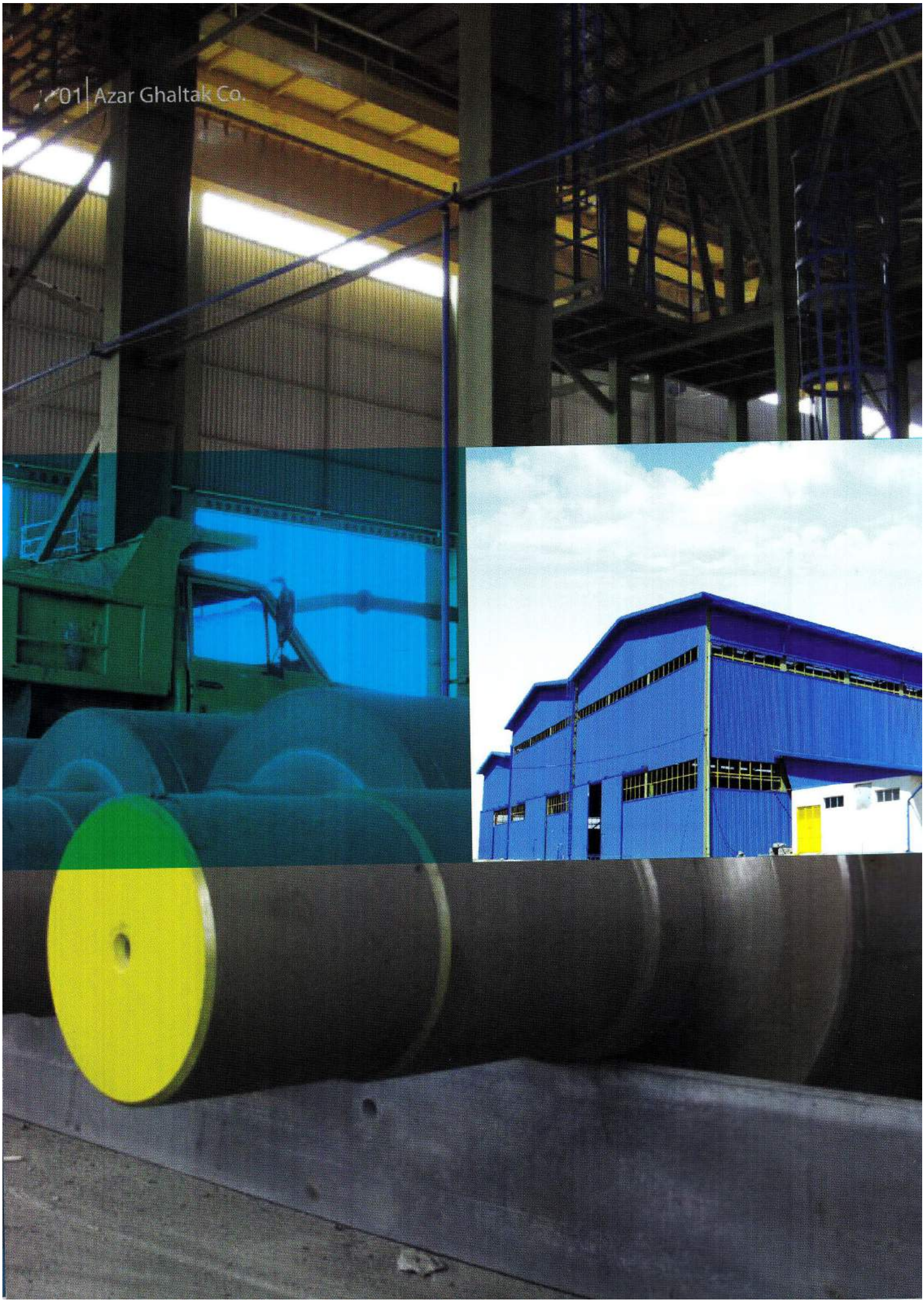
AZAR GALTAK

AZAR . GHALTAK . COMPANY

INDUSTRIAL GROUP

Production of steel ingots and rolling rollers



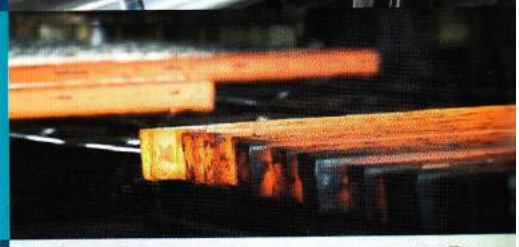
Azar Industrial Group started its unofficial activities in the field of research and survey on the steel industry of the country, especially in eastern Azerbaijan province, and after about six months of activity and decision on the field and area of activity, by investing in the private sector and contract of cooperation with foreign creditable companies, it has begun to execute its operations, regarding the rights of Allah, and cooperation and diligence of the personnel of the company, in an area of 40,000 square meters located in the southwestern region of the Azarbaijan province in Ajabashir industrial zone and with the end of need and development of the casting and cast iron and steel industry of country, with the goal of supplying and manufacturing the types of cast iron rollers required for heat rolling factories and rollers for the printing and cementing industry, as well as heavy steel and cast iron components for the mineral industry, Cement, sand and sand formation officially started its activities. Azar Industrial Group started its informal activity in the field of research and survey on the industries and steel of the country, especially the province of eastern Azarbaijan, on April 2010, after around six months of activity and decision on the field and activity area of the second half In 2010, by investing in the private sector and contract for cooperation with the Turkey creditable company, from November of that year, it began operating with the Co-operation and perseverance of the company's forces at the end of April 2012 , In an area of 40,000 square meters located in the southwestern region of the Azarbaijan province in Ajabashir industrial town and with the end of need and development of the casting and cast iron and steel industry of country With the aim of supply and production Types of: cast-iron rollers required for hot rolling factories and rollers for the printing and cementing industry, and annually more than 200 tons per year depending on the order 2. Heavy steel and cast iron parts began their formally activities for activities in the mining, cement, sand and sand formation. In addition, after completion of its development plan, the company has begun the installation and launch of a continuous steel billet line with a capacity of 100 tons daily and a monthly 3000 tons, in late 2011, which started its operation from the beginning of the year.

