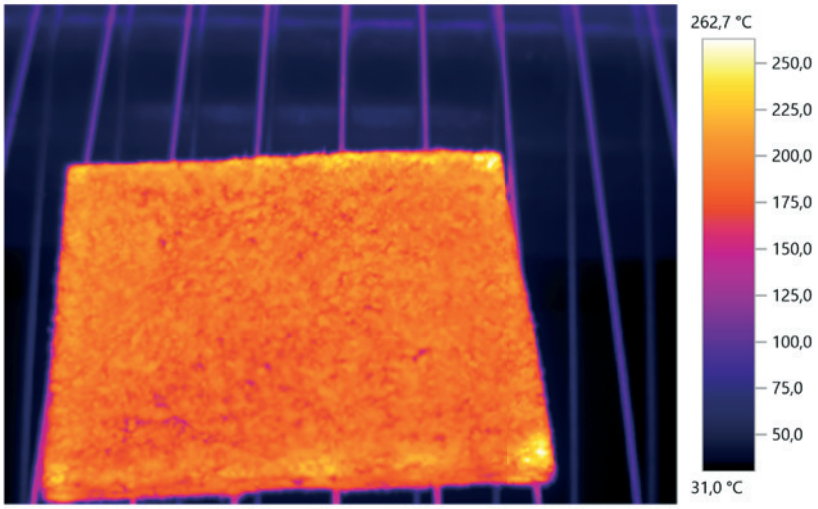

Figure 5- Cured Composite Material.

Technical Specification	Project Output	Equivalent Furnace
Type of Heating Element	250 and 200 W ceramic infrared heaters operating under 220 V voltage.	250 and 200 W ceramic infrared heaters operating under 200 V voltage.
Weight of Conveyor	< 1 kg/m2	≈ 1 kg/m2
Toxic Gas Elimination	With a total of 2 adjustable flapped hoods at the inlet and outlet of the furnace.	Hood without flap at the furnace exit.
Filter System	Filtering of all volatile organic compounds is ensured with the electrostatic and active carbon filter.	Only electrostatic filter is used.
Distance Control Between Heater and Material	Adjustable Distance (100-150 mm).	Fixed Distance (150mm).
Conveyor System	Independent wires tensioned by pneumatic pistons. The system also has spare wires.	Wires connected together under spring tensioner. The system doesn't have any spare wire.

The biggest difference of the preheating furnace, which emerged as a result of our R&D activities, from its counterparts is provided by the wire conveyor system. While there are wires connected to each other under the spring tensioner in the equivalent systems, in case one of these wires breaks or opens, it causes great losses for the companies that make mass production, considering the time spent for repair. However, since the conveyor wires are independent of each other and the spare wires are easy to reach in the preheating furnace, which emerged as a result of our R&D activities, the time spent is shortened and a contribution is made to the mass production of the company. Another convenience is that the distance between the heater and the materials can be adjusted. Although this process can be provided by other companies in recent years, they are designed to be constant for mass production companies, as indicated in the table. However, the preheating furnace, which emerged as a result of our R&D activities, is designed to be adjustable in order to perform the most effective heat treatment, since it addresses many sectors and therefore many materials and sizes.

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[2]- https://www.deltat.com/ceramic_infrared_heaters.html, Date of access: 07.09.2021.
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THE NEW TREND IN NITROCARBURING QPQ

Şarkay ŞAŞİ - Hef Durferrit Turkey General Manager

Nitrocarburization in salt melts has firmly established worldwide. Increasingly, the TUFFTRIDE® treatment in combination with oxidative post treatment respectively the QPQ® treatment is used as substitution for galvanic coating processes such as hard chrome plating, nickel plating, zinc plating etc., or used as substitution of corrosion resistant steels.

The key benefits are high wear resistance, fatigue strength and in particular the exceptionally high corrosion resistance.

The TUFFTRIDE®-/QPQ®-Process offers process specific advantages:
- Highest temperature constancy
- Fast and constant heat transfer
- Very stable chemical composition
- Shortest treatment cycles
- Simple monitoring
- Very flexible in use

Remarkable as well is the relative insensibility towards machining residues on the parts to be treated. Consequently, extensive and costly pre-cleaning processes are not required.

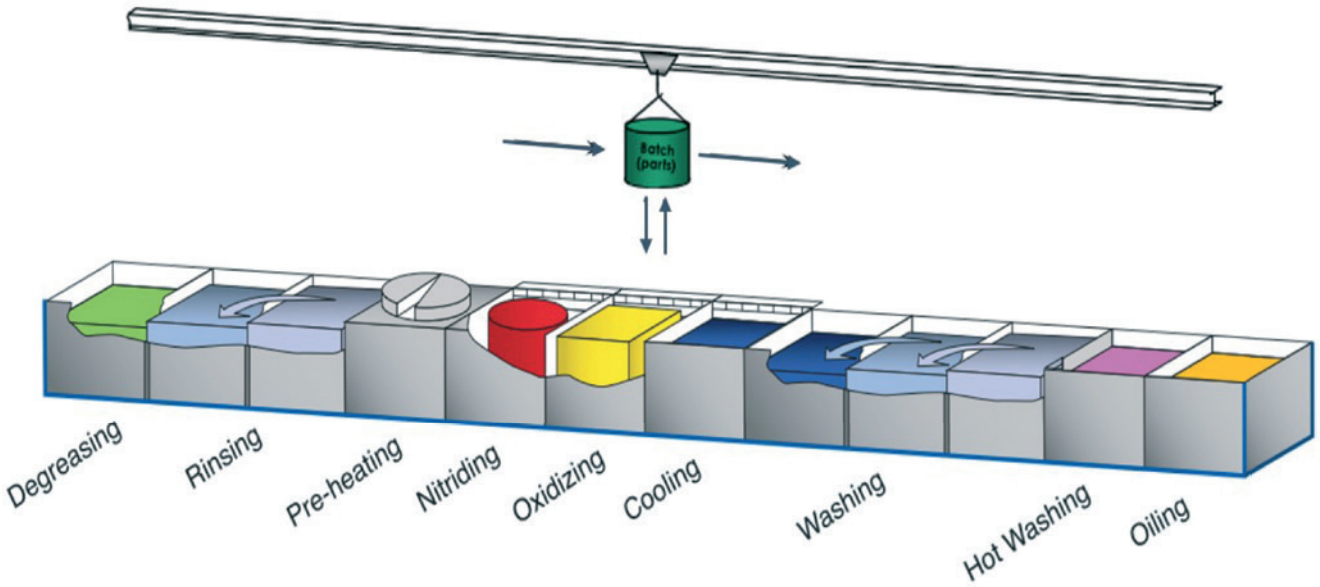
Compared to other treatment media the salt melt provides exceptionally high nitrogen offer.
The nitrocarburizing process immediately starts after immersion into the melt. Already after some minutes the formation of a compound layer can be detected.

Monitoring simply consists of checking:
- Treatment temperature
- Treatment time
- Chemical composition of salt melt

Computer-controlled salt bath plant for carrying out the TUFFTRIDE QPQ process

Process procedure
Compared to other nitrocarburizing methods, to run this process is very easy.
To begin with, the parts are preheated in air to approximate 350 °C.
The nitrocarburizing itself is mostly performed at the standard temperature of 580 °C. The treatment time at this temperature is usually 1 to 2 hours. The active elements in the nitrocarburizing bath are alkali cyanates. During the reaction on the part surface cyanate is transformed to carbonate, whereas the salt bath composition changes slowly. Continuous feed of a polymer regenerator effectuates the recycling of the forming carbonate into active cyanate directly within the melt and keeps the salt bath activity in narrow limits.

The oxidation treatment is per-



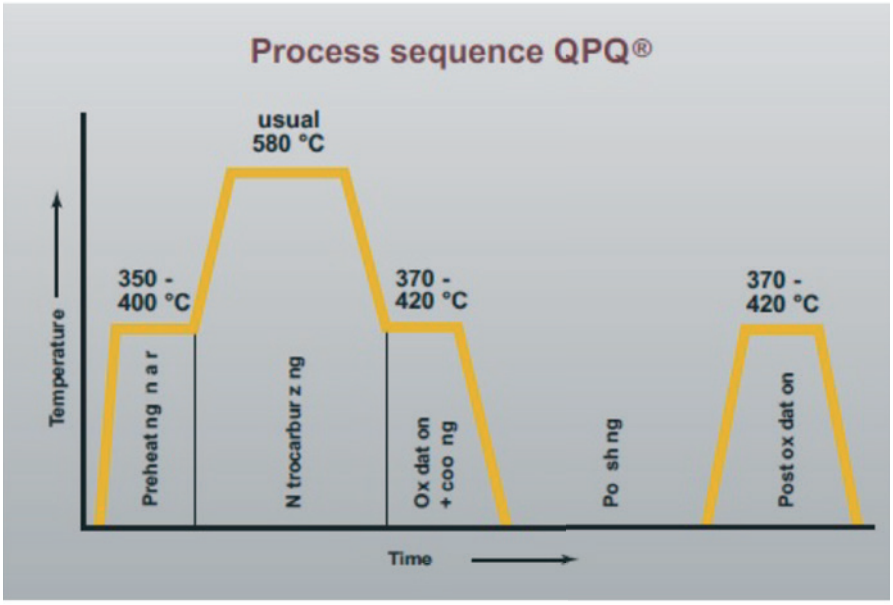
formed after salt bath nitrocarburization in an especially developed cooling bath at a temperature range of 370 - 430 °C. During the treatment a black iron oxide layer (magnetite) is produced on the surface of the treated parts, which enhances substantially the corrosion resistance.

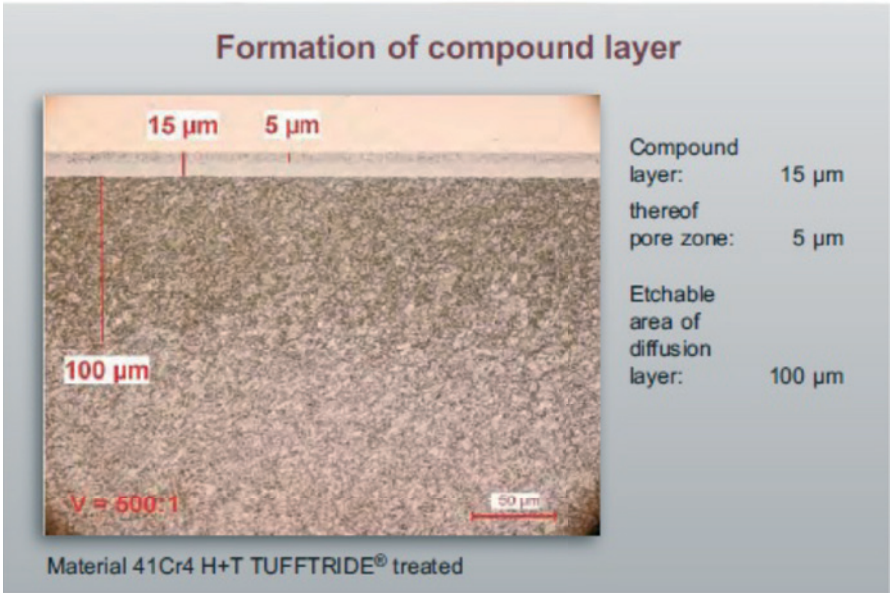
Thereafter, the treated material is furthermore cooled to room temperature as well as cleaned within a well tempered and agitated washing cascade.

Is the surface roughness after nitrocarburization too high, pending on the size and the shape of the parts, various polishing methods can be used. Polishing may partly reduce the gained corrosion resistance. For this reason, in many cases a second oxidative treatment is carried out. This complete sequence is the QPQ®-Process.

QPQ® comprises TUFFTRIDE® treatment with oxidative cooling, mechanical processing and oxidative post treatment, using the same salt melt for both oxidative steps.

During the TUFFTRIDE®-process a nitrocarburized layer is formed consisting of the outer compound

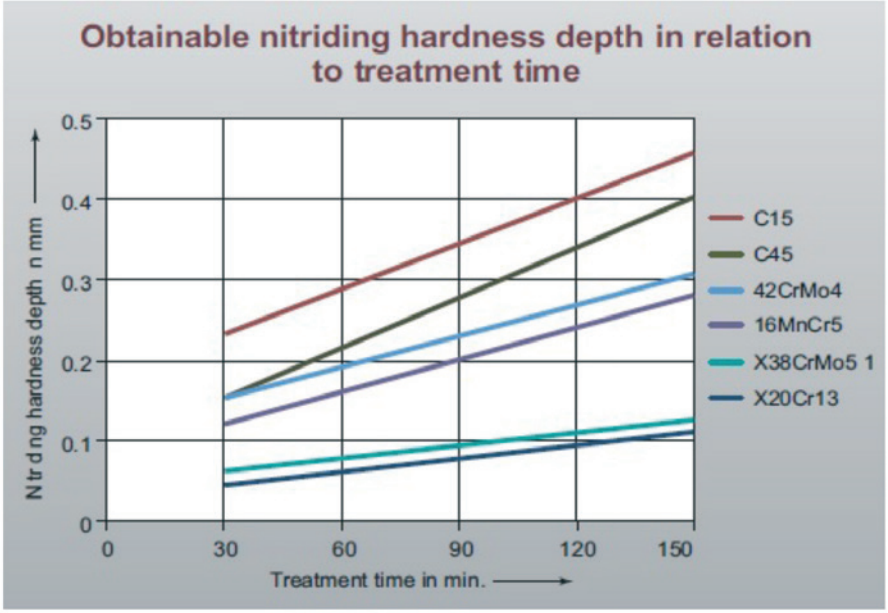




layer (ε-iron nitride) and the diffusion layer thereunder. The formation, microstructure and properties of the compound layer are significant reliant on the base material.
Compared to the classical nitriding the nitrocarburization enriches a small quantity of carbon in the compound layer and strictly speaking iron carbon nitrides are formed. Because of its structure it has no metallic properties any more. It features with exceptionally good resistance against wear, scuffing and corrosion and is consistent nearly up to formation temperature. Since TUFFTRIDE® possess by far most nitrogen offer the compound layers are almost monophase existing of ε-iron carbon nitride. Depending on the material used, the compound layer will have a Vickers hardness of about 800 to 1500 HV measured in the cross section. With the usual treatment time of 60 to 120 minutes a compound layer of 10-20 µm is obtained on most qualities of material.

Material			Core Strength after QT @ 600 °C Tempering Temperature Tempering Duration (N/mm2)		Surface Hardness 90 min 580 °C TUFFTRIDE® treatment
Name	DIN	AISI	2 hours	6 hours	HV 1
Ck15	1.1141	1015	600	550	350
20CrMo5	1.7147	5120	800 – 950	800 - 900	600
42CrMo4	1.7225	4140	900 - 1200	900 - 1100	650
90MnV8	1.2842	O2	1000 - 1200	900 – 1100	550
X38CrMoV51	1.2343	H11	1700 - 1900	1500 – 1700	>900
56NiCrMoV7	1.2714	L6	1300 - 1500	1250 - 1400	650
X210Cr12	1.2080	D3	1500 – 1700	1400- 1600	>800
X20Cr13	1.2764	420	1000 - 1200	1000 - 1200	>900

The area below the compound layer is called diffusion layer. Due to the concentration decline from the edge to the core, the nitrogen content is not sufficient to form iron nitride. Obtainable depth and hardness of diffusion layer are dependant on the material.



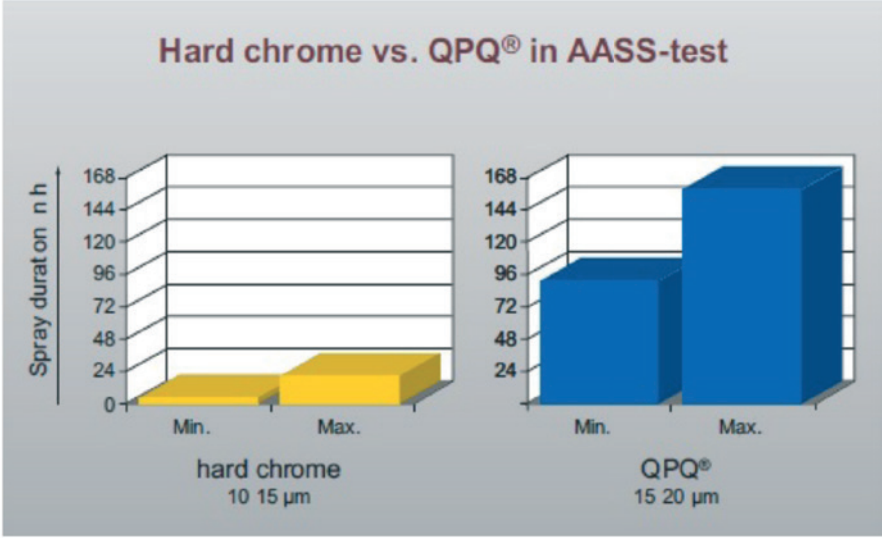
Corrosion Resistance
The stress combination of corrosion and wear happens in practice quite often. With upward trend the nitrocarburization is used for improvement of corrosion resistance of parts made from unalloyed steels.

