



T H E H E A T - T E C H N O L O G Y I N S I D E



BALÇIK ISI ELEMANLARI
SANAYİ TİCARET ANONİM ŞİRKETİ

product
catalog 2016



HEATING ELEMENTS
STEM THERMOSTATS
WELDED TUBES
TUBE SHAPING & PROCESSING
FURNACE BRAZING
BRIGHT ANNEALING



MILESTONES

- 1959 Heating Element Division Founded
- 1959 First Branch in Ulus, Ankara
- 1970 First Workshop in Ostim, Ankara
- 1977 First Export to Europe
- 1994 Became the distributor of Kanthal
- 1996 First Branch in Karaköy, Istanbul
- 2000 First plant in Kazan, Ankara
- 2001 Heating Element Production Technology Renovation
- 2002 Tube Division Founded
- 2003 Company Management Ownership Change
- 2004 Corporate Organisational Restructuring
- 2005 Plant expansion in Kazan, Ankara
- 2006 Acquisition of Tormec s.n.c. from Italy
- 2007 Furnace Brazing and Furnace Bright Annealing Technology
- 2008 Metal Treating Division Founded
- 2009 Second Branch Bayrampasa, Istanbul
- 2010 Plant renovation in Kazan, Ankara
- 2011 Heating Element Production Technology Renovation
- 2012 Automation Production Technology Investments for Heating Elements of Cooking Appliances
- 2013 STF Sealing Technology
- 2014 Plant expansion in Kazan, Ankara
- 2015 Corporate Organisational Restructuring
- 2016 Double Safety Stem type Thermostat Technology Release

BALÇIK is one of the world's leading heating element manufacturer, which was founded in 1959 by the honorary president of our corporation, Mr. Süleyman BALÇIK in Ankara, Turkey. As being a family owned corporation managed by the third generation with over 50 years history, today we became the focus of experience, quality, trust and innovation within the heating elements industry by the brands of BALÇIK and TORMEC.

Beginning with the heating elements manufacturing, we have gradually expanded our activities. Our corporation is currently manufacturing and providing services with it's capabilities in it's four different divisions;

- 1) Heating Element Division; Production of Tubular Heating Elements for Domestic and Industrial Applications.
- 2) Thermostat Division; Production of Stem type Thermostats for Domestic Water Heating Appliances.
- 3) Tube Division; Production of Stainless

Welded Tubes integrated with Tube Shaping, Processing, Assembling Capabilities. 4) Metal Treatment Division; Services of Furnace Brazing, Bright Annealing and Electroless Nickel Diffusion Coating.

Our success is driven by our difference in the industry, with our variety in product, production and service ranges. By high tech products - production abilities, we are aiming to provide added value to our products, our customers and also to our the country. We are currently continuing our manufacturing activities at our headquarters and production facility located in Kazan, Ankara with over 10 millions of pieces production capacity, 200 employees, on 6500sqm.

The acquisition of an Italian well known Water Heating Element and Stem type Thermostat manufacturer TORMEC in 2006 has strengthened BALÇIK's position as one of the leading manufacturer in the industry, by expanding the product range

with Thermostats. Presently our products are reaching to our hundereds of customers in 5 continents / 45 countries, which is supported by our our sales offices and logistics warehouses in Istanbul, Turkey.

BALÇIK, identified it's brand with providing high quality products and services, has VDE, CE product quality and ISO 9001:2000 system quality certificates since 2001 and 2002 respectively and continually updated these in line with international standards over the years.

With more than half century history, BALÇIK aims to be a solution partner for our customers; develops special solutions and products with its unique production technology, provides logistics support with its flexible and fast production infrastructure and represents the technology, efficiency, quality and trust with its experienced staff.

VISION

For providing high tech, energy and cost efficient, long lifetime products to the industry, continuing to the research and development projects together with the new techological and automation investments.

MISSION

Partner for our customers; develops special solutions and products with its unique production technology, provides logistics support with its flexible and fast production infrastructure and represents the technology, efficiency, quality and trust with its experienced staff.

VALUES

- Transparency
- Innovativeness
- Competitiveness
- Customer Orientation

BALÇIK WITH NUMBERS

- 55 Years History
- Two Brands
- Ten Millions Production Capacity
- Two Hundered Employees
- 6.000sqm Built, 20.000sqm Open Production Facility
- Two Sales Offices and Logistic Warehouses
- Export to 45 Countries in 5 Continents
- Participated more than 25 International Exhibitions
- Three Quality Certificatations
- Hundreds of Business & Solution Partners Worldwide



www.balcik.com.tr



Thanks to the consumption and requirement of our Heating Element division for the Welded Stainless Steel Tubes, we have founded the BALÇIK Tube division and offering high-quality Stainless Steel Tubes and Tube products, which find use in a wide range of applications.