Introduction

Equipment/ Features/ Units

Introduction of Company

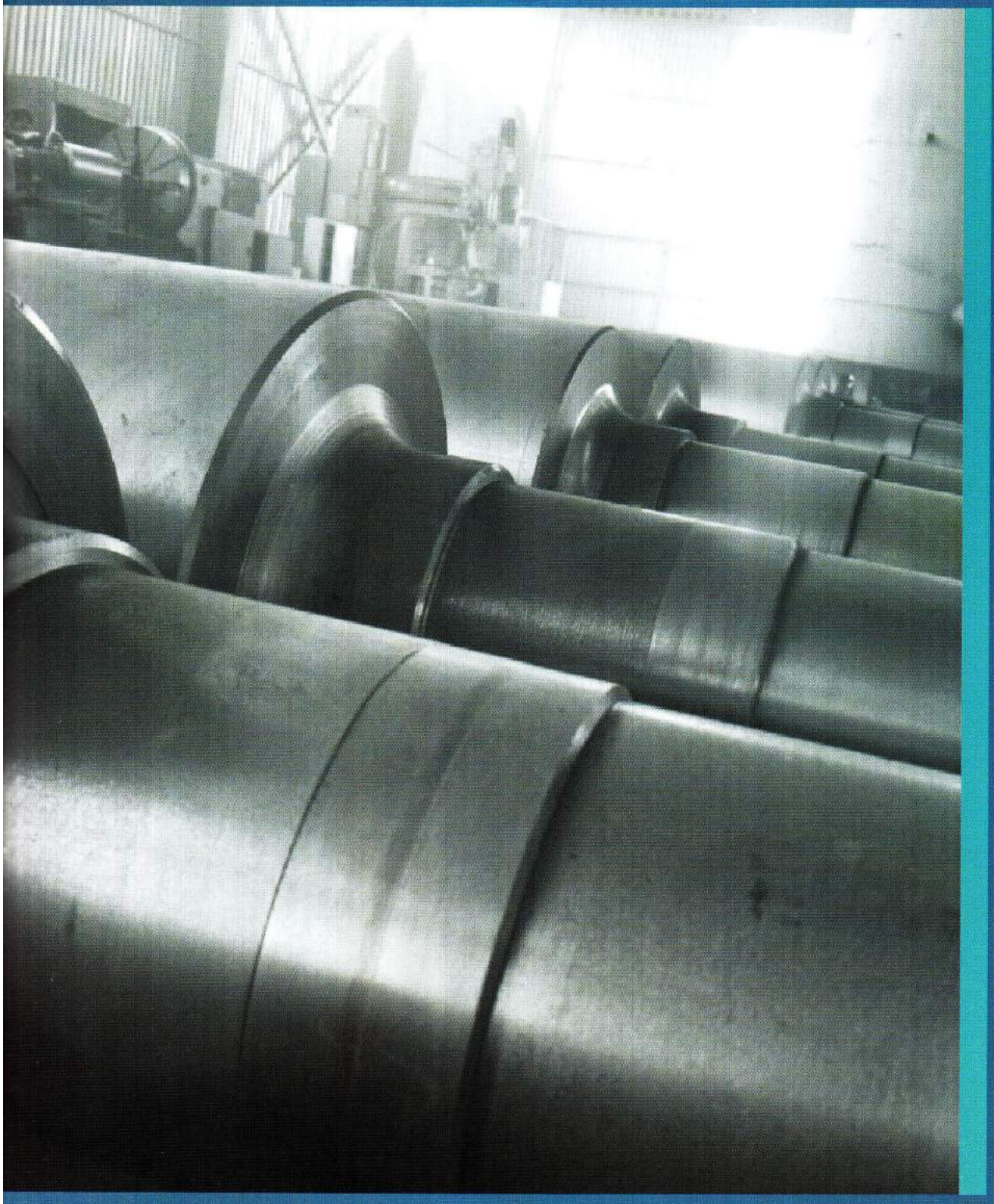
Rollers Production



Ingots Production

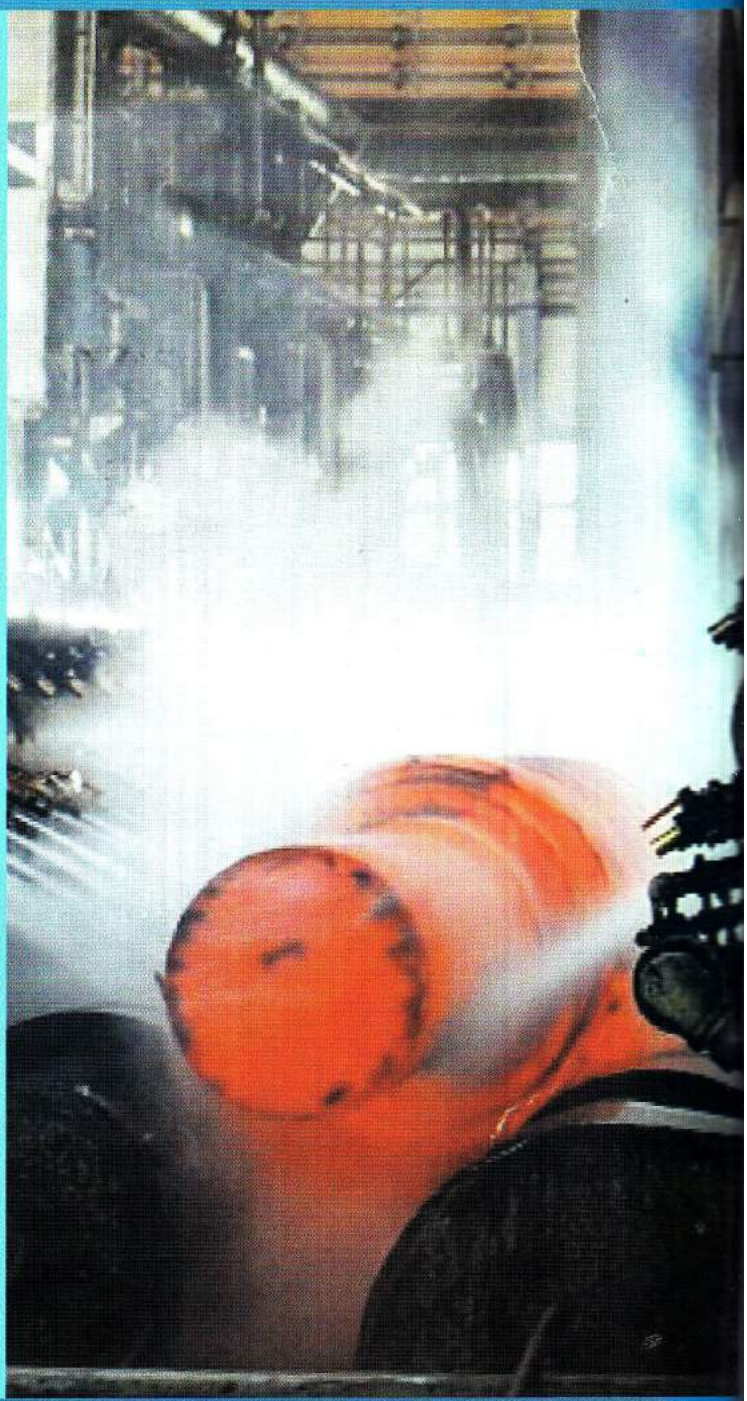
Waste Treatment

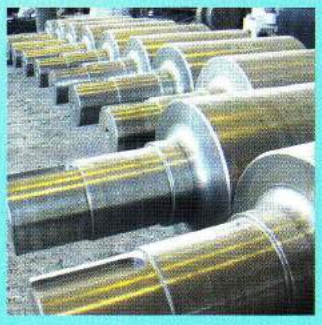
Manufacturing Engineering

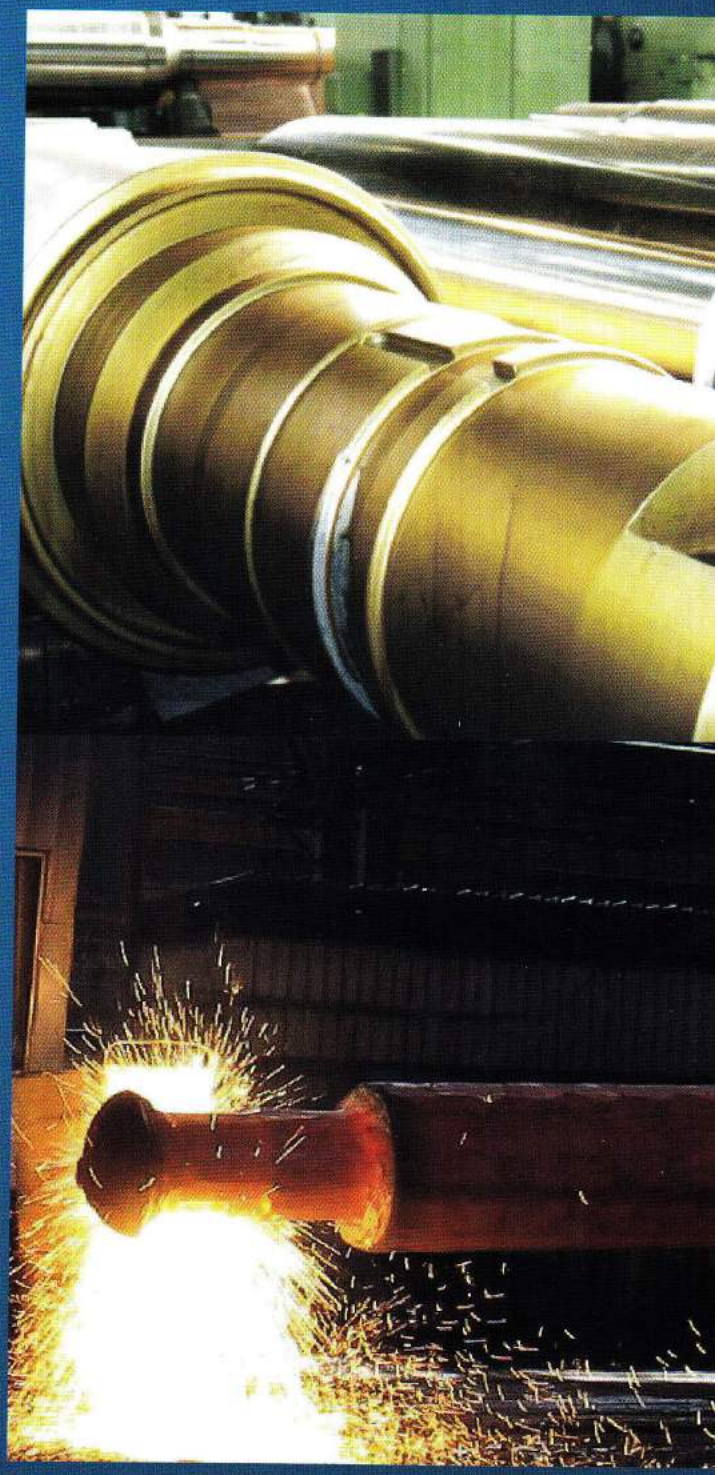


Rollers Production

The complex can produce 36,000 tons of constructional, carbon and low-alloy steel ingots per year by having continuous casting machines with two casting lines.







Department of Production

Rollers Production

1. Melting Unit
2. Molding and Modeling Unit
3. Casting Unit
4. Heat Treatment Unit
5. Quality Control Unit
6. Machining Unit

The Structure of Rollers

Ductile cast-iron rollers with ferrite background:

The graphite in the rollers is spherical that is surrounded by a layer of ferrite, the background structure of the rollers in low-alloy grades is Perlite and in alloy grades and heat treatment is often bainite. A significant amount of ferrite surrounds each graphitic sphere in all grades and prevents the formation of carbide.
Chemical composition and production method of the rollers is in such a way that have good mechanical properties and good resistance to thermal shock and heat cracks. Thermal resistance and high strength of these rollers make their use very appropriate and ideal in raffing shelves and the cases with high working pressure. Due to the spherical shape of the existing graphite, the strength of these types of rollers is very high. The rollers can be used in heavy sections rolling as well. All rollers are produced and supplied using a layer static.