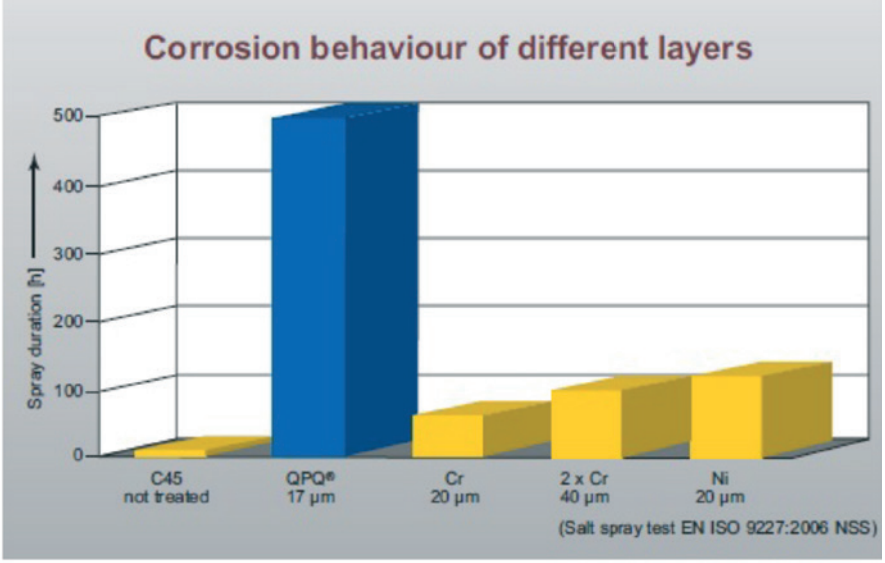
Even after a test period of 500 hours there were no corrosion attacks visible on the functional surface of the QPQ® treated piston rods made of C45 steel. Pending on the part geometry and its surface finish a holding time of up to 200 hours and more are possible in the salt spray test made according to DIN EN ISO 9227:2006 NSS.

One of the hardest corrosion tests according to DIN EN ISO 9227:2006 is the AASS test, which test solution additionally contains acetic acid. Samples showed that average resistance of QPQ® treated parts was 114 hours. However, the chrome plated piston rods failed completely after max 21 hours.

Industrial Application
Tools made of hot working steel for extrusion, forging or die-casting achieve much better service life results after TUFFTRIDE® treatment. Reasoned by the non-metallic character of
the compound layer the functional surface remains smooth for much longer. Nitrocarburized extrusion dies, significantly better press performances are achieved and that tools can even be retreated several times.

Valves in combustion engines are parts having to stand high standards in respect of thermal capacity, wear resistance and corrosion resistance. Compared to hard chrome plating the TUFFTRIDE®/ QPQ®-process offers cost savings to manufacturing





QPQ stands for "Quench-Polishing-Quench" which describes a series of secondary steps following the liquid nitriding step. These steps include the following order: (1) Oxidation: 2-3 micron surface layer is converted to an iron oxide. This is done by immersing the parts in specially formulated 'salts' between 400°C - 425°C; (2) Polishing: to improve the surface; and (3) Re-oxidation: to restore the oxide layer thickness that may have been lost during the polishing step. QPQ is recommended when a smooth surface finish and maximum corrosion protection are required.

costs, because inductive hardening and final grinding is not necessary.
The QPQ®-process finds constant growing application for piston rods, hydraulic cylinders or bushings. The examples could be endlessly continued. The TUFFTIRDE®-/QPQ® process is also used for components in the aircraft, for gun and rifle parts in defence industry in the offshore technology, in machine construction, in energy technology, in the food industry, photo and computer industry as well as in the manufacture of textile machines or hydraulic aggregates.

Intake and exhaust valves for gasoline engines

Extrusion dies for producing aluminium profiles

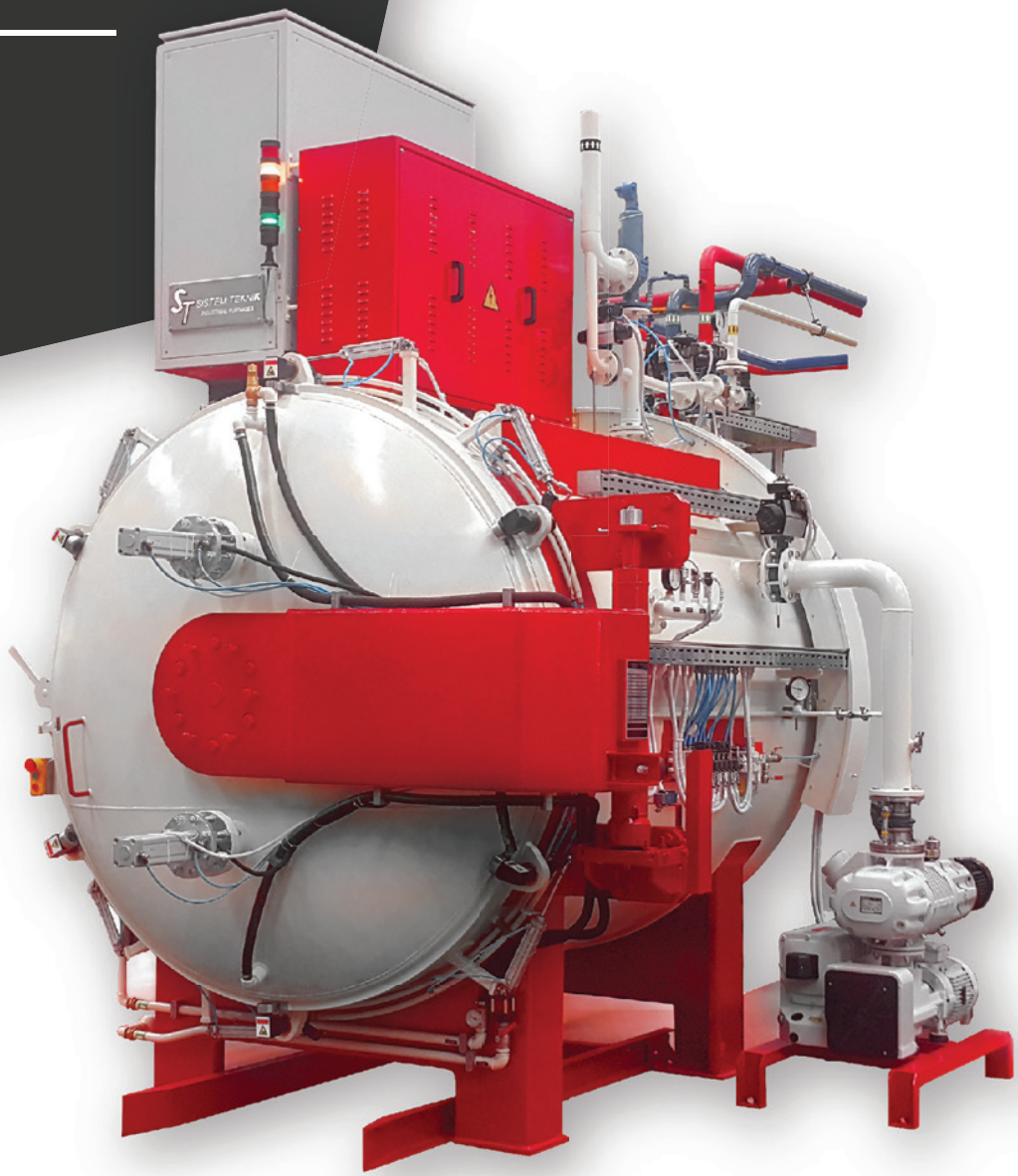
Drive and clutch components for motor bikes

Piston rods for gas springs and dampers

VF-TE-DC SERIES VACUUM TEMPERING FURNACE

TIMES IS MONEY

RAPID HEATING RAPID COOLING



VF-TE-DC SERIES VACUUM TEMPERING FURNACE

Model Number	Sizes	Charge Capacity (kg)	Heating Power (kWh)
VF-TE-DC-696	600x900x600	1000	140
VF-TE-DC-9129	900x1200x900	1500	220
VF-TE-DC-101510	1000x1500x1000	2000	260

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SİSTEM TEKNİK
INDUSTRIAL FURNACES

COPPER PIPE ANNEALING FACILITY WITH ROLLER CONVEYOR

Ozan YILMAZ - Sistem Teknik Project Manager

We will be a partner in a major change for our country in the copper pipe industry with the roller conveyor copper annealing facility which we announced the production agreement in the previous issue. We have competitive power in terms of quality products in copper production where our country is 95% foreign-dependent in terms of raw materials. When we look at the numerical data in the IDDMIB's 2019-2020 evaluation report on the production of copper products, we see that export numbers are tend to increase.

MATERIAL GROUP	DIFFERENCE %		DECEMBER 2019			DECEMBER 2020		
	AMOUNT	VALUE	AMOUNT (KG)	VALUE (FOB USD	UNIT PRICE	AMOUNT (KG)	VALUE (FOB USD	UNIT PRICE
COPPER BAR AND PROFILES	31,99%	46,94%	679.199	3.941.268	5,80	896.502	5.791.306	6,46
COPPER WIRES	14,57%	44,00%	6.301.568	41.178.423	6,53	7.219.646	59.298.768	8,21
COPPER WEAVE ROPES	43,44%	78,44%	3.588.951	24.674.480	6,88	5.147.999	44.030.184	8,55
COPPER SHEETS, PLATES, LEAFS AND STRAPS	99,07%	124,07%	1.172.362	7.865.059	6,71	2.333.805	17.623.626	7,55
COPPER SCRAP	-98,15%	-98,55%	961.340	5.074.087	5,28	17.800	73.450	4,13
COPPER OTHER MATERIALS	-14,95%	2,28%	1.915.820	13.838.194	7,22	1.629.469	14.153.300	8,69
COPPER TOTAL	**17,96%**	**45,98%**	**14.619.239**	**96.571.512**	**6,61**	**17.245.249**	**140.970.635**	**8,17**

Table 1 (IDDMIB; COPPER EXPORTS FOR DECEMBER 2019-2020 COMPARISON TABLE)

According to the ICSG(International Copper Study Group) data , the most produced product is copper wire,with 63% , in industrial copper production used worldwide. Copper pipe production, with flat plate production takes second place with 12% in the copper production.

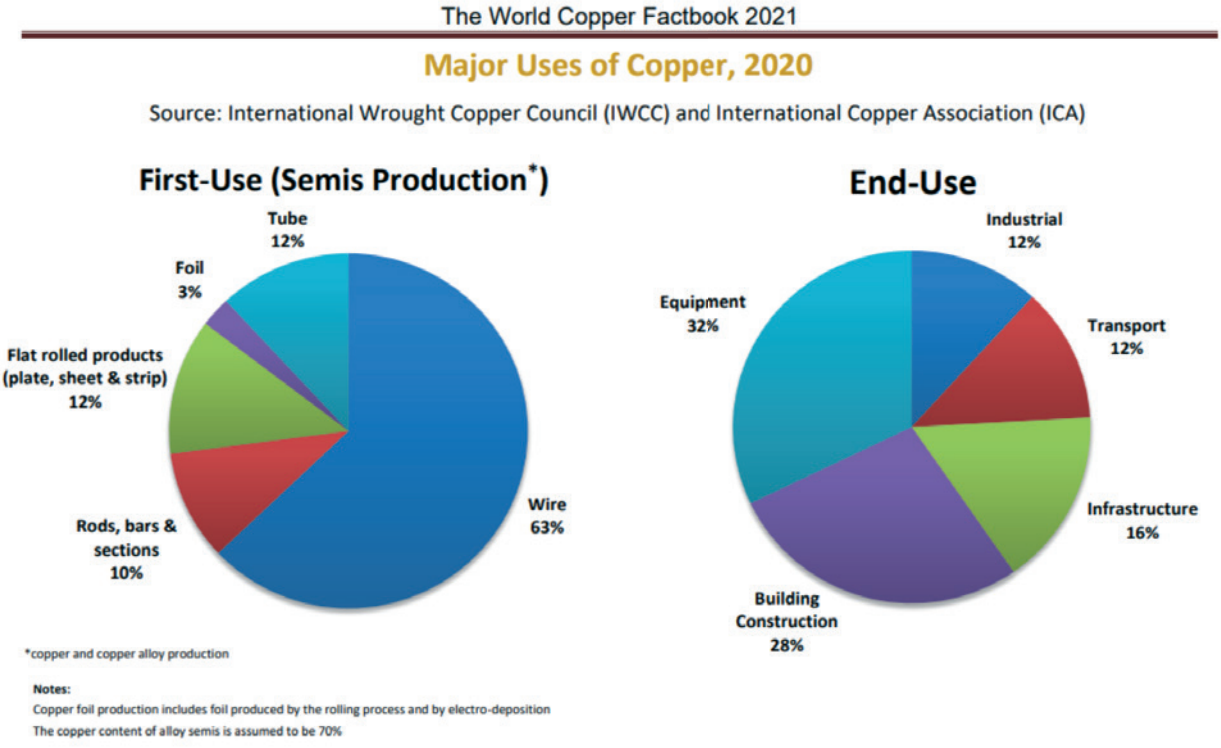


Chart 1 (ICSG; COPPER PRODUCTION GRAPH)

However, copper pipe production has not seen the necessary importance in our country. When we examine Table 1 , there is not even a section in our country's data for export information about copper pipes.

2019/2020 NOVEMBER COPPER INDUSTRY IMPORT TABLE

		November 19			November 20		Change		
HS CODE	Product	Amount (KG)	Value (USD)	Unit Price	Amount (KG)	Value (USD)	Brim Fiyat	Amount	Value
7401	COPPER MANUFACTURING; PRECIPITATED COPPER (Precipitated Copper)	-	-	-	44.027	120.669	2,74	-	-
7402	UNREFINED COPPER, COPPER ANODES FOR ELECTROLYTIC REFINED	284	17.971	63,28	170	5.609	32,99	-40,14%	-68,79%
7403	REFINED COPPER AND COPPER ALLOYS (HAM)	29.762.090	175.863.336	5,91	30.516.353	210.877.882	6,91	2,53%	19,91%
7404	COPPER SCRAPS	5.094.902	25.097.320	4,93	4.184.981	21.928.954	5,24	-17,86%	-12,62%
7405	PREALLOY COPPER (CUPRO)	28.780	359.930	12,51	9.408	200.160	21,28	-67,31%	-44,39%
7406	COPPER POWDERS AND COPPER FINE WASHES	42.027	469.525	11,17	50.265	557.096	11,08	19,60%	18,65%
7407	COPPER RODS AND PROFILES	838.273	5.236.618	6,25	1.417.001	8.473.384	5,98	69,04%	61,81%
7408	COPPER WIRES	5.078.172	31.655.425	6,23	8.096.021	55.769.529	6,89	59,43%	76,18%
7409	COPPER SHEETS, PLATES, LEAFS AND STRAPS (THICKNESS MORE THAN 0,15 MM)	1.079.537	7.950.518	7,36	900.972	7.094.595	7,87	-16,54%	-10,77%
7410	COPPER THIN LEAFS AND STRAPS (THICKNESS <=0,15 MM)	111.537	729.511	6,54	127.945	976.527	7,63	14,71%	33,86%
7411	COPPER THIN AND THICK PIPES	1.705.507	12.087.165	7,09	1.752.523	14.296.533	8,16	2,76%	18,28%

Table 2 (IDDMIB; COMPARISON TABLE OF MONTHLY COPPER IMPORTS BY SECTOR)

In the November comparison table of import figures of the İDDMİB 2019-2020 report, we see that the import of copper pipes is 1752 tons/month. The current table is due to the low production of copper pipes in Turkey. The difficulties experienced in the heat treatment phase of the copper pipe manufacturing process in Turkey are due to the fact that the necessary techniques for heat treatment have not been mastered. We will contribute to the development of the sector by decoupling this deficiency with the long research we have done in our R&D center and Sistem Teknik Industrial Furnaces experience in the heat treatment sector.

Our roll conveyor copper pipe annealing facility, which we continue to design with our engineer team in our R&D center, will make the necessary contribution to the national economy by completing its production in 2022. We will have produced more than 50% of the amount of imported copper pipes in Turkey, with the commissioning of the facility with a capacity of 12,000 tons / year.

If we take a closer look at our facility ; the total length of the facility is designing as 62 meters. We are creating a heat treatment facility with the technology to provide the same desired physical properties at every point of the copper pipe in a protective atmosphere created in accordance with the copper annealing process. This 62-meter-long facility has the technology to be controlled by 2 operators in the same shift. There is a different experience, engineering and analysis at each point of the facility. Each of the hydraulic, pneumatic, mechanical and thermal powers has been calculated, analyzed and constructed.

AGIR GLOBAL MULTIPLIED ITS SUCCESS WITH R&D.

The reputation of Agır Global, which has become a global brand with its exports to over 90 countries, exceeds the borders of our country. Agır Global, which is the 2nd medium-sized company exporting to the most countries in 2014 and the 4th company exporting the most flat steel in 2014, embraces success with its investments in R&D and technology.

With its world-class production, new generation and innovative approach, it has a superior success not only in our country but also in the international arena. It is a giant company that we have learnt that it has implemented its new logo with this perspective. We are talking about Agır Global, one of the companies that was established in 1984 and is one of the prominent companies in the field of iron and steel in Turkey. Of course, the company's achievements are not limited to these. So that; in 2014, it managed to become the second medium-sized company exporting to the most countries, and the fourth company exporting the most flat steel. One of the reasons why Agır Global is so successful is the investments made in R&D and technology. However, the right collaborations it has made are among these reasons. Agır Global Factory Manager Adnan Yaman gives an example of these collaborations, which company gives an example: "We have been working with Sistem Teknik for 12 years. Being an expert and local are among the main reasons why we prefer Sistem Teknik. Sistem Teknik is the leader in its field in our country and has proven itself abroad as well."

Adnan YAMAN
Ağır Haddecilik Fabrika Müdürü

First of all, can we get some brief information about your company?

Agır Global was established in 1984 in the field of iron and steel, one of the leading sectors of our country. Agır Global, the purpose of which was to produce patterned sheet metal, started to be known both in our country and in Europe and the Middle East in the following years, and with this growth, it started to produce different products such as packaged sheet, pipe, profile, expanded sheet, sliced band and cold-pressed sheet. The branded name of our company, which stands out in every product group it produces with its world-class quality, has also been registered with the awards received from reputable organizations. Agır Global, which has become a global brand with its exports to over 90 countries; has implemented its new logo as "AGIR GLOBAL" in order to integrate this perspective with its name. Ranking 308th in 2017, 267th in 2018, 333rd in 2019, and 383rd in 2020 among Turkey's top 500 large organizations, our company also became the second medium-sized company that exports to the most countries in 2014. , again succeeded to be the 4th company exporting flat steel. Today, Agır Global serves the country's economy in Dilovası Makine İhtisas Organized Industrial Zone, in three separate production and logistics storage facilities, Osmaniye and İzmir, with a closed area of 50.000 m2 and a total area of 112.000 m2. In all its existing facilities, it has collected the roof rain water in 2000 m3 storage with an environmental focus and used it in the irrigation of process and green areas. In addition, it has started solar energy investment on all existing factory roofs. Our company contributes to the production and use of clean energy on its own scale.