Based on large know-how and experience in tube manufacturing for more than 15 years, in our production site, high-quality BALÇIK Stainless Steel Tubes with diameters from 6,0 mm to 13,0 mm are TIG welded.

Stainless Steel Welded Tubes can be ordered in various dimensions:

Outside diameter: 6,0 - 13,0 mm
Wall thickness: 0,25 - 1,0 mm
Length: 20 - 8.000 mm

We have significant stock of tubes and raw material and can quickly satisfy customer's requests with timely supplies even for small quantities.

Technological Process

Roll-forming of cold-rolled strips of stainless steel or alloys with high content of nickel to the required diameter, TIG welding in inert atmosphere, sizing of outside diameter, heat treatment at 1040-1100°C.

Extremely precise production techniques guarantee the high performance of BALÇIK Stainless Steel Tubes:

- TIG welding with welding factor $V = 1,0$
- Annealing within inert gas atmosphere
- Leakage test
- Various tube end treatments for example
 - Burr-free cutting,
 - Inside and/or outside countersink deburring
 - Low burr sawing
 - Brush deburring
- Vibratory grinding
- Defined roughness of welding seam
- Defined increase of inner welding seam

We optimize the complete production process in-house in order to achieve best final tube products starting from the selection of high-quality strip material to the adjustment of all production steps.

Our own laboratory analyzes and approves tubes or materials for our customers with up-to-date and high-equipped test devices.

We ensure high quality due to strict controls which accompany every phase of the production process. We rely on a modern and well-equipped laboratory to monitor the quality. Diverse methods for analyzing the physical, metallographic and chemical properties of materials are available.

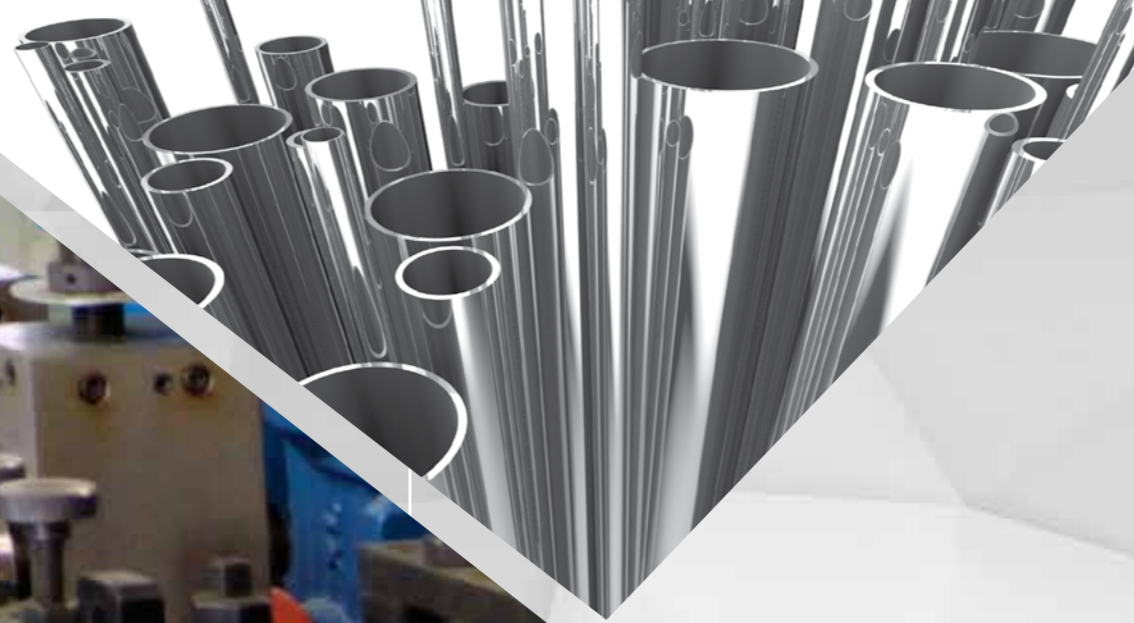
These methods especially include:

- Tensile tests: yield point, tensile strength, elongation
- Chemical analyses with a stationary metal analyzer and ICP-OES
- Hardness tests
- Measurements of roughness
- Material tests with digital processing of images; by means of a scanning electron microscope
- X-ray tests
- Extensive investigations into corrosion resistance

BALÇIK Stainless Steel Tubes and Tube products comply with the following standards;

- EN10088-2 Raw material technical specifications (strip)
- EN10217-7 General reference standard for welded stainless steel circular tubes for pressure equipment
- DIN 54141 Process control (Eddy current or Foucault current test) with cutting and automatic selection of tube with possible surface variations.
- Non destructive test, carried out on the production line
- EN ISO 8493 Diameter expansion test, 30% minimum, without detecting cracks
- Destructive test, carried out on samples out of the production line
- EN ISO 8492 Back bending test of the welding area
- Destructive test, carried out on samples out of the production line
- EN 10204 Metallic materials: types of inspection documents
- ASTM A 249/A Technical reference norm for heat-treated tubes to be used for heat exchangers and boilers
- ASME
- SA-312/SA312-M Specification for seamless and welded austenitic stainless steel pipes

STAINLESS STEEL WELDED TUBE



Material Number	US code	Density g/cm³	C%	Si%	Mn%	P%	S%	Cr%	Mo%	Ni%	Cu%	Others%
1.4016	AISI 430	7.70	0.06	1.00	1.0	0.04	0.015	16.0 - 18.0	-	-	-	-
1.4301	AISI 304	7.90	0.07	1.00	2.0	0.045	0.015	17.5 - 19.5	-	8.0-10.5	-	N ≤ 0.11
1.4306	AISI 304L	7.90	0.03	1.00	2.0	0.045	0.015	18.0 - 20.0	-	10.0-12.0	-	N ≤ 0.11
1.4401	AISI 316	7.95	0.07	1.00	2.0	0.045	0.015	16.5 - 18.5	2.0-2.5	10.0-13.0	-	N ≤ 0.11
1.4404	AISI 316L	7.95	0.03	1.00	2.0	0.045	0.015	16.5 - 18.5	2.0-2.5	10.0-13.0	-	N ≤ 0.11
1.4435	AISI 316L	7.95	0.03	1.00	2.0	0.045	0.015	17.0 - 19.0	2.5-3.0	12.5-15.0	-	N ≤ 0.11
1.4439	AISI 317	8.00	0.03	1.00	2.0	0.045	0.015	16.5 - 18.5	4.0-5.0	12.5-14.5	-	N 0.12-0.22
1.4509	-	7.70	0.03	1.00	1.0	0.04	0.015	17.5 - 18.5	1.20-2.0	-	-	Ti 0.10-0.60 / [3xC+0.3] ≤ Nb ≤ 1.0
1.4510	AISI 439	7.70	0.05	1.00	1.0	0.04	0.015	16.0 - 18.0	-	-	-	[4xC+N+0.15] ≤ Ti ≤ 0.8
1.4512	AISI 409	7.70	0.03	1.00	1.0	0.04	0.015	10.5 - 12.5	-	-	-	[5xC+N] ≤ Ti ≤ 0.65
1.4521	AISI 403/444	7.70	0.025	1.00	1.0	0.04	0.015	17.0 - 20.0	1.8-2.5	-	-	N ≤ 0.030; [4(C+N)+0.15] ≤ Ti ≤ 0.80
1.4538	AISI 904L	8.00	0.02	0.70	2.0	0.03	0.010	19.0-21.0	4.0-5.0	24.0-26.0	1.2-2.0	N ≤ 0.15
1.4541	AISI 321	7.90	0.06	1.00	2.0	0.045	0.015	17.0-19.0	-	9.0-12.0	-	[5xC] ≤ Ti ≤ 0.70
1.4571	AISI 316Ti	7.95	0.06	1.00	2.0	0.045	0.015	16.5-18.5	2.0-2.5	10.5-13.5	-	[5xC] ≤ Ti ≤ 0.70
1.4828	AISI 309	7.90	0.20	1.5-2.5	2.0	0.045	0.015	19.0-21.0	-	11.0-13.0	-	N ≤ 0.11
1.4833	AISI 309S	7.90	0.15	1.00	2.0	0.045	0.015	22.0-24.0	-	12.0-14.0	-	N ≤ 0.11
1.4841	AISI 314	7.90	0.20	1.5-2.5	2.0	0.045	0.015	24.0-26.0	-	19.0-22.0	-	N ≤ 0.11
1.4845	AISI 310S	7.90	0.12	1.50	2.0	0.045	0.015	24.0-26.0	-	19.0-22.0	-	N ≤ 0.11
1.4876	INCOLOY 600	8.00	0.12	1.00	2.0	0.03	0.015	19.0-23.0	-	30.0-34.0	-	0.15 ≤ Al ≤ 0.60; 0.15 ≤ Ti ≤ 0.60
2.4616	INCONEL 600	8.50	0.05-0.1	0.50	1.0	0.02	0.015	14.0-17.0	-	≥72.0	≤0.50	Al ≤ 0.30; Ti ≤ 0.30; Fe 6.0-10.0
2.4856	INCONEL 625	8.40	0.03-0.1	0.50	0.5	0.02	0.015	20.0-23.0	8.0-10.0	Rest.	≤0.50	3.15 ≤ (Nb+Ta) ≤ 4.15; Co ≤ 1.0; Al ≤ 0.40; Ti ≤ 0.10
2.4658	INCOLOY 825	8.10	0.025	0.50	1.0	0.02	0.015	19.5-23.5	2.5-3.5	38.0-48.0	1.5-3.0	0.60 ≤ Ti ≤ 1.20; Co ≤ 1.0; Al ≤ 0.20; Fe Rest