Refrigerating ductile cast-iron rollers with perlite background:

In fact, these rollers are semi-refrigeration rollers, but the existing graphite in them is spherical rather than crustal and sheet-shaped. The names of these rollers are based on the presence of graphite's and carbides in the perlite field. Due to its hardness and high toughness, good abrasion resistance and stiff arms are used extensively in light sections such as rod, and more soft types have perlite fields with surrounded ferrite by spherical graphite. The amount of carbide found in the structure of the harder grades is significantly higher than that of the softer grades; the resistance to fiery cracks in the softer grades is the best. These rollers are well-used in light sections and semi-heavy and roller sheets, all of these rollers are statically manufactured and supplied.

Ductile cast-iron rollers with martensit background:

These rollers have a hardness and higher abrasion resistance than perlite refrigeration rollers, and they have the ability to achieve very high stiffness as well. These rollers have more alloying elements than perlite rollers, and as a result, these rollers have a higher carbide content and martensite content in harder grades. The very good abrasion resistance and excellent level of these rollers for the use of the middle and end of Stands roller rods and sections as well as made a very well suited sheets. Due to the high hardness and good abrasion resistance and stiff arms, the rollers are used in rolling light sections and in a wide range of other applications. All these rollers are produced and supplied in a static manner.

First

Second

The Use Ulace of Casting Rollers

Roll Grage	Medium Profiles			Light Profiles			Rounds		
	Roughing stand	Intermediate stand	Finishing	Roughing stand	Intermediate stand	Finishing	Roughing stand	Intermediate stand	Finishing
AZ 52R									
AZ 62M									
AZ 63M									
AZ 72F									
AZ 73F									

Analysis and Hardness of Casting Rollers

Chemical Analysis						Hardness SHC	Roll Grade
Mo%	Ni%	Cr%	MN%	Si%	C%		
0,3 -1,4	1,5 - 2,5	0,4max		1,5 - 2,2		44-52	AZ 52R
0,4 - 0,8	1,4 - 2,2	0,5 -1.1		1,4 - 2,0		52-64	AZ 62M
0,4 - 0,8	1,4 - 2,0	0,5 - 1,2	0,4 - 0,7	1,2 - 2,0	3,2 - 3,6	58-68	AZ 63M
0,5 - 1,1	1,8 - 3,0	0,5 - 0,9		1,2 - 2,0		62-74	AZ 72F
0,5 – 1,0	3,0 – 4,0	0,5 – 0,8		1,1 – 1,8		66-78	AZ 73F

Mechanical Properties of The Manufactured Rollers Based on Suggested Grades

Micro Structure	Bending Strength N/mm²	Tensile Strength N/mm²	Hardness SHC	Roll Grade
Perlitic+ Carbide& Nodular Graphite	1000-1400	520-680	44-52	AZ 52R
Perlitic+ Carbide& Nodular Graphite	1200-980	490-600	52-64	AZ 62M
Perlitic+ Carbide& Nodular Graphite	1000-1300	540-660	58-68	AZ 63M
Perlitic+ Carbide& Nodular Graphite	980-1200	490-600	62-74	AZ 72F
Martenzitic +Bainitic	1100-1350	580-680	66-78	AZ 73F

Roller Melting Unit

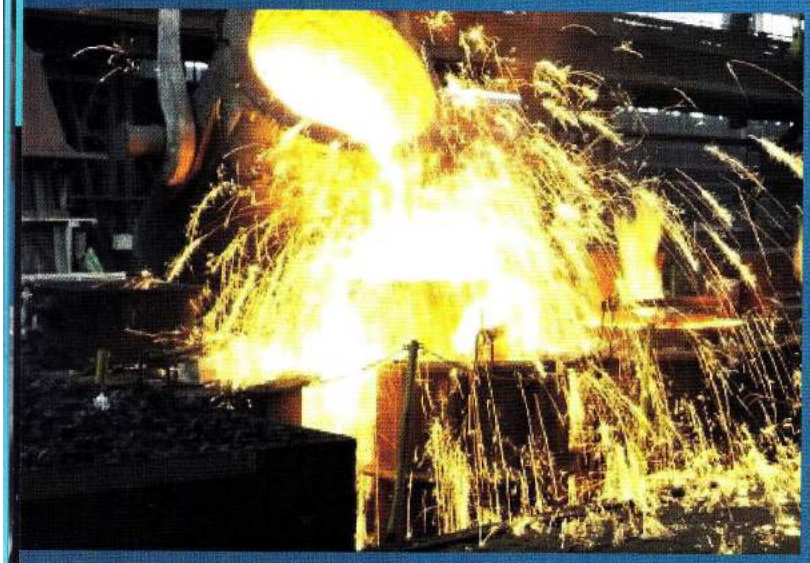
In this complex, three inductive furnaces with a day technology and a total capacity of 13 tons per hour utilized for casting rollers for the needs of hot rolling factories based on the requested analysis of roller companies. The whole process of production and preparation of iron melting is under the supervision of the engineering unit and for the charging of furnaces for the preparation of ductile cast iron melting is used from wastage of oily sheets and timeworn rollers, and during the preparation and preparation of melting of all the constituent elements of melting includes ferroalloys as well as melting temperatures under qualitative and quantitative control.