So, how did your paths cross with Sistem Teknik? One of the features of the Direct Gas Heated Roller Conveyor Rolling Annealing Furnace is that it has been specially designed for the parts that the customers will process. How did the idea of choosing this furnace come about?

Agır Global decided to invest in a new facility due to its facility in Akçakoca being far from the market and insuffi-

cient capacity and technology. In May 2009, the foundation of the Dilovası factory was laid, and in a short period of 1.5 years, the factory building and machinery were completed in accordance with Industry 4.0 and put into production in November 2011. In this process, negotiations were made with domestic and foreign annealing furnace manufacturers. Domestic manufacturing companies were given priority. The reason why Sistem Teknik is preferred; local, expert in its field and a special design of 52 meters. At the same time, we have come to the conclusion that we will receive technical service on time and at a sufficient level with references. Due to the characteristics of the furnace, the final decision was made in mutual negotiations.

Direct Gas Heated Roller Conveyor Rolling Mill Annealing Furnace is designed according to your needs. In this furnace, burners with high energy efficiency are used. What has changed in your production environment with the Roller Conveyor Annealing Furnace?

We have had gains such as ensuring energy efficiency, preventing heat losses, decreasing process costs, increasing process efficiency, continuity of the process, increasing capacity, eliminating temperature differences in the furnace, complying with environmental emission standard values, ensuring plant equipment safety, tracking and traceability, software and hardware of the furnace. Here is an important issue that I would like to point out in particular; it is important to reach the actual consumption value below the natural gas consumption value recommended by Sistem Teknik. The annealing in question is an important indicator of the efficiency of the furnace.

How many years have you been receiving service from Sistem Teknik? Which products and services do you use?

We have been receiving service from Sistem Teknik for about 12 years. It is important that technical support is given to us, especially in 24/7 working order. We provide services for the natural gas equipment of the annealing furnace and furnace automation equipment (burner bricks, burners, roller conveyors, in-furnace maintenance).

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

Sistem Teknik's constant communication with the customer, ensuring and prioritizing customer satisfaction, and providing 24/7 supply service have provided significant gains in our product quality.

Can we get information about your R&D investments and studies?

Our company applied to the R&D projects titled TÜBİTAK 1501 in 2013, 2017, 2018, 2019 and all of its projects were accepted. It has successfully completed these projects. The first of the R&D projects is related to the process, and the other eight R&D projects were made for the first time in Turkey and presented to the industry of the country.

> Factory Manager Adnan Yaman said, "Sistem Teknik is the leader in its field in our country and has proven itself abroad as well. With the production and automation of furnaces, which are needed by all kinds of industries, and the services they provide, they have made our country independent on foreign sources and created an important added value for our country.

COMPLIMENTARY WORDS BY VALFSAN FOR SARVION

Erkan Korkmaz, Factory Manager of Valfsan Engineering, has spoken well for Sarvion. "The biggest reason why we preferred Sarvion for periodic maintenance is that Sarvion is an expert in this field."

Erkan Korkmaz, Engineering and Factory Manager of Valfsan, a well-established company that has made a serious investment in automation in the last 5 years, has answered our questions. Saying that they are working for zero defect production, Korkmaz has shared the New Year targets of the successful company just a few months before the New Year. "Our robot and automation investments will continue," Korkmaz has said. Currently exporting to 35 countries in approximately 200 different locations, Valfsan is also in a a strong cooperation with Sarvion. Erkan Korkmaz explains why Valfsan prefers Sarvion for the maintenance of its industrial furnaces as follows: "The biggest reason we has preferred Sarvion for periodic maintenance is that Sarvion is an expert in this field. Our goal is to focus on our core business by outsourcing maintenance to specialists."

Erkan KORKMAZ
Valfsan Engineering and Factory Manager

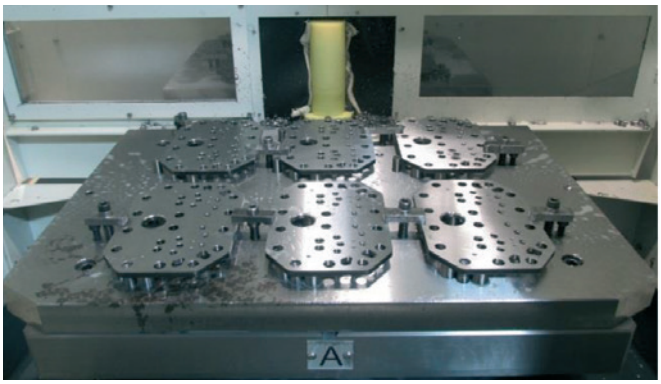
First of all, thank you for your positive response to our interview request. We would like to introduce you briefly to our magazine readers, can you tell us about yourself?

My name is Erkan Korkmaz. I am 47 years old and have been working in the manufacturing industry for 20 years. I have an associate degree in Mechanical Engineering and a Bachelor of Industrial Engineering. I started my professional career as a Production Planning and Logistics Engineer at Kale Auto Radiator, then, after working as a Method Engineer for 4 years, I passed to Arçelik Electronic. I worked for 5 years as a Production Engineer, Team Leader and Project Manager in the Production Engineering Department at Arçelik. During this period, I took charge in various positions of Arçelik's international projects. I worked for 2 years as the Installation Coordinator at the Beko factory established in Russia and I have been at Valfsan for the last 13 years. I started my job as Engineering Manager at Valfsan and continue as Engineering and Factory Manager.

When was Valfsan founded and what are its fields of activity? We would like to hear from you briefly about your company.

Valfsan is a company that was established in 1983 in Doğu Sanayi Sitesi with two partners and two assistants. Two domestically made press machines were purchased with limited capital. This is the way to manufacture parts made of very special steel, which are used in shock absorbers and compressors and act as valves. The origin of the partners is refrigeration compressor and shock absorber. At that time, the company producing shock absorbers was very few and the market was limited. We have reached the point we have reached in about 40 years, with our 370 employees, we export 97% to companies with a large market share that have a say in the world. As a company that constantly improves itself, we continue on our way at full speed.

Our products are valve discs and washers made of high carbon material shock absorber steel for automo-



tive shock absorbers, high fatigue resistant stainless and high carbon valves, valve plates and check-valve products for the refrigeration industry, and valve plates for brake air compressors used in commercial vehicles. In addition, special press parts used in electric motors and control units are also included in our production portfolio. Our most important customers in refrigeration are Emerson Copeland, Alco-Controls, Bitzer, M. Dorin, Bock, Danfoss, and in the automotive field, K.Bilstein, Knorr Bremse, Wabco, Koni, Marelli, Tenneco, BWI, Monreo, ZF Sachs, Maysan Mando . We export to approximately 200 different locations, 150 customers and 35 countries. We have IATF 16949, ISO 14001, OHSAS 45001, Covid-19 Safe Manufacturing quality system certificates. In addition, we continue to work on 50001 for energy and 27001 for IT.

As we approach the New Year, what are the targets of Valfsan and your department for 2022?

In recent years, we attach great importance to efficiency. In the New Year, the most important issue we will work on will be to increase production efficiency. In the meantime, our evaluations on Industry 4.0 continue. We have made a serious investment in automation in the last 5 years. In addition, our investments in renovation of benches and machines that have completed their amortization period or that may be more efficient will also continue. We are working for zero defect production, and for this, our robot and automation investments will continue.

What is the importance of industrial furnaces in the production track?

Industrial furnaces have a very important place in our process. Uninterrupted operation is very important as it is an intermediate process. For this reason, we are trying to keep the furnaces working 24 hours in a day, 7 days in a week. We also have a CQI9 application, since the functionality and criticality level of our products is very high at the points where they work.

What was the most effective reason for you to choose Sarvion for periodic maintenance in your furnaces?

The biggest reason why we preferred Sarvion for periodic maintenance is that Sarvion is an expert in this field. Our goal is to outsource maintenance work to specialists and focus on our core business.

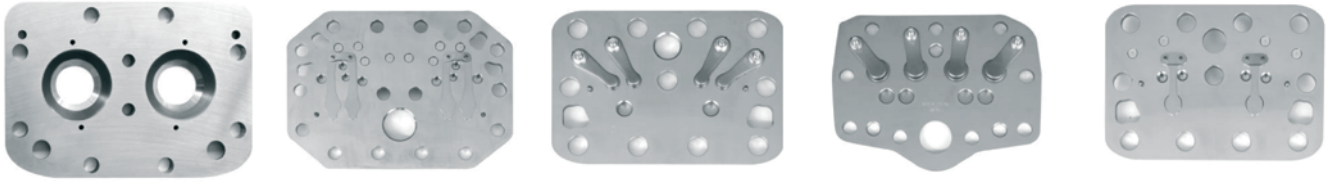
What are your thoughts on the service provided by Sarvion, informing you during the maintenance process and accessibility?

We started working with Sarvion in 2021. It is an important feature of Sarvion that it manages the maintenance process in the form of project management from the very beginning to the end of the process, and I can say that it is its strength that it quickly solves the unplanned actions during maintenance.

We know how important periodic maintenance is to prevent unplanned downtime. Can you talk about the contribution of the maintenance we have carried out with Sarvion to your company?

First of all, the planned periodic maintenance provided a great advantage for both production and planning and for our maintenance departments to organize their own work. Since it is Sarvion's field of expertise, it also intervened in some points that we could not see, preventing possible downtimes.

> Erkan Korkmaz said "The biggest reason we has preferred Sarvion for periodic maintenance is that Sarvion is an expert in this field. Our goal is to focus on our core business by outsourcing maintenance to specialists."



NUMBER 1 IN ELECTRONIC WEIGHING DEVICES PRODUCTION: ESIT ELECTRONIC

Esit Electronic Mechanical Workshops Manager Hakan Eker said that their productivity has increased with the Vacuum Heat Treatment Furnace and added: "We are happy to work with Sistem Teknik, both in after-sales services and because of their fast and solution-oriented approach in case of any problem."

Breaking new ground in Turkey in the production of electronic weighing instruments, Esit Electronic is one of the leading companies in the sector with its deep-rooted engineering power and creative R&D studies today. The successful company is also in close cooperation with Sistem Teknik. Mechanical Workshops Manager Hakan Eker, who has answered our questions sincerely, has said that they have achieved high efficiency and profitability rates with the High Vacuum Heat Treatment Furnace signed by Sistem Teknik.
We thank dear Eker for his nice words, he has said, "We are happy to work with Sistem Teknik, both in after-sales services and in case of any problem, for their fast and solution-oriented approach." and we leave you alone with the interview we made with him. Good reading.

Thank you very much for accepting our interview offer. First of all, could you briefly describe Esit Electronic for our readers?
Our company started its activities in 1980 as an engineering company in the field of electronics. In its early days, it appeared in the industry by producing electronic systems on various subjects.
In the course of time, it focused on weighing and started to produce electronic weighing instruments under the brand Esit in 1987. Esit has always broken new ground in Turkey in the production of electronic weighing instruments. It started to produce the first weighing indicator in 1987, the first load cell in 1989, the first automatic weighing instruments in 1991, the first digital load cell in 1996, mobile vehicle weighing systems in 2000, and operator free and wireless systems in 2006. Our company, which is the pioneer of its sector in Turkey, has succeeded in producing weighing instruments and systems produced only in developed countries in the world, in our country, with creative engineering and rigor-

ous R&D studies, and has registered its products with quality certificates obtained from Europe. In our factory established on an area of 30 thousand m² in the Hendek district of Sakarya, truck scales are produced. In our factory, which is established on an area of 32 thousand m² in Alemdağ, Istanbul, there are Load Cell, Electronics, Steel Construction, Machinery, Metal Processing, Heat Treatment and R&D technical units, as well as management and marketing units of the company. The number of employees in our factory reached 270 people in 2011. The main principle of our company is quality production and meeting the customer's needs 100%. Our goal is to provide the highest quality service with our technology and continuity in the world weighing industry in the long term. Our company makes direct sales to end users and manufacturers in our country, and abroad, we have partnerships in Bulgaria, Romania and Russia and agencies in various countries. Indexing its success measure to foreign sales, Esit Electronic's export rate is over 30 percent. In short, Esit has successfully accomplished important projects in technology-based weight measurement and control by bringing together the production of weighing instruments, extensive engineering infrastructure and experience. Since 1998, production has been carried out under the ISO 9001 quality assurance system. In addition, it has an EU certificate, which means that the products it produces and brands are accepted in the European Union. In addition to the EN 45501 Certificate, our products have international OIML and CE certificates.

So, how did your paths cross with Sistem Teknik? How did the idea of choosing a High Vacuum Heat Treatment Furnace come about?

During the periods when we outsourced the heat treatment service of the stainless load cells, we encountered serious tarnishing problems on the parts. Thus, we decided to carry out the process with our own furnace.

High Vacuum Heat Treatment Furnace; A furnace with many different features designed to suit your needs. What has changed in your production environment with the High Vacuum Heat Treatment Furnace?

First of all, the problem of blackening on the parts has disappeared. We have created serious differences in product quality with the processes we have developed according to part types.

How many years have you been receiving service from Sistem Teknik? Which products and services do you use?

The furnace in our company is the first furnace produced by Sistem Teknik. We started using this furnace in 2004. We did not encounter any problems. We continue to receive service from Sistem Teknik about maintenance and spare parts supply.

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

I think the Heat Treatment process is very important. Therefore, it is extremely important to determine and record the Heat Treatment parameters and to trace the process records. According to my opinion, the positive results we have achieved in our Sistem Teknik furnace and the high efficiency rate we have achieved, have a direct and indirect contribution to the profitability of our business.

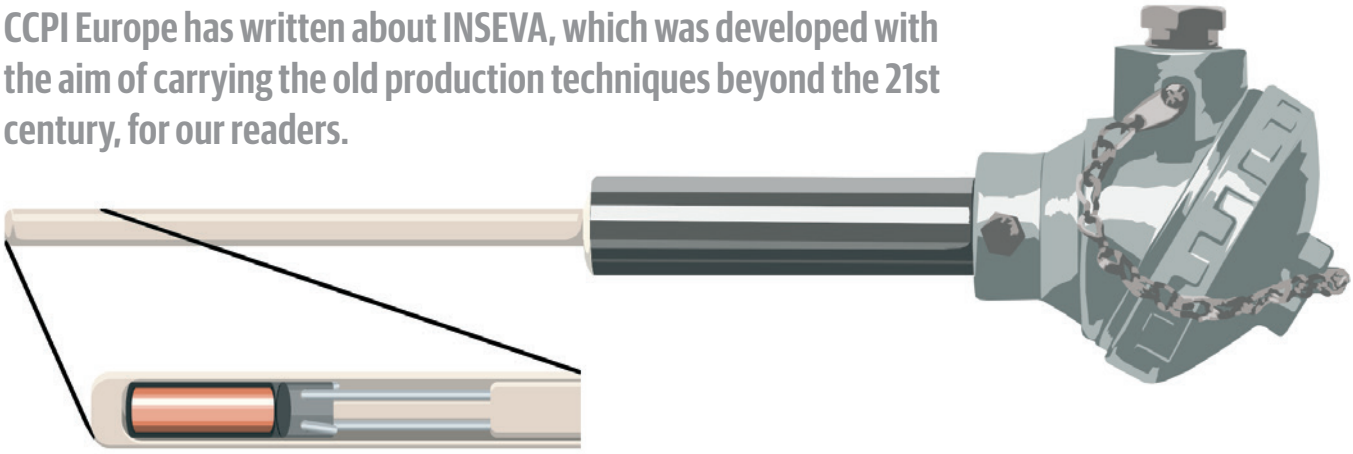
Finally, can we get information about your R&D investments and studies?

In our Esit Electronic R&D department, we have 22 new ongoing projects.

> Hakan Eker, Mechanical Workshops Manager, said "According to my opinion, the positive results we have achieved in our Sistem Teknik furnace and the high efficiency rate we have achieved, have a direct and indirect contribution to the profitability of our business."

INSEVA ENDS OLD PRODUCTION TECHNIQUES

CCPI Europe has written about INSEVA, which was developed with the aim of carrying the old production techniques beyond the 21st century, for our readers.



Temperature is one of the most important parameters that is often required to be measured. Thermocouples are & have been the main temperature sensor used in industry for over 100 years, particularly in the temperature range above 500 ˚C.
The problem with thermocouples is that they are often exposed to harsh conditions during use. This causes them to suffer from drift, a change in output signal with time at temperature. This eventually leads to inaccurate measurement.
Current methods used to deal with drift in thermocouples range from, replacement at regular intervals, removal for recalibration & on location calibration. This is because the rate of thermocouple drift is difficult to predict. All these methods work but result in furnace downtime, additional labour & calibration costs.

Thermocouple Problem Is there a solution?

Originally developed by the National Physical Laboratory (NPL), the INSEVA technology is a miniaturised version of the conventional fixed-point cells used in thermal calibration laboratories for the highest level of calibration.
The INSEVA can provide validation of the thermocouple readings from within the furnace, confirming the true furnace temperature.
This means the sensor can validate the furnace compliance when regularly replacing the sensor or recalibrating is impractical.

What is fixed-point calibration?

A fixed point is a reproducible physical event that has a defined temperature value assigned on the ITS90.
The reliable melting/freezing point of pure metal and more recently metal carbide eutectics are used to calibrate thermocouples at set fixed point temperatures. An example of a conventional fixed point used in temperature calibrations is Copper, which melts (goes through the transition from a solid to a liquid) at exactly 1084.62 °C.
Under these conditions, the tightest of uncertainties of measurement & accuracies possible can be achieved for temperature sensor calibration.

The INSEVA Thermocouple

With an outer diameter of just 4mm, the miniaturised fixed-point cell can fit in a typical 7mm outer diameter alumina insulated ceramic thermocouple assembly.
Just like a regular thermocouple assembly, the INSEVA Thermocouple can be highly customised with alternative cold end termination options such as; tails, plugs, sockets and cables. Additional stainless steel outer sheaths can also be added for protection from the hostile environments they encounter.
The miniaturised cell can contain any stable pure metal or metal carbide eutectics, making the INSEVA highly customisable to fit the specific requirements of the end user.