Pressure test in air at 10 Bar for 10 min. or, in conformity with EN 10217-7 norm, in water at 70 Bar or up to 300 Bar on request.

All tubes are marked with identification code of producer, in addition to diameter, thickness, alloy and specific production information to guarantee that all data about them are traceable.

Tube in bars is packed in:
 stackable wooden boxes, fixed with straps
 stackable wooden boxes, fixed with straps and cover
 appropriate wooden crates for tubes cut to length
 bundles, fixed on wooden boards with straps
 made-to-measure wooden packages, fixed with straps for tubes up to 20 m long.

All types of packing guarantee the preservation of all the dimensional and sanitary characteristic of the product.

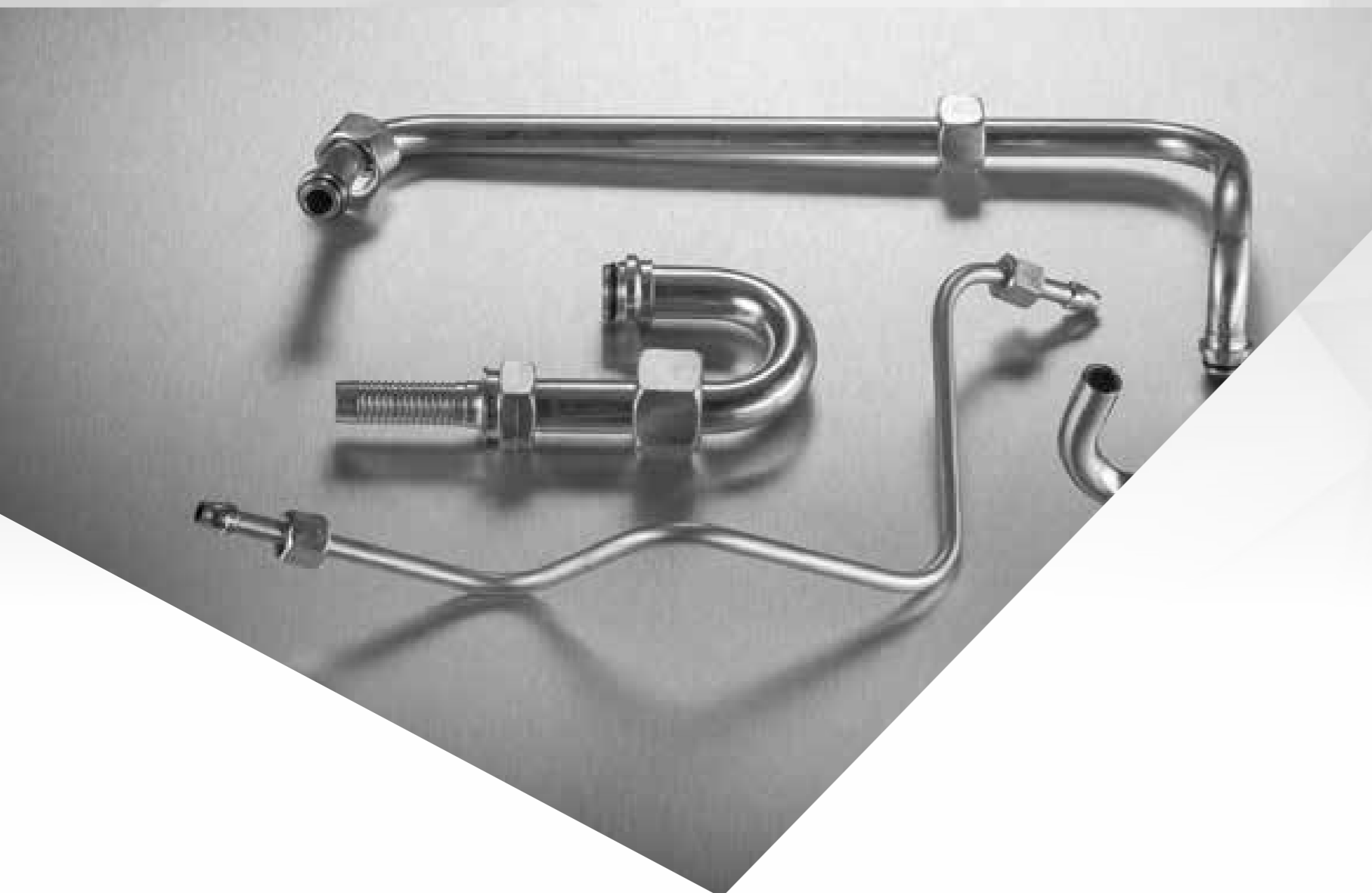
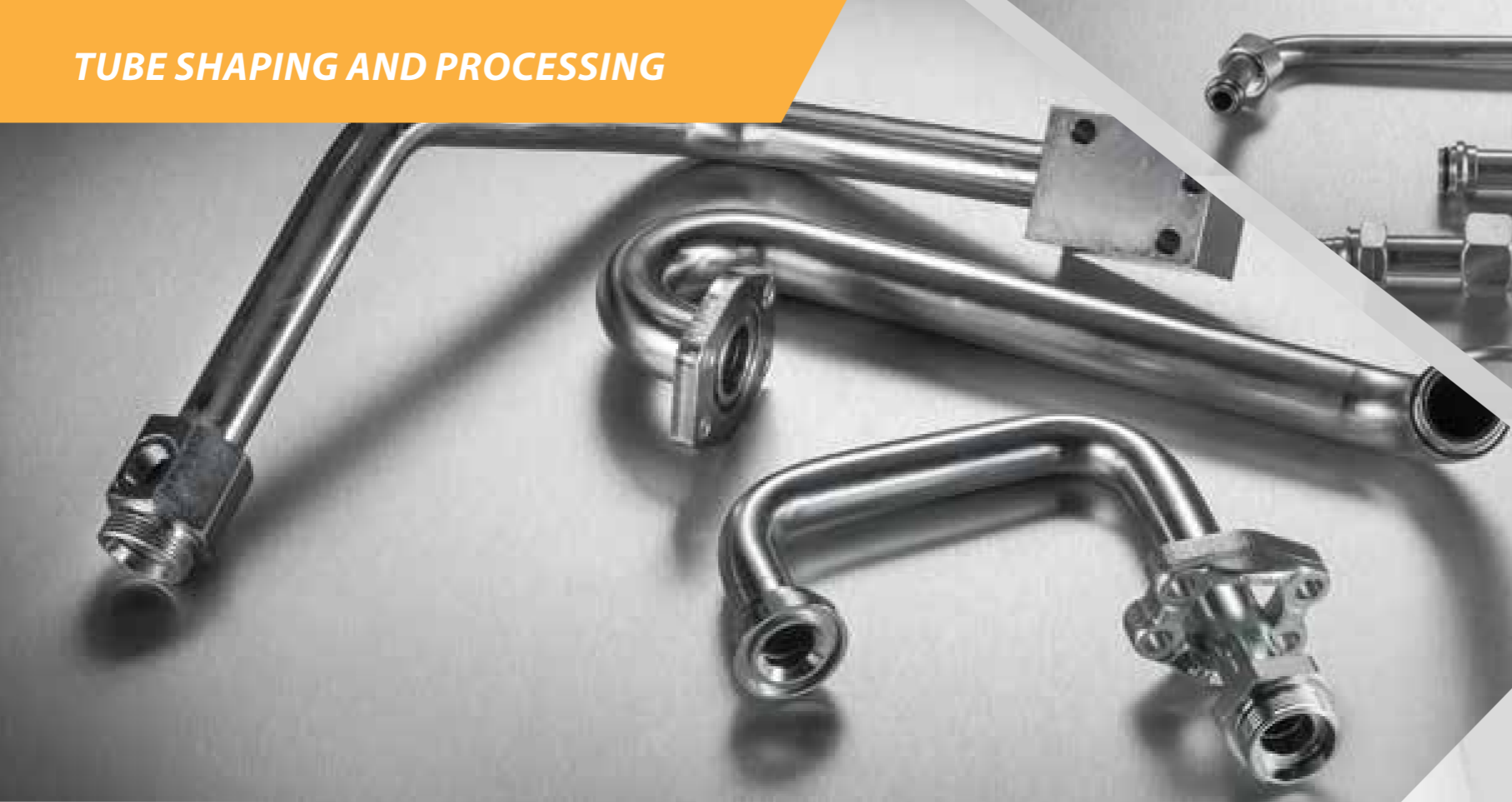
Heat Treatment for Tubes - Online Bright Annealing Technology