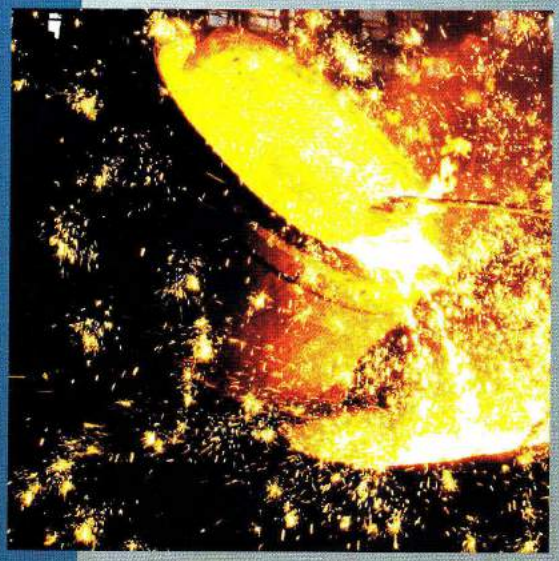
Molding and Modeling Unit

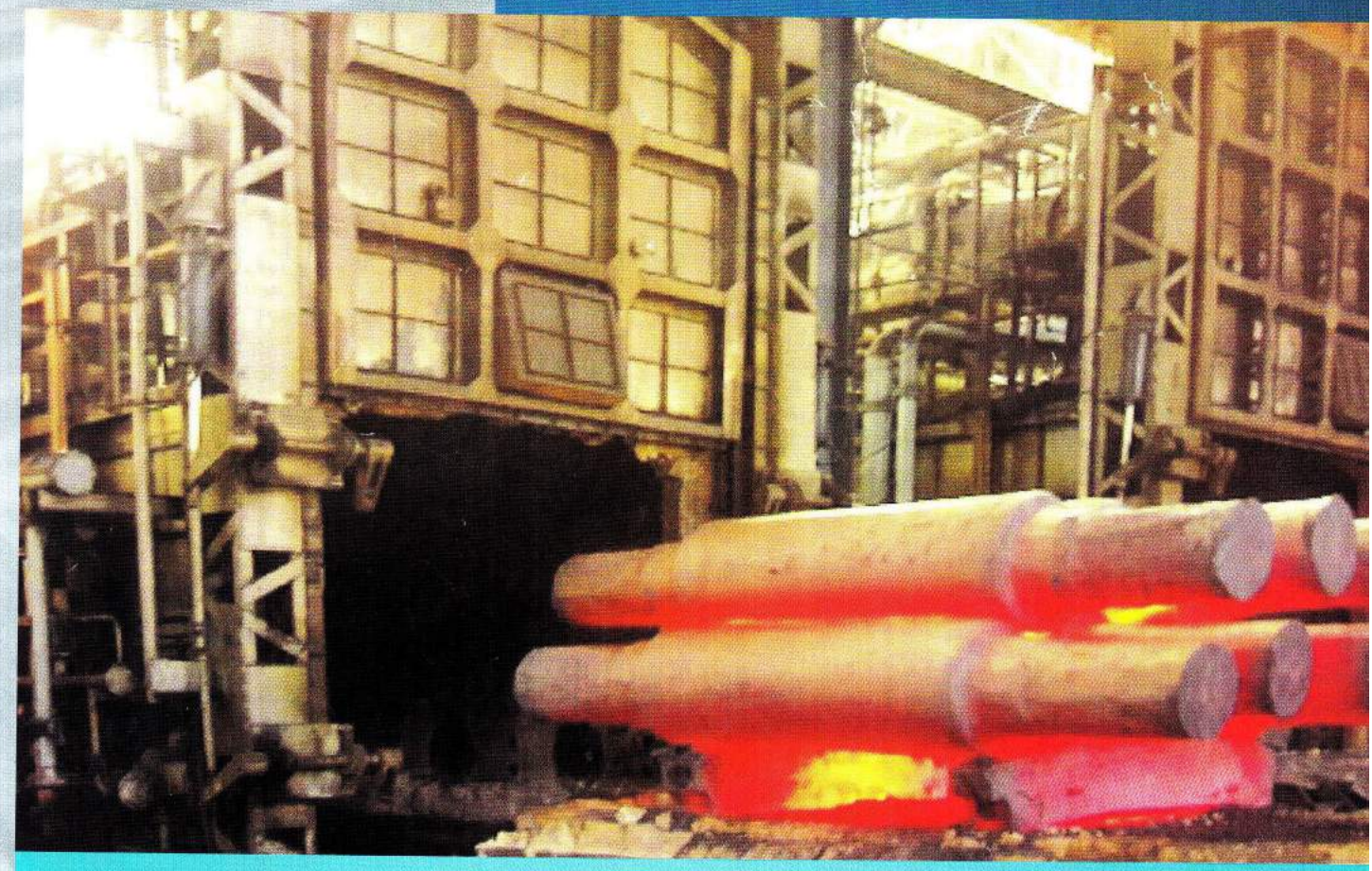
Roller molds, due to the sensitivity of their working conditions, require a high precisio in the selection of molding materials and brand of material, from which both situation sand mold and metal mold are used in the casting of cast iron rollers, for this reason molding and modeling is done by using of modern and fully automated devices.