Software

Developed in-house by our software team, the INSEVA software detects the thermocouples voltage reading hesitation (or plateau) as the thermal environment transits the melt/freeze point of the chosen cell material and triggers customer bespoke automations.
The software provides real-time information to monitor the calibration status of the INSEVA Thermocouple, enables predictive replacement & automates control of thermocouple life.

Summary

The INSEVA Thermocouple is set to alter how the industry use temperature sensors & bring the dated techniques of manufacturing into the 21st century and beyond.
With industry trails currently ongoing, the INSEVA is looking at launching in 2022.
For more information, get in touch or scan the QR code below to visit our website.

C3 DATA

NADCAP | AMS2750 | CQI-9
FURNACE COMPLIANCE SOFTWARE

WHAT IS C3 DATA?

C3 IS A SOFTWARE PLATFORM BUILT SPECIFICALLY FOR THE THERMAL PROCESSING INDUSTRY TO HELP ENSURE FURNACE COMPLIANCE.

THE SOFTWARE EFFECTIVELY ELIMINATES VIRTUALLY ALL THE HUMAN-ERROR PROCESSES ASSOCIATED WITH COMPLIANCE, ALLOWING YOU TO FOCUS ON OTHER VALUE-ADDED ACTIVITIES.

THINK OF C3 AS A SINGLE PLACE TO EASILY AND CONFIDENTLY MANAGE ALL YOUR THERMOCOUPLES, STANDARDS, TECHNICIANS, SCHEDULING, DATA COLLECTION, LABEL PRINTING, REPORT GENERATION, QUALITY APPROVAL, AUDIT PREP AND MORE!

SAVES TIME

REDUCES THE TIME REQUIRED TO ENSURE COMPLIANCE BY UP TO 52%, ALLOWING YOU TO FOCUS ON OTHER TASKS

REMOVES NCRS

ELIMINATES THE POTENTIAL FOR HUMAN ERROR ASSOCIATED WITH THE TOP 10 INDUSTRY NCRS

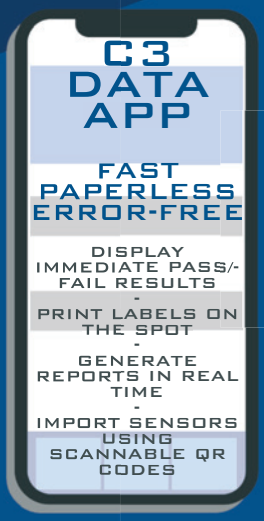
STREAMLINES AUDITS

COMBINES ALL COMPLIANCE PROCESSES INTO ONE SYSTEM, ENSURING YOU'RE ALWAYS AUDIT-READY

C3 WEB PORTAL

C3'S WEB PORTAL ACTS AS A SINGLE LOCATION TO SCHEDULE AND MANAGE ALL YOUR FURNACE COMPLIANCE DATA. HERE YOU MANAGE AND VIEW ALL YOUR FURNACES, INSTRUMENTS, SENSORS, STANDARDS, PERSONNEL, AND ACCOMPANYING TEST DATA USED TO DETERMINE COMPLIANCE.

YOUR DASHBOARD USES A GREEN=GO, RED=NO VIEW OF EVERY FURNACE IN THE PLANT. THIS IS YOUR REAL-TIME VISUAL INDICATION OF A FURNACE'S ABILITY (OR INABILITY) TO RUN PRODUCTION ACCORDING TO THE SPECS ASSIGNED TO THE FURNACE.



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THREE KEY GOALS FROM WEISS ANLAGENTECHNIK

Rolf Pöckler, Sales Director of Weiss Anlagentechnik, talked about the work and goals. In his statements, he also referred to the successful work between Weiss Anlagentechnik and Sistem Teknik, based on long years of mutual trust.

Weiss Anlagentechnik, a specialist in the field of spring manufacturing machinery and automotive engineering stabilizers for suspension springs, was founded in 1984. One of the companies Weiss collaborated with, which has been providing customized concepts and solutions to the industry since then, is Sistem Teknik. Rolf Pöckler, Sales Director of the successful company, answered our questions sincerely and shared the details of this cooperation with us. According to Pöckler, who especially emphasized that we successfully realized the projects together, there are three main goals for the future. Rolf Pöckler said, "We want to expand our cooperation with Sistem Teknik. "This expansion and advancement will enable us to deliver even more fully integrated solutions that benefit our customers and everyone involved."

Rolf Pöckler
Weiss Anlagentechnik Sales Director

How did you meet with Sistem Teknik? Can you tell us about your story?

We came into contact due to our activities in suspension spring industries. That means in particular the production of leaf and coil springs for automobiles, trucks and railways.
While Sistem Teknik was active in regard to industrial furnaces, I was active in regard to the required machinery in such spring factories. So at one day I came into direct contact with the managing director of Sistem Teknik Mr. Mehmet Özdeslik and his team while we were working for the same client. That is more than 15 years ago, when in 2005 we independently supplied our equipment to a Turkish spring factory and interfaced it to an automatic production line.
This way we developed a good relation and a feeling of trust which allowed us to intensify our common activities. Already in 2006 we realized our first common project in Czech Republic with a package of a machine from Weiss Anlagentechnik and an end heating furnace from Sistem Teknik.

Could you please explain the cooperation of Weiss Anlagentechnik with Sistem Teknik?

Both companies already worked successfully in suspension spring industries for a very long time. Both as a leader in its field, but somehow in parallel. So it was clear for me that we have to bring both expertise together and to present full solutions to our clients. This way we can guarantee that no additional or unnecessary interfaces have to be handled by the client, because Sistem Teknik and Weiss Anlagentechnik can manage such mechanical and electrical interfaces directly. In spring factories it is required to heat the product several times before it is formed in special machines. As an example only, Sistem Teknik provides end heaters,

> "Pöckler said that 2006 we realized our first common project in Czech Republic with a package of a machine from Weiss Anlagentechnik and an end heating furnace from Sistem Teknik."

hardening furnaces and tempering furnaces for leaf springs, while Weiss Anlagentechnik provides the related taper rolling machines, eye forming machines and bending machines. Starting from our projects in Turkey and Czech Republic, we later successfully entered the markets in Germany, France, Belgium, Italy, Poland and Tunisia, beside others. Currently we supply another full automatic taper rolling line for spring plates to Russia, consisting of a package of machines and furnaces from both companies.

What are the best achievements of this cooperation for you?

Together both companies realized a lot of projects successfully and to the satisfaction of our clients. Only to pick some highlights: Our cooperation allowed us to supply a complete new parabolic leaf spring production plant in Germany. In Tunisia we supplied a complete full automatic heat treatment line for such springs. Full automatic with industrial robot integration, full automatic bending and quenching equipment supplied by Weiss Anlagentechnik and high quality gas heated continuous working hardening and tempering furnaces made by Sistem Teknik. Here our clients value positively our long standing in this business field along with collected large experience over decades. They consider our equipment as most advanced and absolute state of the art. In addition they know exactly that both companies do not focus on the sales only, but also ensure a long term support during the extreme long life time of our equipment.

What are your goals in future with Sistem Teknik?

Basically I have three goals with Sistem Teknik. First goal is to support Sistem Teknik in order to keep close contact with our existing clients. Secondly we should add new clients into our portfolio. Therefore we need to enter new markets. Whereby "new market" means suspension spring factories in countries other then we already work on. The third target is to extend the cooperation between Weiss Anlagentechnik and Sistem Teknik. This will allow us to provide even more fully integrated solutions to our clients, with benefit for all involved.

SISTEM TEKNIK FURNACES IN THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

Thomas Bell-Wright International Consultants, one of the largest fire test laboratories in terms of capacity and capability from West Africa to Bangladesh, uses the fire resistance test furnaces signed by Sistem Teknik.

We had a pleasant interview with Brett W. Shinn, who works as Project and Operations Laboratory Manager at Thomas Bell-Wright International Consultants, one of the largest fire test laboratories. Shinn, who made striking statements about the company's activities and the fire testing industry, also explained that the successful company's paths crossed with Sistem Teknik. "We are always in contact with Sistem Teknik and aside from the pandemic challenges, they have been extremely supportive of our operation," Shinn said. Of course, there is more. Then we wish you pleasant reading.

We know that Thomas Bell-Wright has a strategical importance in United Arab Emirates area for testing, inspection and certification in construction industry. Could you please briefly explain about the history of Thomas Bell-Wright and what kind of services you provide?

We are currently the largest fire testing lab for passive fire protection products as far as capacity and capability from West Africa, right up to Bangladesh. We started in 1995 as a privately held facade consultancy firm and, over time, evolved into a multi accredited laboratory offering a wide range of conformity services related to testing, quality, safety and performance of Building Envelopes and all passive fire protection materials, systems and installations. We hold accreditations under ISO 17020, ISO 17025, ISO 17065 from UKAS, IAS, GAC, ENAS, EIAC, etc.

How do you describe Thomas Bell-Wright's distinctive feature in Fire testing industry among other laboratories?

As we have originated and evolved from a region which is a melting pot of Standards from around the world, we have developed a very vast experience and expertise across European, British, North American, and several

other International Standards. This positions us uniquely as a well-respected and acceptable conformity body across several jurisdictions across MENA, UK+ Europe and Indian Subcontinent regions.

How many testing furnaces you have in your facility and how many of them are produced by Sistem Teknik? Could you mention which tests are you able to perform with Sistem Teknik furnaces?

We have four fire resistance furnaces, three propagation rigs, and a rull range of small scale reaction to fire equipment. Our two largest resistance furnaces were provided by Sistem Teknik (ST) – one large scale vertical (4 x 5 m) and one large scale horizontal (4 x 5 m), both of which support a full range of loadbearing and non-loadbearing tests for full range of tests across European, British, and American standards

What are the main advantages in use of Sistem Teknik furnaces?

ST has a robust history in furnace design which revolves around using a PLC-based automation model for industrial control – which is largely new to fire resistance furnaces, which are most often controlled using microcontrollers. There are a lot of advantages to this – PLCs, as an electrical unit, are more robust in industrial environments than micro-controllers with a simpler software and logical design SCADA based interface, and they are capable of separating the automated functions of operating the furnace with the data logging and collection.

Let's get to know Brett W. Shinn

Brett W. Shinn is Project and Operations Lab Manager at Thomas Bell-Wright International Consultants. Shinn explains his responsibilities within the company as follows:
"I oversee the tests, whitepapers, operations and furnace automation related work."

With the current technological developments, we know that Fire Testing equipment are also being improved. As a technical person who is experienced in both Fire testing and software programming, how do you think that trends will be changed especially in Fire Resistance test furnaces?

In the nature of what fire testing is, the stakes involved, and the experience of completed fire tests, i think furnace design will trend to installing more traceability and redundancies, for a few reasons. Furnace design in a way, sites at a pivotal point at the moment. There are a lot of old furnaces which still operate manually, and operate well, on MS DOS, but there is also a new generation of heavily automated furnaces emerging. With Automation comes a long list of advantages which allow operators to record and monitor more of the process, which is becoming increasingly necessary as accreditation bodies grow their list of traceability.

As a last question, how would you describe your cooperation with Sistem Teknik?

We've always maintained open communication with Sistem Teknik since the commissioning and, pandemic difficulties aside, they've been supportive in our operation.

"SISTEM TEKNIK IS A COMPANY THAT TURKEY CAN BE PROUD OF"

Selim Makina Sales Manager said "Sistem Teknik is a company that Turkey can be proud of. A very nice family business. I wish every sector had a company like Sistem Teknik and people like Mehmet Özdeşlik who devoted their lives to working and being successful..."

One of the companies we host in this issue is Selim Makina. The company has many years of industry experience. Established in 1945, Selim Makina produces iron and steel raw material parts for different sectors and metal industries. At the same time, the production of countless parts is realized thanks to the heat treatment forming, machining and chipless manufacturing and foundry facilities within the enterprise. The reason why the company, which has specialized in the production of equipment and accessories for LPG cylinders, has been so successful in recent years is to work, work and always work hard. This word is not belong to us, it belongs to Selim Makina's Sales Manager, dear Sezer Matkap. In addition to all these, Matkap has referred to the successful cooperation with Sistem Teknik and said: "We recommend Sistem Teknik to all our customers. Sistem Teknik is a company that Turkey can be proud of." Thank you dear Sezer Matkap. We hope that our cooperation will continue to increase. Here is that interview in which dear Matkap has spoken words about Selim Makina and us that makes us proud. We wish you good reading.

LPG Cylinder Protection Ring

LPG Gas Distribution Flange

Tube Lower Circle / Tube Lower Platform Sheet

You are one of the leading companies in the iron and steel industry and in the production of equipment and accessories for LPG cylinders. You produce equipment and accessories for companies producing LPG cylinders in many different parts of the world. What factors contributed to this growth? In this context, could you briefly describe your company policies?

Selim Makina is a family company. Family businesses often have conservative structures. This is not the case in our company. Only family members who can contribute can take part in the company. In addition to the advantages of being a family company, this enables us to take action faster than corporate companies. Our hard work is the reason why we are among the most reliable suppliers in the industry in Europe, Africa, South America and the Middle East. The feature that impressed our customers the most is our ability to respond to their needs at all times, regardless of time difference.

Sezer MATKAP / Selim Makina Sales Manager

So, which products and services of Sistem Teknik do you use?

We have worked with Sistem Teknik on only a project. But this project was also very successful. We worked with Sistem Teknik on the Tube Annealing Furnace project for a customer in Morocco. The success of this project has increased the trust of our customers in us. Not only in sales and installation processes, but also we understood better how we made the right decision in the after-sales process.

What would you like to say about the process quality and traceability of the furnace that Sistem Teknik produces according to your needs and the requirements of your industry?

We recommend Sistem Teknik to all our customers. All companies producing quality tubes must have ST furnaces in their production lines. From the beginning to the end of the project, we were informed instantly at every stage. It was very impressive to know what condition the furnace was in at which stage. After the delivery, information about the condition of the furnace was requested periodically without any complaints from the customer, and it continues to be so. Being able to establish and organize this system should really be appreciated. Sistem Teknik is a company that Turkey can be proud of. A very nice family business. I wish every sector had a company like Sistem Teknik and people like Mehmet Özdeşlik who devoted their lives to working and being successful...

LPG Cylinder Coloret

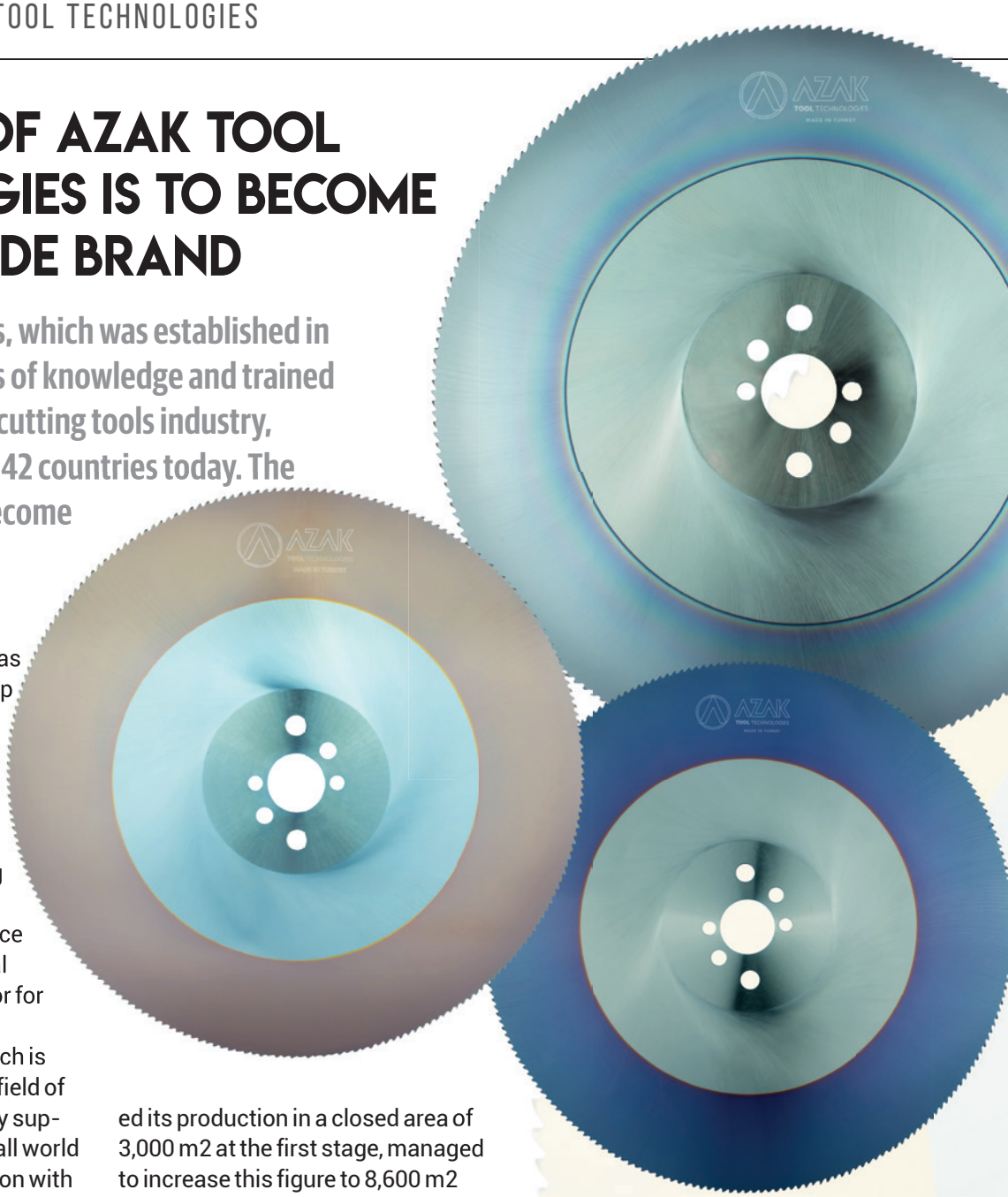
LPG Cylinder Valves (Brass)

LPG Tank Legs

Picnic (Camping) Tube Carrying Apparatus

THE GOAL OF AZAK TOOL TECHNOLOGIES IS TO BECOME A WORLDWIDE BRAND

Azak Tool Technologies, which was established in 2018 with its long years of knowledge and trained and expert staff in the cutting tools industry, exports its products to 42 countries today. The company's goal is to become worldwide brand.