A heat treat process performed online through our tube mills by a carefully controlled furnace atmosphere resulting in a clean, smooth, scale free metal surface. During typical open annealing, the heated steel combines with oxygen in the air to form an oxide layer on the steel's surface. In bright annealing, the steel is heated in a furnace filled with gases, such as hydrogen or nitrogen, to prevent oxide scale formation. The material comes out of the bright anneal furnace with the same surface as it had when it went into the furnace.

Bright annealing is carried out in a furnace full of Hydrogen (H2) at temperatures ranging between 1040 °C and 1100° C and is followed by a rapid cooling. The Hydrogen is NOT an oxidising agent and therefore no surface oxidation is created and pickling is no longer required after the bright annealing.

The main advantage of this system, besides a bright and even surface that eases further processing of the tubes, is the improved corrosion resistance of the material. Such treatment, carried out at the final stage of the production process, ensures the complete solution of the possible carbides precipitated at the grain border, thus obtaining an austenitic matrix free of defects. This makes it possible to avoid the dangerous phenomena of intergranular corrosion.

The austenitic structure obtained through on-line bright annealing, is homogeneous with regular grain size; the consequence is an improvement of stainless steel tensile properties, in particular traction and elongation, with an increase of plasticity and a decrease of residual stress. This is a material characteristic very well appreciated by all end users who are making further manipulations on tubes such as bending and forming.



Thanks to the expertise of our customer-orientated project management and our highly qualified technical engineering we are in a position to supply Tubes as processed – shaped - welded tubes according to the requirements and demands of our customers.

Range of Possible Tube Processing;

Deformed tubes;

1) Bending techniques (Full Automatic CNC & Semi Automatic)

Possibilities of deformation with full-automatic CNC machine

We can bend a further range of tube dimensions by semi-automatic bending

2) Compression of tube ends

a) Upsetting

Possibilities of upsetting

Change of length, thickness and shape via compression forces Deformation grade of one process approximately 40 %

b) Rotary swaging

Possibilities of rotary swaging

Reduction of tube diameter: Two or more tool segments surround the tube cross section simultaneously in the radial direction and in rotation Deformation grade of one process approximately 300 %

Tubes with brazed metal parts;

Brazing of various metal parts on our tubes for example

Flanges

Support bars

Brackets

We offer our customers to design their special product requirements by implementing new techniques such as;

- Perforation
- Stamping
- Punching
- Adding of screw connections

www.balcik.com.tr



T H E H E A T - T E C H N O L O G Y I N S I D E



BALÇIK ISI ELEMANLARI
SANAYİ TİCARET ANONİM ŞİRKETİ

product
catalog 2016

International Sales Department
exp@balcik.com.tr

Domestic Sales Department
sp@balcik.com.tr

Factory Headquarters / Ankara
Fatih Mah. Turgut Özal Blv. No: 50
Kazan 06980 Ankara Türkiye
Tel: +90 312 8145120
Fax: +90 312 8145129
balcik@balcik.com.tr

Sales Office / Istanbul
Gümüşsuyu Cad. Odin Center 28/184
Zeyinburnu 34010 İstanbul Türkiye
Tel: + 90 212 4800171
Fax: +90 212 4800179
istanbul@balcik.com.tr