Casting Rollers Unit

The rollers' casting with regards to the analysis and their special application conditions in heat rolling factories and casting conditions for rollers, including the atmosphere, convenient ambient temperature, precise control of the melting conditions, melting temperature and the exact control of the temperature of the molds. Therefore, the conditions of the workshop casting should to be placed under atmospheric conditions and the temperature of the molds should be controlled until the casting.





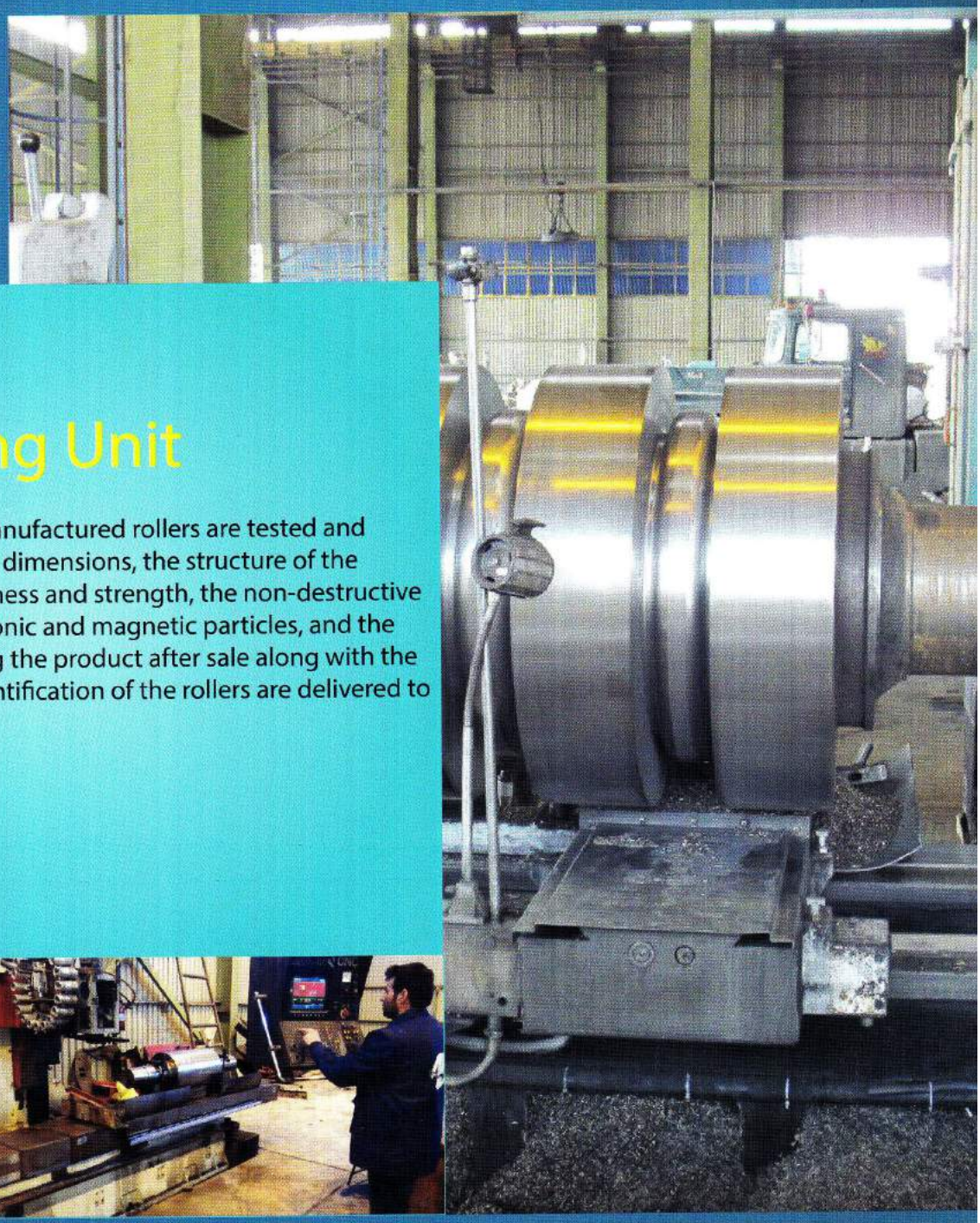


Heat Treatment Unit

Since the casted rollers have residuum tensions due to freezing and casting, they need to be stretched and to be reached an ideal state, which this is done by three 25-ton gaseous and electrical heat treatment furnaces that have the ability to accurately control the temperature by The PLC system. The furnaces also have the ability to perform various heat treatment processes such as annealing, toughening and creating different structures of ductile, malleable and gray cast-iron, and various types of steel and cast-iron products in this unit to create the desired properties for the ordered units that controlled in terms of temperature and thermally treatment atmosphere.