The goal of Azak Tool Technologies, which has embraced success step by step with the principle of "People First" since the first day of its establishment, is to become a worldwide brand. It was established in 2018 as a result of observing the current product needs in the market with the experience and knowledge of Ağır Global company gained in the sector for many years.

Azak Tool Technologies, which is based on specializing in the field of cutting tools and accordingly supplying products suitable for all world markets, started its production with the HSS circular saw product after a few years of preliminary research. The company, which carries out all processes such as heat treatment, tempering, honing, grinding, thread cutting and coating of raw material taken as an unprocessed product in its own integrated production facility, continues to invest in the production of other more advanced cutting tool product groups in the future with a similar perspective.

Latest technology in machinery and equipment

The production facility of the successful company is located in Dilovası Industrial Zone, 70 km from Istanbul, on a total area of 45,000 m2. Azak Tool Technologies, which started its production in a closed area of 3,000 m2 at the first stage, managed to increase this figure to 8,600 m2 with ongoing investments in just 2 years. In the next 5 years, it aims to reach a closed working area of approximately 40,000 m2. Company officials especially emphasize that the production facilities are equipped with state-of-the-art machinery and equipment, including heat treatment furnaces, machines for various grinding processes, thread cutting machines, coating machines and a fully equipped laboratory.

They embraced success with the principle of "people first"

Azak Tool Technologies firm also works with universities. Authorities; "One of the main factors that directly affect product performance in cutting tool applications is the coating

Azak Tool Technologies signature in fairs in Turkey and the world

Participation in international fairs held in different parts of the world was given great importance. The main ones of these fairs are as follows: Fabtech Dubai 2018, Tube Russia, Tube India 2018, Tube Düsseldorf 2018, Saw Expo Augsburg 2018, Metal Expo Istanbul 2018, Maktek Istanbul 2018, EMO Hannofer 2019, Fabtech Chicago 2019, Tube South Asia 2019, Steelfab 2019 , Metalloobrabotka Moscow 2021, Fabtech Chicago 2021, EMO Milano 2021.

process. We are working with universities on this issue in order to increase the high performance that our coatings provide to our customers. In this context, we have come to a point where we can offer coating options specific to the processes of the users. As Azak Tool Technologies Inc., we approach the requirements of our customers from their point of view and carry out the necessary engineering studies together with our customers in order to make the product as practical and efficient as possible for them." Currently, a total of 85 personnel are employed, 20 of which are white-collar. Azak Tool Technologies officials, who say that they always work with the principle of "people first" as a company, say, "In the light of this principle, we are aware that the most important weapon we have in ensuring life safety is "Education".

Every sector from A to Z

Azak Tool Technologies exist in every sector from A to Z. They provide products and services in every sector of industry such as pipe and profile production, automotive industry, furniture production, construction industry, shelf production, pier production, shipbuilding industry, heavy industry, food industry, textile industry and paper production. In addition to the material supply services of the company, there are also re-sharpening and coating and technical support services.

Shorter delivery, high performance

Despite the long delivery times of three to four months in the HSS circular saw industry, Azak Tool Technologies has succeeded in bringing a different dynamism to the industry thanks to its industry experience and well-equipped human resources and the latest technology it uses. The firm has achieved this success by offering products with short delivery times, competitive prices and high performance at the same time. Authorities describe this pride and happiness with the following words: With the support of our group company's 35 years of experience, as Azak Tool we know the best ways to meet the needs of our customers in Turkey and around the world. For this reason, we keep sufficient stock of raw materials to ensure fast turnaround and much shorter delivery times. We also plan to continue developing processes by working directly with our customers. The test unit, which will be established in our company's laboratory and not available to any other manufacturer, will enable us to observe and develop our saws using cutting-edge technology, and will offer advanced cutting opportunities. This is an important step in the research and development process for both our company and the cutting tool industry as a whole."

Worldwide service points will be created!

Azak Tool Technologies plans to expand its worldwide presence and network by establishing collaborations with accurate and reliable partners. Parallel to this, the successful company, which aims to further improve the product quality, also aims to improve its after-sales technical support and quality with the concept of certified sharpening service. In order to achieve this, the company, which plans to create and authorize Azak certified sharpening service points worldwide, has already taken the first steps. In this context, the first company named Azak GmbH was opened in Germany in September.

> "Azak Tool Technologies exist in every sector from A to Z. They provide products and services in every sector of industry such as pipe and profile production, automotive industry, furniture production, construction industry, shelf production, pier production, shipbuilding industry, heavy industry, food industry, textile industry and paper production."

PERFECT EXPERIENCE WITH ECOSTAR FUSE: HIGH-VELOCITY GAS BURNER FOR PROCESSES

by ÇAĞRI BEZMEZ, PRODUCT ENGINEER

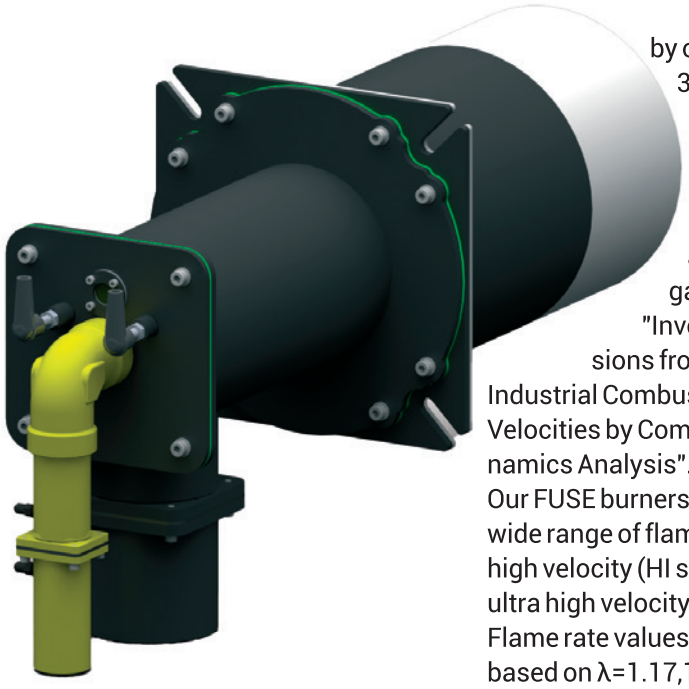
As Turkey's leading burner brand, Ecostar specializes in two main burner groups: monoblock (domestic) and duoblock (industrial). In the burner group, Ecostar, which has the most diverse and widest range of products in our country, also includes liquid, gas and dual fuel products and special burners for different fuel types among the burner systems produced. With our approach, focused on the environment and energy conversion, burner series with low emissions (NOx and CO) have also been added to the product range and our investments in these products are continued uninterruptedly.

Our burners; thanks to the wide power capacity and high combustion efficiency, especially for industrial furnaces; can be used in start-up applications in industrial boilers, hot air generators, rotary dryers, fluidized bed combustion and grate firing. In this way; it shows up in almost every branch of industry such as heat treatment industry, melting pots, metal industry, cement plants, asphalt plants, paper mills, sugar factories, ceramics, textile, food, soil, chemistry, fertilizer, biomass power plants, thermal power plants.

The FUSE series was developed by our R&D team, especially for use in industrial furnaces. Our FUSE burners; thanks to its superior technical features and ergonomic design, offer a perfect experience with the right product in processes.

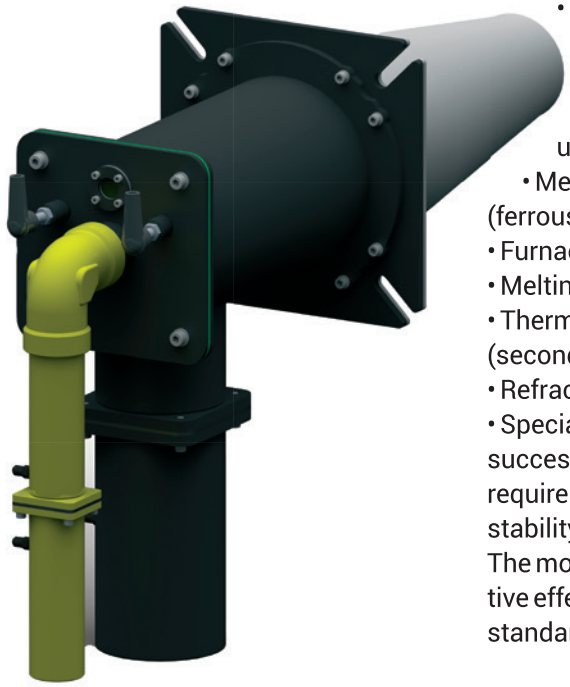
Our FUSE burners are known as high velocity burners among users due to their flame velocity values. Industry-accepted flame rate standards are as follows;

• Low Velocity Burners (10-50 m/sec)



• Medium Velocity Burners (50-90 m/sec)
• High Velocity Burners (90-150 m/sec)
• Therm-Jet Burners (150 m/s and above)

The scientific publication on the grouping of flame velocity values in burners was published by our company in the 3rd International Engineering and Technology Management Congress in 2020 and became a pioneer in this regard with the article "Investigation of Emissions from Combustion in Industrial Combustor with High Flame Velocities by Computational Fluid Dynamics Analysis".



Our FUSE burners can be used in a wide range of flame rates with their high velocity (HI series) model and ultra high velocity (UL series) model. Flame rate values of our FUSE burners; based on λ=1.17,1350°C temperature and 0 atm pressure standards, can reach +150 m/sec speed. This high combustion gas output flow rate supplies;

• A homogeneous temperature distribution in the furnace.
• Reaching the process temperature in a shorter time
• Achieving better product quality
• Increasing the efficiency of the system

Such high flame velocity values are primarily used in;

• Metal-oriented heat treatments (ferrous and non-ferrous metals)
• Furnaces in the ceramic industry
• Melting furnaces in the glass industry
• Thermal air outlet cleaning systems (secondary combustion)
• Refractory drying applications
• Special drying applications

successfully and in all processes that require high temperature and flame stability.

The most basic contribution and positive effect to the process compared to standard burners is due to the physical

structure of the flame. Since the cold spots remaining on the product will reduce the efficiency, it is necessary to increase the flame velocity in order to ensure that the heat reaches each region and to ensure homogeneous heat distribution as soon as possible. For example, while standard burners produce flames close to the flame tube and in a wide/spherical shape, our FUSE series; since it produces a thin, long and stable flame, increase the quality of the heat treatment. While the furnace reaches the desired temperature in a shorter time, it also directly affects the quality of the processed materials, as the heat distribution inside the furnace is better.

Our FUSE burners provide high quality combustion and mixing performance thanks to the unique and special turbulator designed by our R&D team. Thanks to its pre-mixing zones and its patented turbulator, it not only works efficiently due to low NOx and CO emission values, but also offers an environmentally friendly solution to the users.

FUSE burners are produced with four different heads as SS/SC/RR/RS based on their application-oriented temperature resistance.

The values below are shared considering the inner temperature of the furnace. The material strength temperatures of the heads are approximately 30°C to 50°C higher, but the recommended usage limits are as follows, since the material strength limits are completely enforced would reduce the lifetime of the cap;

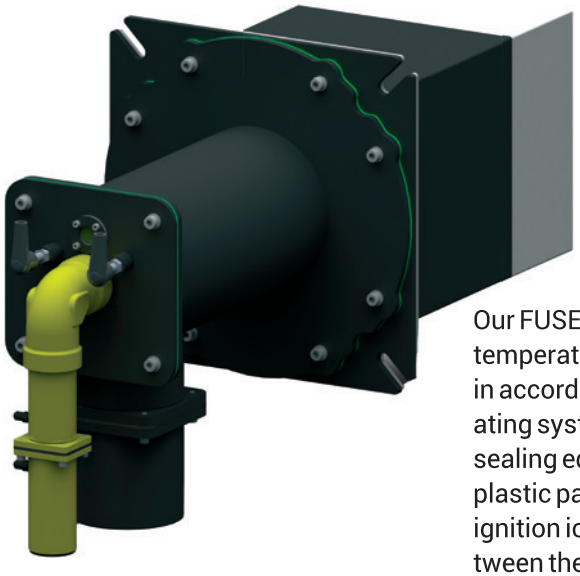
• Maximum temperature 1100°C when using SS head (stainless steel - cylindrical design)
• Maximum temperature 1350°C when using SC head (silicon carbide - cylindrical design)
• Maximum temperature 1650°C when using RR head (refractory - cylindrical design)
• Maximum temperature 1650°C when using RS head (refractory - square design)

Although the service life of these heads may vary depending on the process conditions and similar factors, they are shortened considerably when the material works at maximum strengths instead of the recommended in-furnace values.

In the use of FUSE burners, determination of the required temperature values, for both application and actual, is of great importance in presenting a suitable and economical head. In this way, it is possible to prevent problems which may occur in the long term, such as;

• Change after header destruction
• Material consumption to arise
• Unnecessary furnace stops

Considering this, the importance of choosing the right head increases even more.



Our FUSE burners offer quick and easy assembly thanks to their compact design and user-friendly structure.

Undoubtedly, one of the most important criteria in devices produced for heating purposes is their power capacities. In this context, our FUSE burners can offer the right solution for different applications with their output of 6000 kW.

Especially;

• Changes and revisions to be made in old furnaces
• Processes such as aluminum melting, crucible heating
• Where compact solutions are required due to space constraints
• Special applications such as hot air generators

The place and importance of FUSE burners is indisputable.

Our FUSE burners, which offer advantages to users for low power as well as high power capacities, have the option to be used as a single stage up to 150 kW, thanks to the high mixing performance they provide.

Today, in order to increase the energy efficiency in the system, specially designed burner systems (recuperative, regenerative) are involved in different / special applications. Again, in this style, the use of hot air as combustion air in the burners is becoming widespread, so that the energy of the burner is spent less on heating the combustion air in the environment and the generated power is channeled to the materials to be heat treated.

Our FUSE burners can use air at a temperature of 450°C when designed in accordance with this type of operating system. Instruments such as; sealing equipment, product paint, plastic parts on the product, gaskets, ignition ionization cables placed between the cap holder plates, that we use in the product geometry are the determining factors of our operating temperature. This and many other variables determine the hot air operating limits of the product.

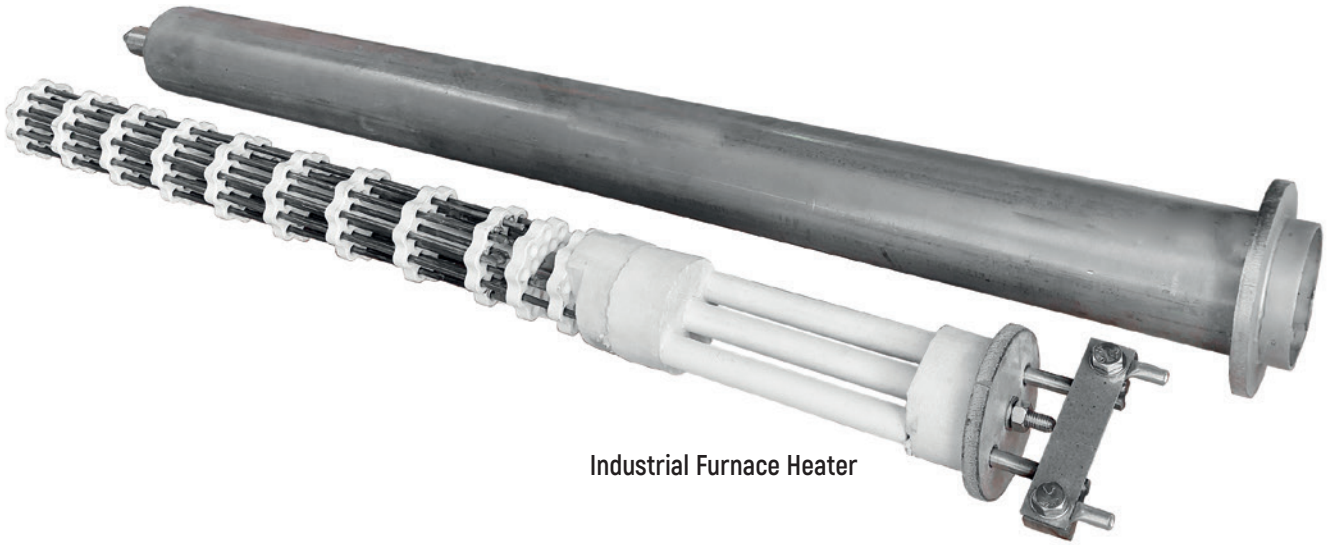
Another important issue is the ignition temperature of the fuel. For example, natural gas is a self-igniting fuel at 550°C-650°C. Therefore, the presence of air at 450°C around the gas line provides a safe working environment for the users.

On the other hand, hot air processes are generally examined within the scope of special systems. Based on the demands in line with your applications, the level of working with hot air can be increased by developing models specific to such uses in the future.

BAYKAL REZISTANS OFFERS ENGINEERING SOLUTIONS WITH ITS BOUTIQUE PRODUCTION

Industrial Heating Elements Most Preferred Producer of Turkey

Since 1970, Baykal Rezistans is serving unlimited and excellent to its customers. Now, our company is only producing industrial heating element for its special customers. Baykal Rezistans presents high level engineering services to approximately ten thousand customers all around the world, with boutique and customer based exclusive service philosopy. Finally, the company Baykal Rezistans, with its excellent customer service understanding, will continue to serve its good quality products in next years, to its customers from all over the world.

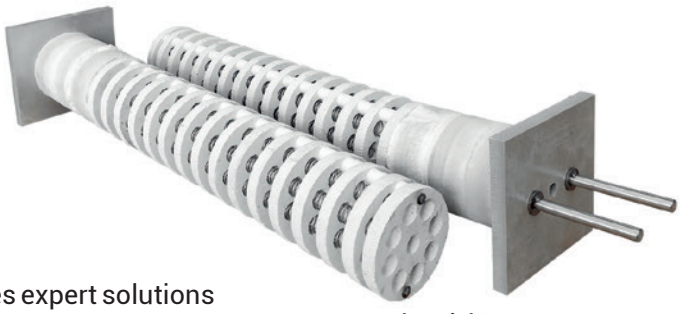


Industrial Furnace Heater

"Industrial Furnace Heaters are types of heaters used in the heat treatment furnace, which allows to increase the internal environments of the ovens to the desired temperature values. Production is carried out in Baykal quality according to different types and usage dimensions, as well as the furnace interior temperature."

Types of Heaters According to Maximum Temperatures in the Oven

›› Tubular Heaters (Maximum 700°C)
›› Spiral Wound Heaters (Maximum 1100°C)
›› Metal Sheathed Ceramic Carrier Supported Heaters (Maximum 1200°C)
›› Silicon Carbide Heaters (Maximum 1400°C)

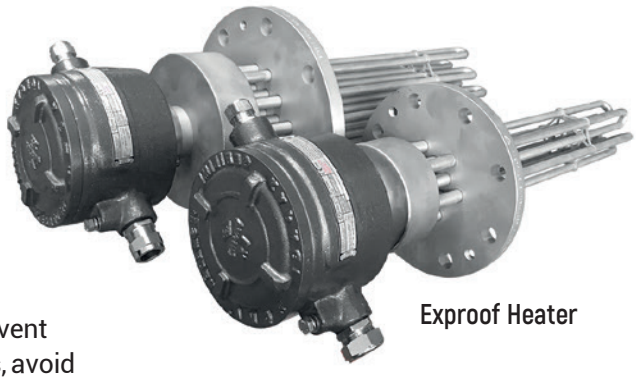


Industrial Furnace Heater

You can work with Baykal Rezistans, our team that provides expert solutions in terms of customer experience, together with its expert personnel in these types, which you can choose as a tool to meet a wide range of customer needs in all your processes that require heat treatment, and which you can use as one of the best manufactured products. With its focused approach, you, too, always benefit from the right furnace heating element types in the manufacturing processes of industrial furnaces and equipment.The heat treatment furnace resistances, also known as high-temperature heaters, are today made of special ceramic materials up to 1400 degrees Celsius and a high-temperature structure made of resistance wire. "As Baykal Resistance, we provide the production in accordance with the desired projects and in the dimensions you want according to the furnace types. You can reach the special production point at any time you want, and you can stay in touch for information and support.

Explosion Proof Heaters

Exproof Tubular Heaters can be used for a wide variety of purposes. It is used safely in the chemical and petrochemical industry, in industrial processes, oil platforms, military facilities and many other placs, in areas where an explosive atmosphere may occur, in environments where substances are stored, processed or produced. In such cases, it is necessary to take preventive measures to reduce the risk of explosion of the substances in question.



Exproof Heater

These preventive measures are based on the principles to be applied in the following order:

- Replacement
- Control
- Reduction

Replacements is the replacement of flammeble materials with less flammable materials. Control includes measures to reduce the amount of flammable materials, avoid or minimize leaks, prevent the formation of an explosive atmosphere, collect and limit leaks, avoid sources of ignition, and the like.

Mitigation includes measures to reduce the number of persons exposed, to take measures to prevent the spread of the explosion, to reduce or contain the explosion pressure, to provide protective equipment to personnel, and similar measures. Following the implementation of the replacement abd control principles, all remaining hazardous areas will be classified into zones according to the risk of an explosive atmosphere accurring. This classification will enable the determination of the protection classification of materials, nd this will enable the determination of the appropriate protection method for each space. For an explosion to accur, an explosive atmosphere must be combined eith an ignition source.

Resistance Wires

Baykal Rezistans is the largest resistance wire supplier in the region. KANTHAL, BGH, REDTIGER, VDM, GEBAUER GRILLER, ATWIRE AND in RESCAL brand resistance wires. Resistance wires that convert electrical energy into heat energy are called 'resistors'. The wires that generate the heat in heating devices are called resistors. It usually contains chromium (Cr), Aluminum (AL) and Nickel (Ni). It is made of iron (Fe) alloys. But among the general public It is known as chrome-nickel wire. The resistors have a very high impedance and shows a great thermal resistance (up to 1400°C).

Resistance Wires

Resistance wire is a kind of alloy that has various usage areas and consists of metals in different proportions. The resistance wire got its name from the fact that it is referred to as a heater wire in heating elements. The resistance wire resists electric current. Resistance wires are used as electrical heating elements in industrial ovens and electrical household appliances. Baykal Resistance provides guidance and information to its customers about the right wire in accordance with their intended use. It always provides uninterrupted service to its customers with its superior stock situation in the region. Baykal which has almost all resistance wires in its stock, apart from wires in different alloys, can also serve its customers in different wire types according to demands. The products that can be preferred according to the place of use may differ. It is an iron chrome-aluminum alloy element with a maximum usage temperature of 1400°(. Ni-Cr wires with a maximum temperature of 1250°() thanks to the nickel alloy it contains, higher resistance strength compared to iron-chromium-aluminum based resistances, maintaining its continuity after use, non-magnetic, It is the heating element that has advantages such as higher corrosion resistance.

AIR DUCT HEATERS

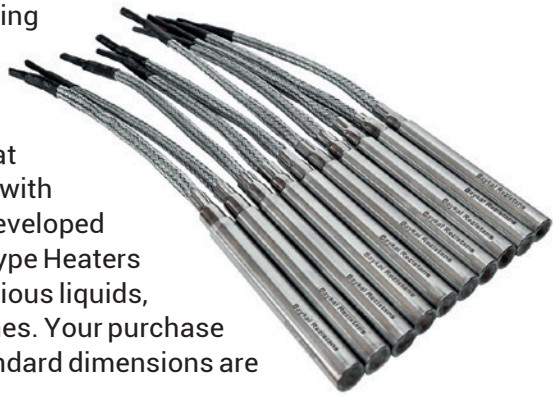
AIR DUCT HEATERS are the latest in industrial furnaces and ventilation systems. They are used as a heater or to heat the outside air in fresh air systems. In addition, to meet the additional heating need in heat recovery devices, fresh can be attached to the air discharge outlet. BAYKAL cassette type heaters are certified to ATEX has. Cassette type heaters with rectangular, square or round mechanical body. It is produced as and in the desired channel section. Cassette heaters with today's technological possibilities, it provide heating up to 600 ˚C. Cassette type heaters are produced in desired sections. Heating elements they are made of stinless material, the body material is galvanized sheet or it can be produced as stainless sheet. Cassette heaters for industrial furnace manufactureres electrically designed, which can be easily installed in an industrial oven. Heaters are to provide heating in industrial furnaces or very low outdoor environment they are used to increase the fresh air intake temperature in conditions.

In addition, Cassette type heaters are ATEX certified. Optionally in the chemical and petrochemical industry, industrial in furnaces, oil platforms, military facilities and more in a very similer place, where an explosive atmosphere could arise where substances stored, processed or produced in environment can be used safely.

Cartridge Heaters

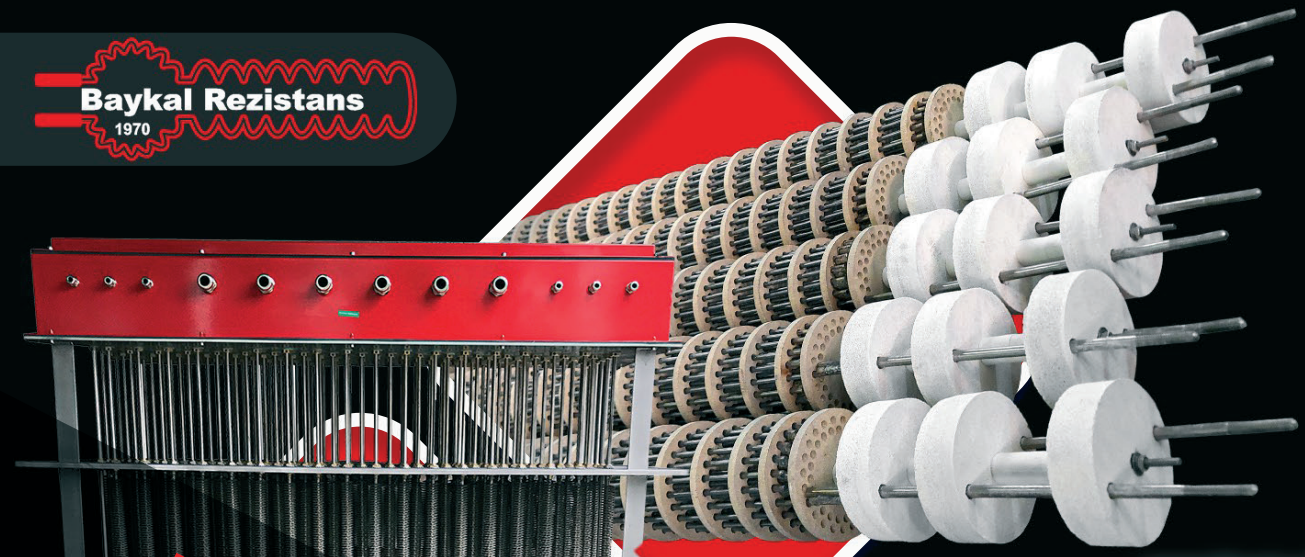
Cartridge Type heaters are commonly used in many fields. This is the most commonly preferred type especially for heating molds and press benches. this high quality type of heater is also used for heating packaging materials and benches of packaging machines, and heating water, oil and corrosive liquids.

Cartridge heaters can be manufactured with tube diameters varying from 4 mm to 31,5 mm. These cartridges can be manufactured with varying lengths from mininum 30 mm up to 5000 mm. In addition, they can be manufactured as 90 ˚C bended L-type- Elbowed - Cube Elbowed - Steel Cord Armored - Spiral Armored - Bushed - Flanged - Sleeved. Various types of staninless steel materials are used in manufacturing of Cartridge Heaters depending on the fields of application. Main steel grades used in tubular heating elements include; Grade 304-316-321-310 S Stainless Steel. We also manufacture heating elements by using special alloy stainless tubes. These special materials are Alloy800 - Alloy825 and Alloy600. Now, our company can also manufacture flat tubular Cartridge Type Heaters with the cutting-edge technology developed recently. Flattubular Cartridge Type Heaters are commonly used for heating various liquids, and horizontal plate and press benches. Your purchase orders with dimensions other than standard dimensions are custom-made.

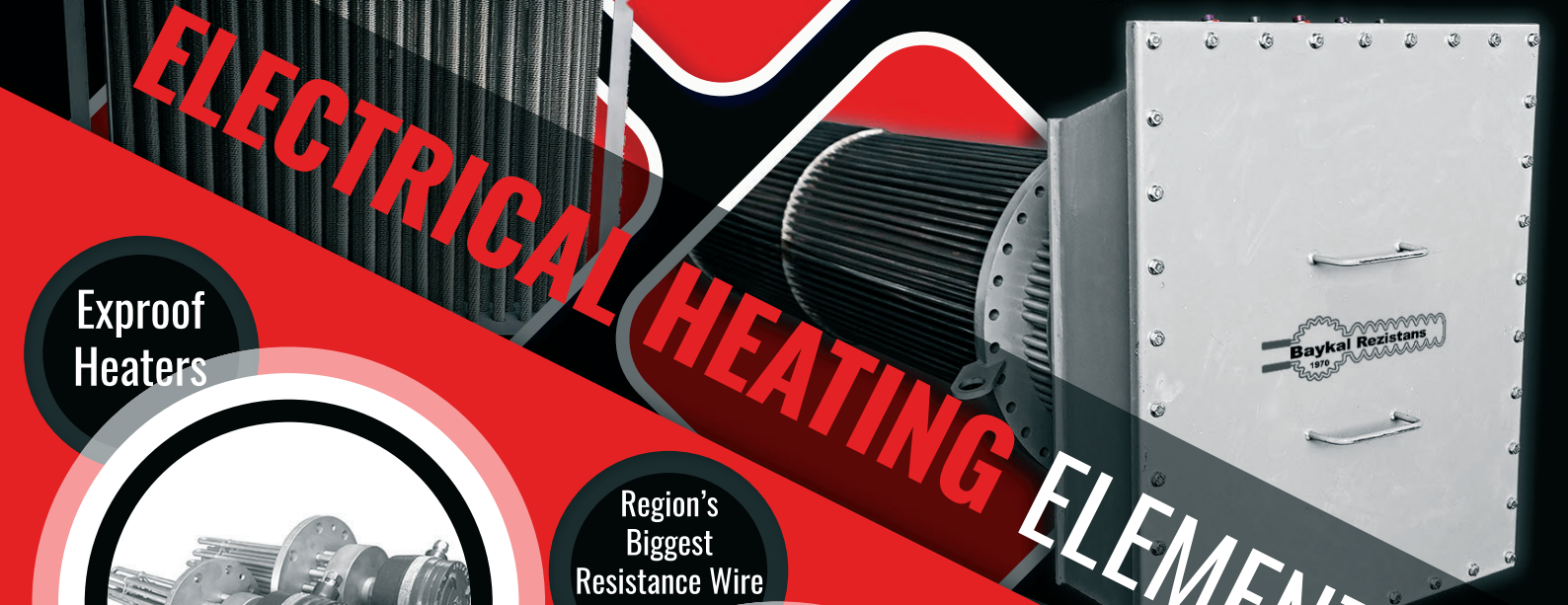


Baykal Rezistans
1970

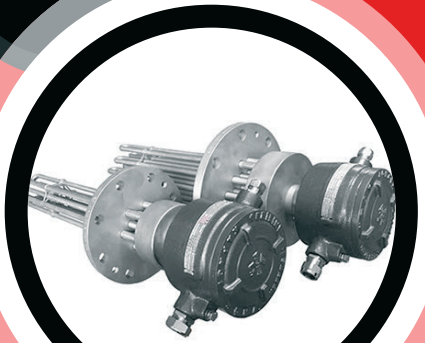
50 YEARS EXPERIENCE



ELECTRICAL HEATING ELEMENTS

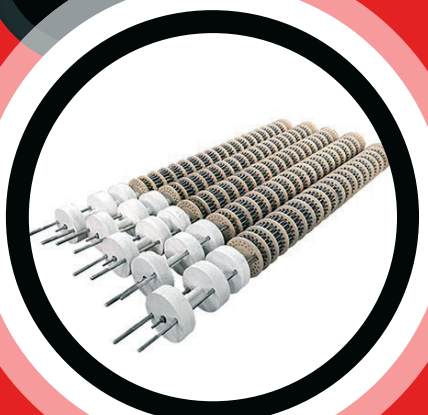


Exproof Heaters



Region's Biggest Resistance Wire Stockholder

Furnace Heaters



EXPERTS IN

- TUBULAR HEATERS
- FURNACE HEATERS
- PTC CARTRIDGE HEATERS
- AIR DUCT HEATERS
- FINNED HEATERS
- EXPLOSION PROOF HEATERS

Industrial Heating Elements Most Preferred Producer of Turkey
Since 1970, Baykal Rezistans is serving unlimited and excellent services to his customers.
Now, our company is just producing industrial heating element for his special customers.

www.baykalrezistans.com

CONTACT US
+90 212 244 52 13
export@baykalrezistans.com

LABORATORY BY SISTEM TEKNIK IN SLOVENIA

Sistem Teknik team takes action to establish the biggest test laboratory of the region in Slovenia, the production base of Central Europe.

Sistem Teknik, one of the most well-known companies in the world in the production of fire resistance test furnaces, carries its technology and 'high quality' production approach to Slovenia. A start was made to establish a fire test laboratory in Slovenia. The fire test laboratory to be established in Slovenia, which is defined as the production base of Central Europe with its advanced infrastructure, high education level and economic structure, will be the largest in the region. 20 truck shipments were made. The 1st phase of installation was completed in October 23 and the 2nd phase of installation is expected to start in February 2022.Our work continues in the facility.

YOUR PROCESSES ARE STABLE WITH

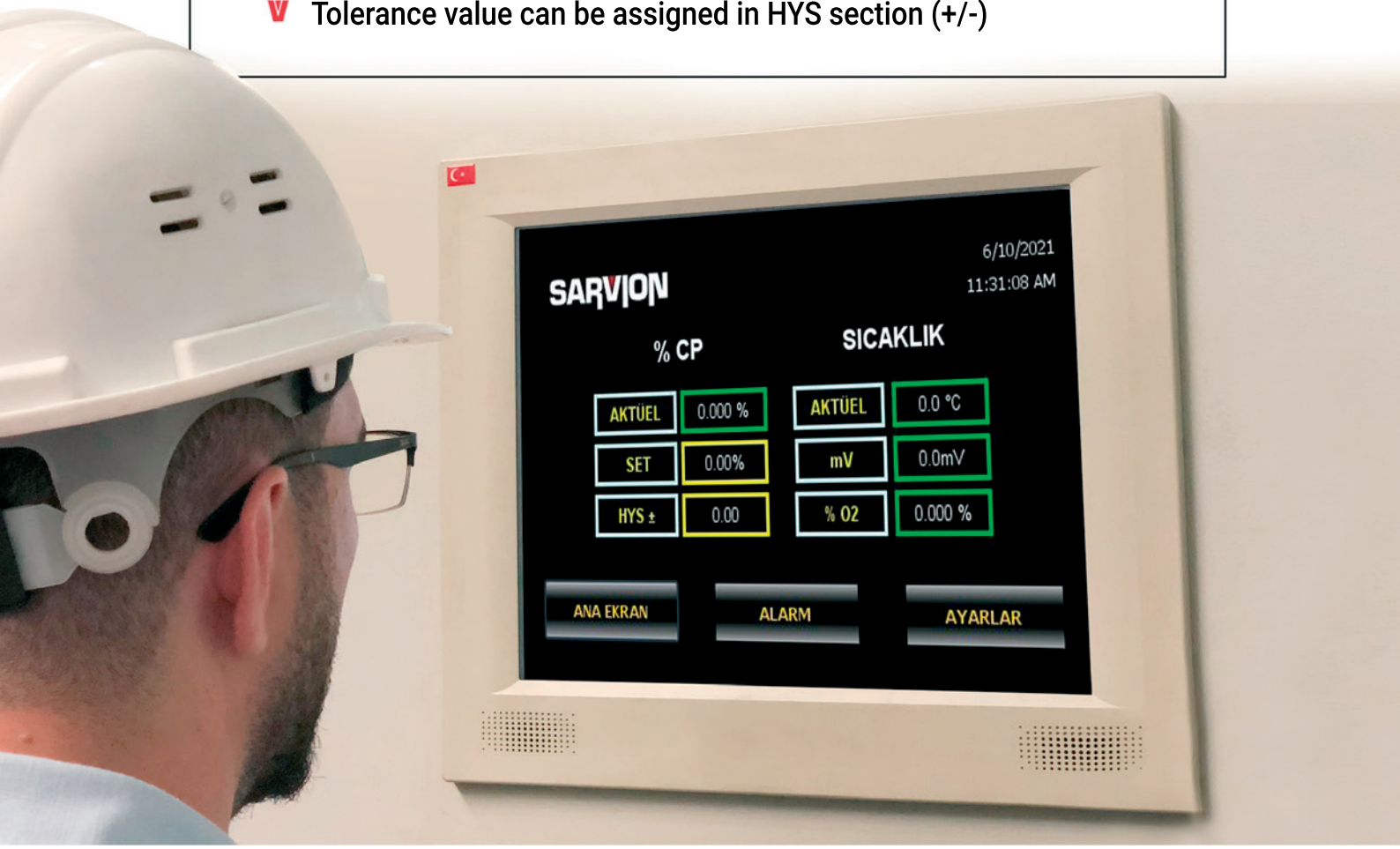
SARVION CARBON CONTROL SYSTEM NOW!

WHAT CAN THE SARVION CARBON CONTROL SYSTEM MONITOR?

- Current carbon level (%Cp)
- Current oxygen level (%O_2)
- Temperature reading from oxygen probe (˚C or ˚F)
- mV value of oxygen probe

Also,

- Carbon set value can be entered (Cp set)
- Tolerance value can be assigned in HYS section (+/-)



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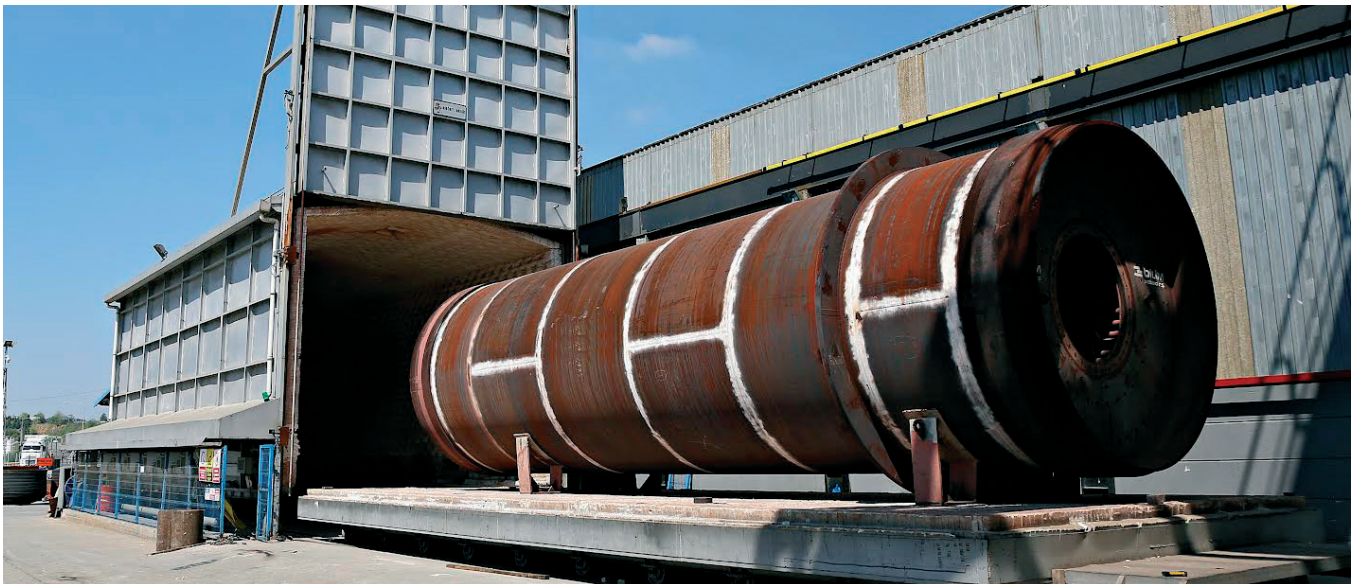
KARTAL BOMBE HEAT TREATMENT SERVICES MAKE DIFFERENCE!

One of the services provided by Kartal Bombe, which is an expert in metal forming and stands out with its quality production, is heat treatment. We have focused on the main heat treatment methods applied by the successful company for our readers.



Kartal Bombe, one of the facilities with the largest heat treatment furnace capacity in our country, performs heat treatment applications for dished and external products in line with international standards and customer demands. The internal and external thermocouples of its heat treatment furnaces are periodically calibrated by Türkak accredited institutions. For our dear readers, we focused on the main heat treatment methods applied by Kartal Bombe. Here are those methods:

Spheroidal Annealing (Soft Annealing): This method, which is generally applied to high carbon steels, is carried out with long-term annealing in the Ac1 line region. The general purpose of this method is to impart ductility to the material.

Stress Relief Annealing: It is a heat treatment method that is applied in the form of waiting for 1-2 hours depending on the material thickness between 500-680°C in order to eliminate the stresses after cold forming and welded manufacturing.

Recrystallization Annealing: Hardening occurs due to the dislocations that occur after the plastic deformation process. These hardnesses cause cracks after a certain time and the machinability of the material decreases for the next process. It is a type of heat treatment that is usually done in the 600-700°C range with 1-2 hours of waiting to restore ductility to the material.

Quenching: It is a type of heat treatment that is generally heated at 1000-1050 temperatures and rapidly cooled with water in order to correct the deteriorated grain structures of stainless steels.

What is heat treatment?

Heat treatment, which is extremely important for materials science, is applied to obtain a significant change in the structures of metals and alloys. Depending on the phase diagrams, the process of obtaining the desired mechanical properties and internal structures with different processes applied at temperatures below the melting temperature is called heat treatment.

■ Camber ■ Profile, Pipe, Cylinder Twisting ■ Heat Treatment
■ Tank Accessory ■ Pressure Equipment...

KBS
Kartal Bombe Sanayi



ASME U • ASME U • ASME S • GOST R • ISO 3834 - 2 • AD-2000 WO • AD-2000 HPO • PED 2014/68EU • ISO 9001 • ISO 14001 • ISO 45001

KARTAL BOMBE INDUSTRY

KBS, which is at the forefront of the world with its products, manufactures single and double walled pressure equipment, especially vacuum tanks, for Turkish industrial furnace manufacturers according to customer demands. **Kartal Bombe Industry;** It can take part in stamped projects with ASME U, ASME U2 and ASME S quality certificates, as well as design and produce according to EN 13445, AD 2000 Merkblatter and other international standards.

EAGLE, which was established with the principle of high quality service and product production, has started to serve in the expansion tanks sector under the roof of **KARTAL GROUP** as a new brand structured with an innovative perspective.

EAGLE
GENLEŞME TANKLARI | EXPANSION VESSELS






KARTAL BOMBE ve BASINÇLI KAPLAR SANAYİ ve TİCARET A.Ş.

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KEEP UNDER CONTROL

The Visualization and Control of Industrial Heat Treatment Process

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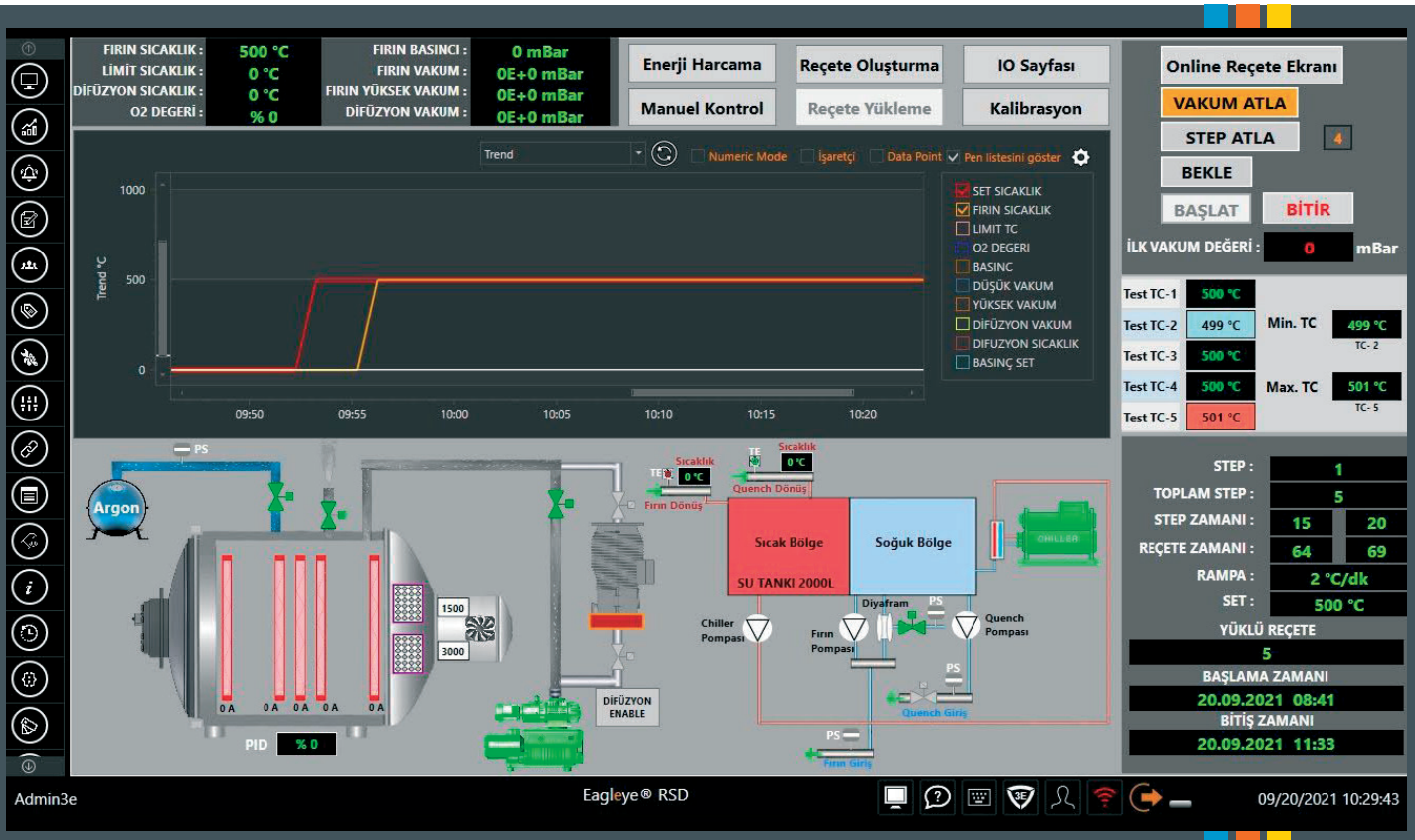
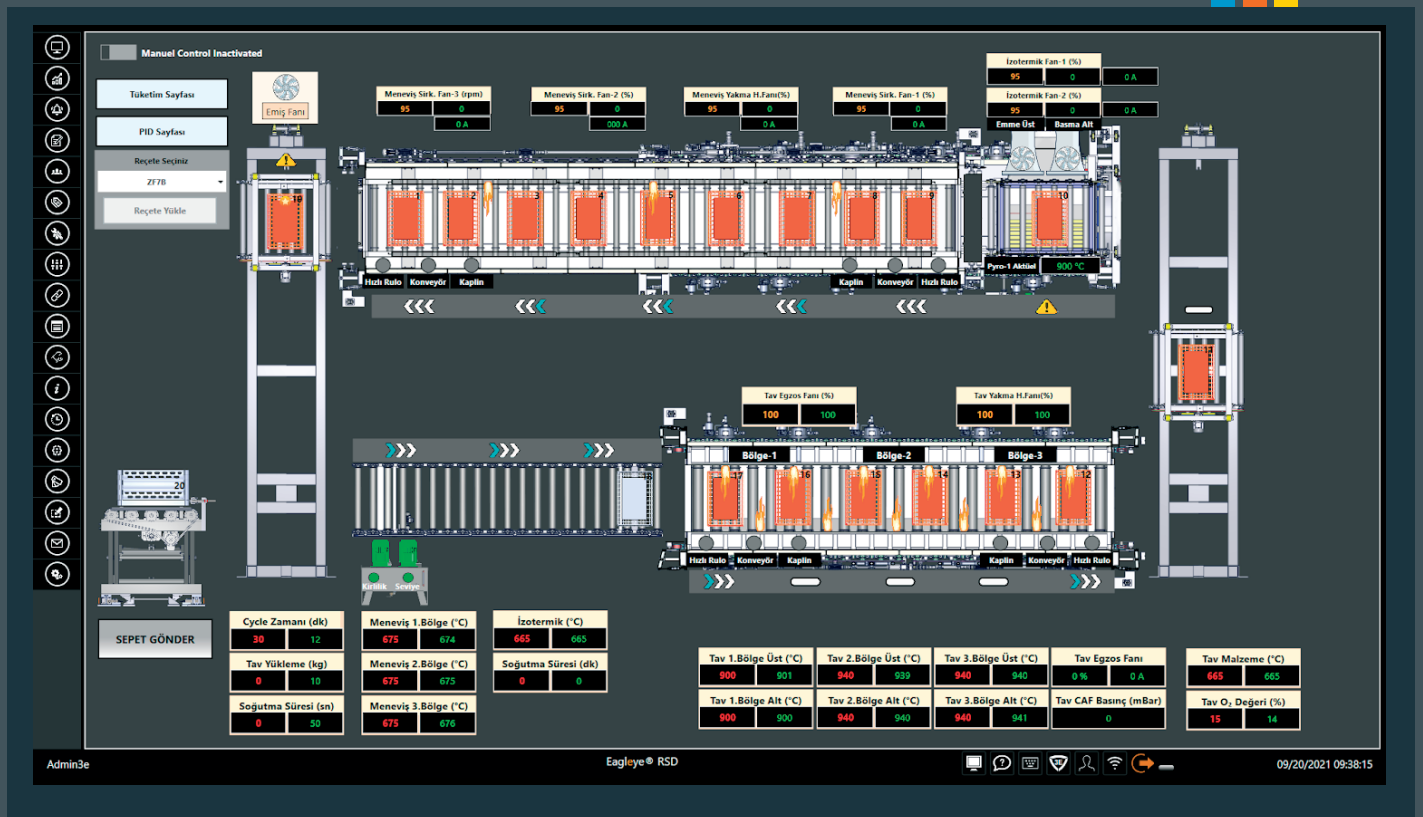
- Autoclaves
- Atmosphere Furnaces
- Fire Testing Furnaces
- ... much more

SPECIAL TOOLS (GCODE, PIPE BENDING ETC.) - UNLIMITED SCREEN DESIGNER - EVENT & TIME SCRIPT - ALARM MANAGEMENT - USER MANAGEMENT - SMS & E-MAIL NOTIFICATIONS - WEB SERVER - REPORT DESIGNER - RECEIPE MANAGEMENT - REALTIME & HISTORICAL TREND... MUCH MORE





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LEADER IN COATING INDUSTRY: CINKOSAN

Cinkosan Surface Coating Technologies operating in the coating sector; with its professional technical team and investments in technology, it has managed to become one of the leading companies in the sector.

Cinkosan Surface Coating Technologies has many years of sectoral experience in the coating industry and a quality service approach. At all stages of production, service is provided by using inspection and quality control systems. One of the most important reasons for the successful realization of this service today is the company's professional technical team and the investments made in R&D and technology. Cinkosan is also one of the leading companies in the sector with its laboratories equipped with high technology.

It stands out with environmentalist actions

Since 1995, Cinkosan has provided the coating services applied to the fasteners in İkitelli Galvanoteknik Industrial Site, as of this year, after the development and diversification of the coating.
Since it could not adequately respond to the demands, it decided to move a part of the production line to its factories located in Hadimköy Kurtini. Acting by keeping the advantages of technology and the demands of the sector in the foreground since the first day it was founded, Cinkosan Surface Coating has ISO 9001: 2015 Quality Management System certificate and IATF 16949: 2016 Automotive Quality Management System certificate. It also stands out with its sensitivity to the environment. With the treatment plant with a daily capacity of 300 tons in the Hadımköy factory, the amount of final waste was reduced to minimum levels.

Workforce efficiency and quality service

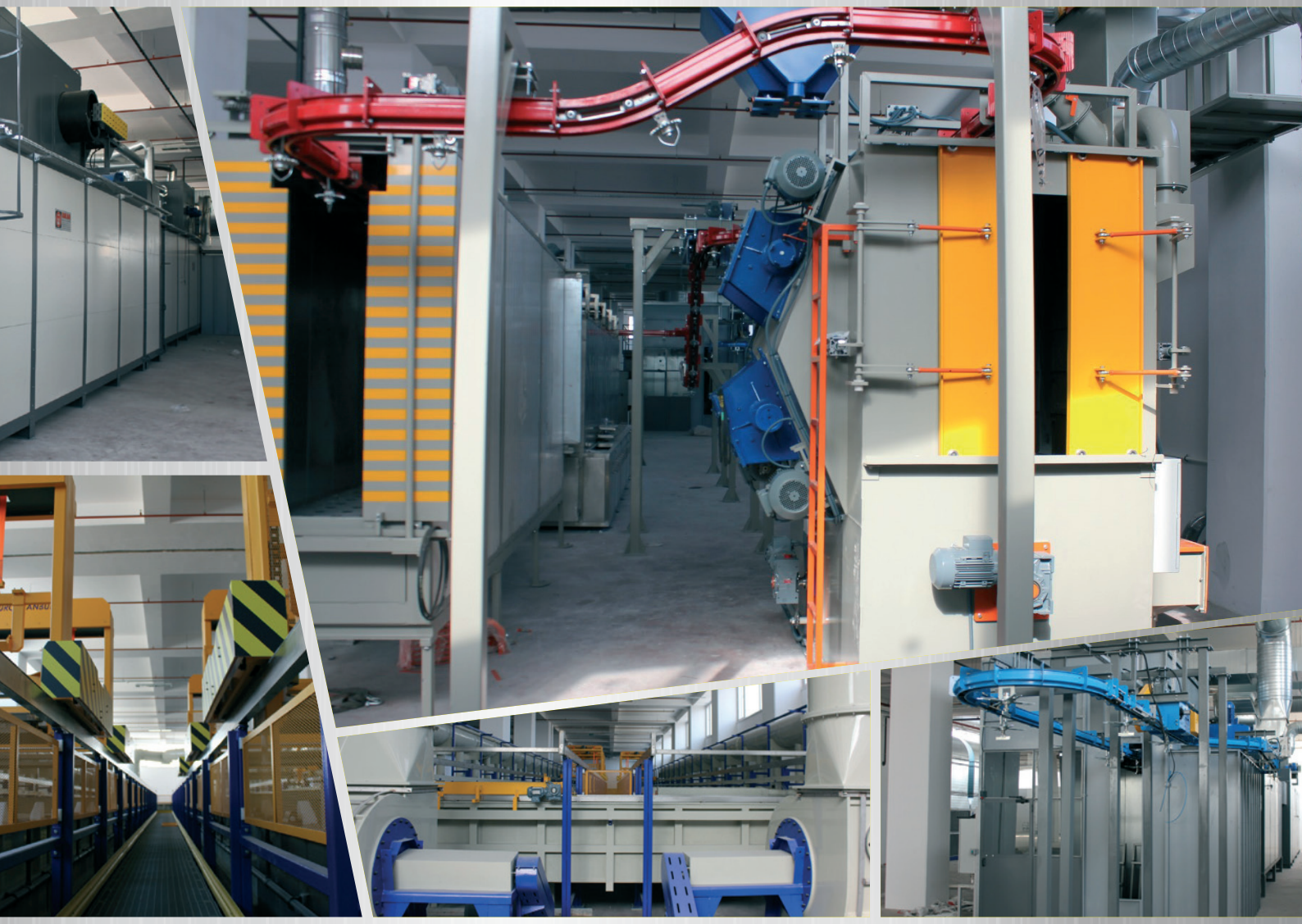
With its production technology, dynamic team and a facility with a total pool capacity of 1500 tons, Cinkosan Surface Coating Technologies, Alkaline Zn Cabinet, Alkaline Zn-Ni Cabinet, Acid Zn-Ni Cabinet, Alkaline Zn Hanger, Alkaline Zn-Ni Hanger, Solvent and Water Based Zinc Flake Coating performs Zinc Phosphate Coating, Manganese Phosphate Coating, Alkaline Zn-Fe Coating and Thermal Diffusion Coating processes with Data Based Control and Surveillance Systems (SCADA). This feature of the company reveals the advantage of maximum workforce efficiency and quality service.

CİNKOSAN

Surface Coating Technologies

WITH 40 YEARS OF EXPERIENCE

TO THE DEVELOPMENT OF THE FASTENERS INDUSTRYWE CONTINUE TO GROW BY CONTRIBUTING AND INVESTING.



45 tons of production per year

135 TL turnover per year

12,000 m² plant completed in Istanbul in 2020, 16,000 m² plant continuing in Istanbul and 18,000 m² plant have already started in Izmir.

investments in a total plant area of 46,000 m²

YANMAZ YATIRIM HOLDİNG A.Ş.
Koşuyolu Mah. Katip Salih Sk. No: 30-32/1 Kadıköy / İSTANBUL

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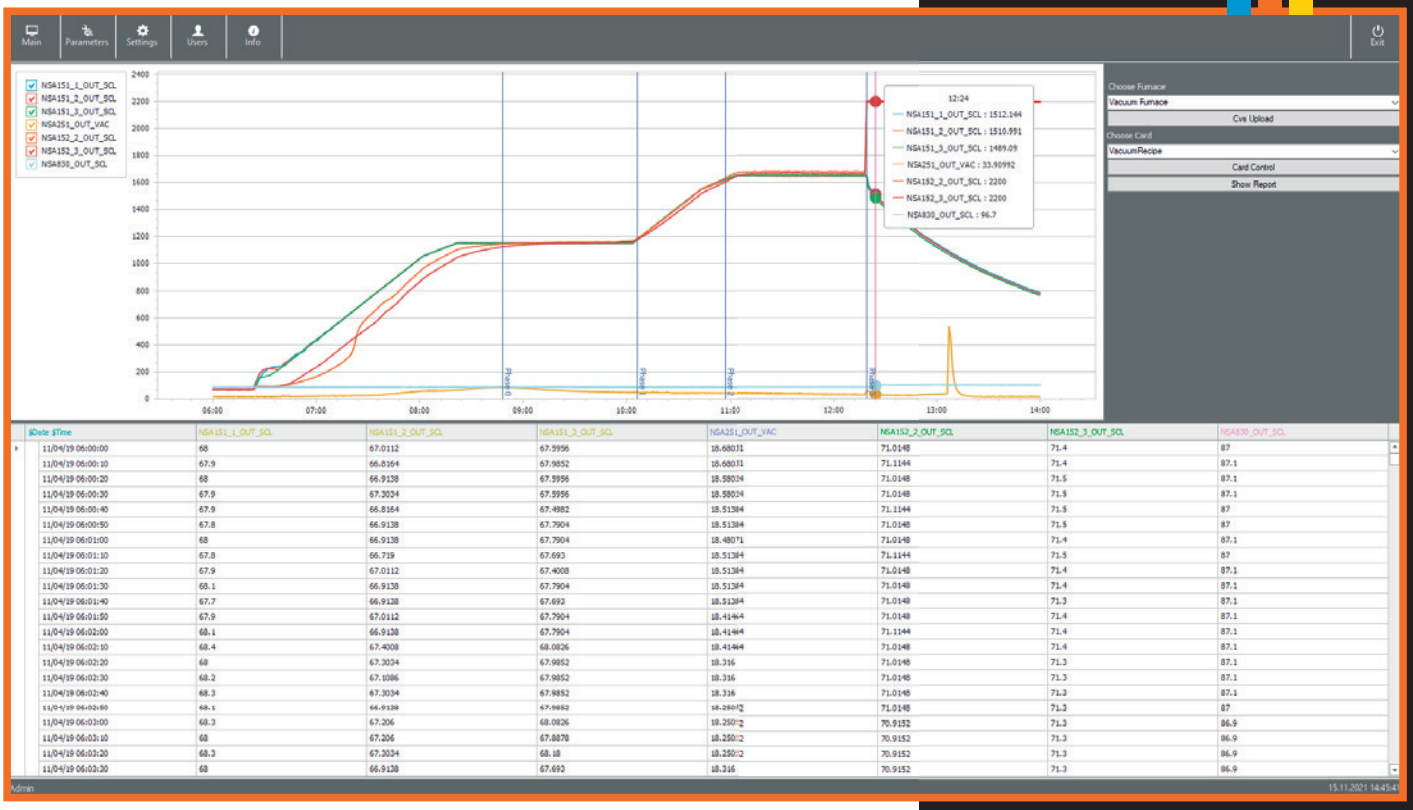
Eagleye® QRD

(Quality Report Designer)



No Error Risk in AMS 2750 and **CQI-9 Compliance**

Standards such as AMS 2750 and CQI-9 are used for the control of heat treatment processes of high quality materials in the automotive, aerospace and aviation industries. After the determination of these standards, sector-specific requirements for heat treatment were defined and processes were subjected to stricter rules. In summary, these standards describe in detail the requirements applicable to heat treatment plants.

Eagleye QRD automatically checks and reports whether the data received from the furnaces meet the relevant standards according to the desired quality cards. Process data can be loaded from a table or obtained directly from the field or by connecting to an ERP system. In this way, you can perform your controls that may take hours in seconds and evaluate your process. After checking dozens of machines working in your facility from a single point at the same time, the quality reports and results are shared with you by e-mail. In addition to shortening the process, your risk of making mistakes is eliminated.

With its flexible structure, different process controls, system integrations, unlimited quality card definition and many more features, Eagleye QRD is with you...

- AMS 2750 and CQI-9 compatibility
- Easy management and use
- The most effective and fastest solution
- ERP integration
- Paperless use
- Reliable and accurate quality control
- Automatic data transfer
- User-defined reference cards

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PHD-4 PORTABLE LEAK DETECTOR FOR TESTING UNDERGROUND STORAGE TANKS

Leak Testing for Underground Storage
of Hazardous Materials

Leaks in underground gasoline and fuel oil tanks are a danger to the environment especially if leaking fuel enters local water supplies. To avoid environmental damage, countries worldwide are instituting legislation restricting the level of leaks allowed to emanate from underground tanks.
To protect the environment and to avoid the liability costs associated with non-compliance with environmental legislation, it is very important to find and repair leaks quickly.
The average cost to clean up a simple tank leak is very high and increases with the size of the leak. One way to minimize the danger and expense of leaks is to find them when they are very small. This requires a high degree of sensitivity and reliability in the leak detection method, one that both identifies and locates leaks precisely. The PHD-4 does both. This eliminates the need to excavate the area around an entire tank to fix a leak that may only be in the piping.

What Is PHD-4?

The PHD-4 is a self-contained, ready-to-use portable leak detector capable of detecting helium concentration as small as 2 parts-per-million.

• Why Helium?

Due to the low concentration of helium in the atmosphere (only 5 ppm), very small leaks can be detected.
Helium is non-reactive with other chemicals.
Helium as a tracer gas is advantageous because it is non-toxic, non-flammable, inexpensive, and quickly diffuses through small leaks.

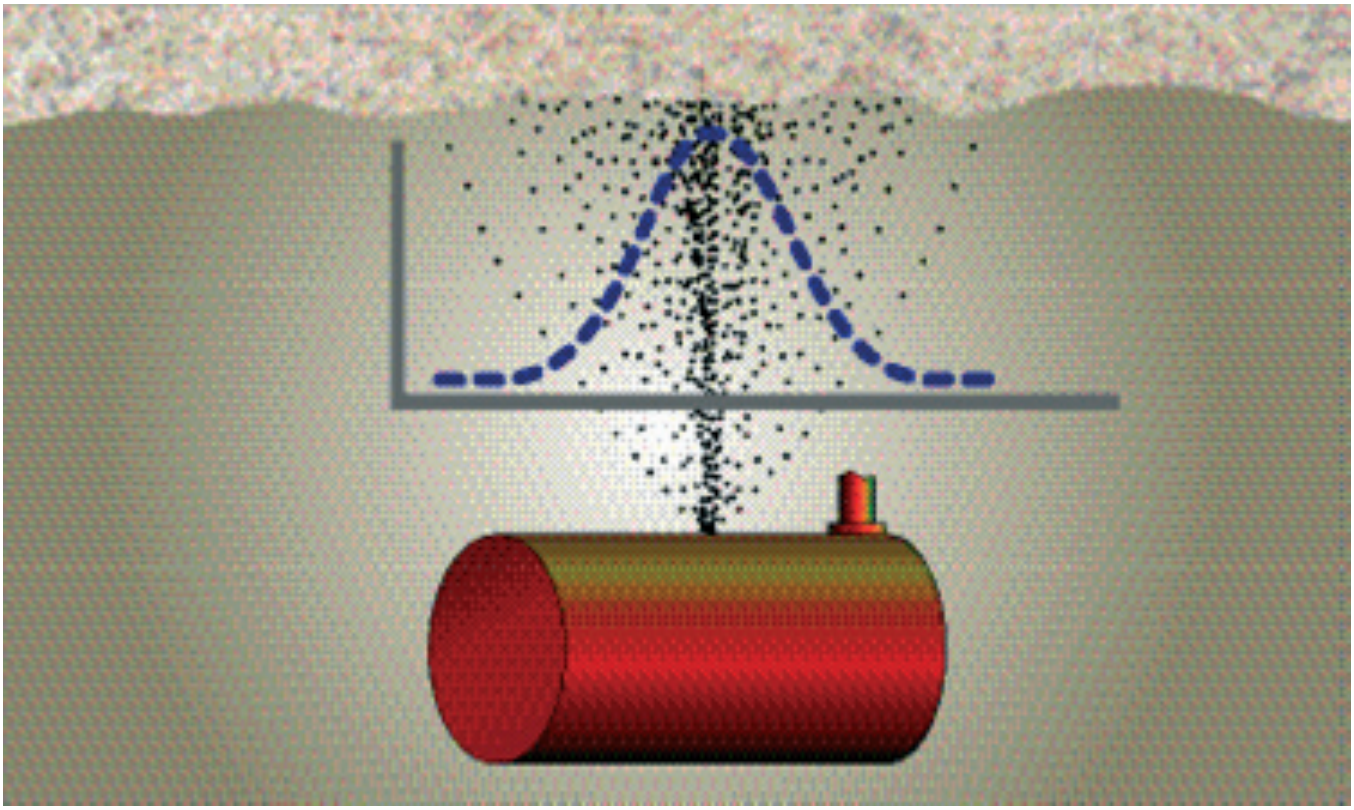
• Easily permeates earth and asphalt.

1- Leak Detection At Initial Installation
2- Post Installation Leak Detection

• Leak Detection At Initial Installation

Leak detection during initial installation is usually easier to accomplish because most or all components of the UST are readily accessible. Today, most new installations consist of primary and secondary containment systems. Tanks are typically double-walled and piping runs consist of an inner primary pipe and outer secondary pipe. Product leaking from the

> One way to minimize the danger and expense of leaks is to find them when they are very small. This requires a high degree of precision and reliability in the leak detection method that both pinpoints and detects leaks.



primary pipe is caught by the secondary pipe. Since piping runs are pitched back toward the sump area, any captured product flows in that direction to help insure containment.
Generally, testing of the tank top and piping in a new installation proceeds as follows:
• Adequately seal all tank and piping penetrations.
• Apply helium flow to one end of the system and monitor helium flow at the opposite and farthest end of the system to insure flushing of the ambient air within and to make sure that helium has reached all components.
• Seal the downstream penetration and pressurize the system with welding grade helium.
Although higher total pressures will increase the flow rate at leak sites and make smaller leaks easier to detect, one hundred percent helium is not necessarily required. Once the system is flushed and helium is added, the total pressure can be increased with air or nitrogen. When testing the primary piping using the PHD-4 helium "sniffer", the secondary piping can often be used to help contain any leaking helium. An accumulation effect occurs, making detection easier. In these cases, once the primary system is found to be leak free, the secondary piping can be sealed. Then, using a similar process, this secondary containment area, the interstitial space between pipes, can be flushed, pressurized with helium, and checked for potential leaks.

• Post Installation Leak Detection

Leak detection of a previously installed UST can be much more challenging since the tank and most of the piping are less accessible. These sites also typically have a layer of concrete or asphalt at the surface. The system must be flushed of air and pressurized with helium as described earlier, and leak detection must be performed through the layers of dirt, sand, gravel, concrete, etc.
Helium will pass through all substrates but will not always follow a straight-line path to the surface. To aid in finding the precise location of the leak site, holes may be drilled through the concrete at regular intervals along and directly over the piping runs. Once pressurization and a short dwell time are accomplished, the PHD-4 probe is placed at each of these holes to determine the approximate location of the leak.
Tape or some other material is placed over the hole during the dwell period to permit an accumulation effect and make the detection method more sensitive. Proper execution of this method can significantly reduce the amount of excavation required to repair leaks at an existing UST site.

• Why PHD-4 ?

High Selectivity PHD-4 is sensitive only to helium. There are no false signals due to the presence of any other gases.
High Sensitivity PHD-4 is nearly as sensitive to small leaks as a more expensive mass spectrometer leak detector used in the sniffing mode. This allows precise location of the leak which helps minimize excavation costs.
Battery Operated PHD-4 can be operated without a main power supply or power generator. Up to 4 hours on a single charge.
Simple Operation PHD-4 is very easy to use and does not require any special operator training. All the active menus of the PHD-4 are available in four languages. Specifically designed for underground testing (see sampling probe in photo on page 3).
Very Low Maintenance Replacement of sampling line filters is straightforward and requires only a screwdriver.
Portable PHD-4 is lightweight, portable and easy to carry, even to the most difficult leak check locations. It weighs only 2.6 kg.

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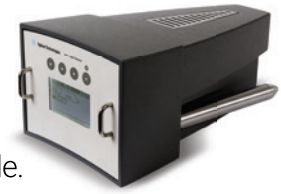
Precise, powerful, easy-to-use

HLD Helium Leak Detector

- High sensitivity
- Application-specific configurations
- It can detect even a few cc leaks per year.

Portable Sniff Detector

PHD-4 Portable Helium Det.



- Easy to carry simple
- Versatile and absolutely reliable.
- It can detect even a few cc leaks per month.

Solution for vacuum or pressure distribution Pipes containing steam and chemicals

Harsh Environment (HE) Probe for Leak Detectors

- Allows testing on hot and wet surfaces.
- It is not clogged and only allows the passage of helium.
- It absolutely protects the vacuum system and the spectrometer.

Solution for underground pipes and storage tanks

PHD-4 PRO Leak Detector

- Up to 4 hours of battery life.
- Portable, easy to use and operator friendly.

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Processes and Heat Treatment Furnaces

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