Quality Control Unit

In this section, the manufactured rollers are tested and controlled in terms of dimensions, the structure of the metallographic, hardness and strength, the non-destructive tests including ultrasonic and magnetic particles, and the numbering for tracing the product after sale along with the confirmation and identification of the rollers are delivered to the machinist unit.

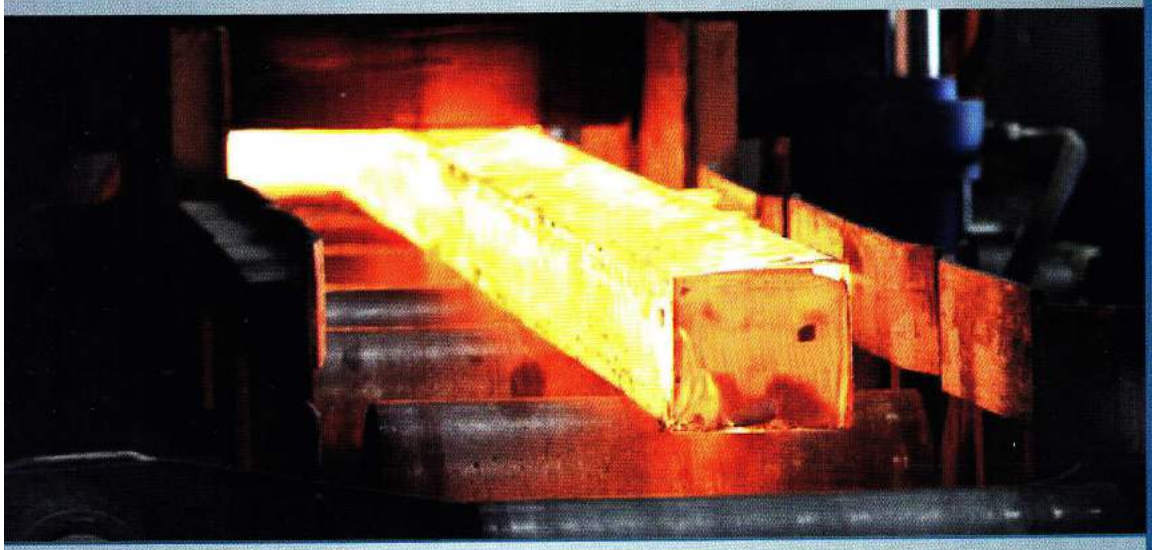


Machining Unit

In this section, the manufactured rollers are tested and controlled in terms of dimensions, the structure of the metallographic, hardness and strength, the non-destructive tests including ultrasonic and magnetic particles, and the numbering for tracing the product after sale along with the confirmation and identification of the rollers are delivered to the machinist unit.

Steel Ingot Production

In addition to producing various types of rolling mills, the complex has taken action to produce various sizes of billeted steel grades and because of the high quality of manufactured steel ingots, this company has been able to place itself in the regional markets.



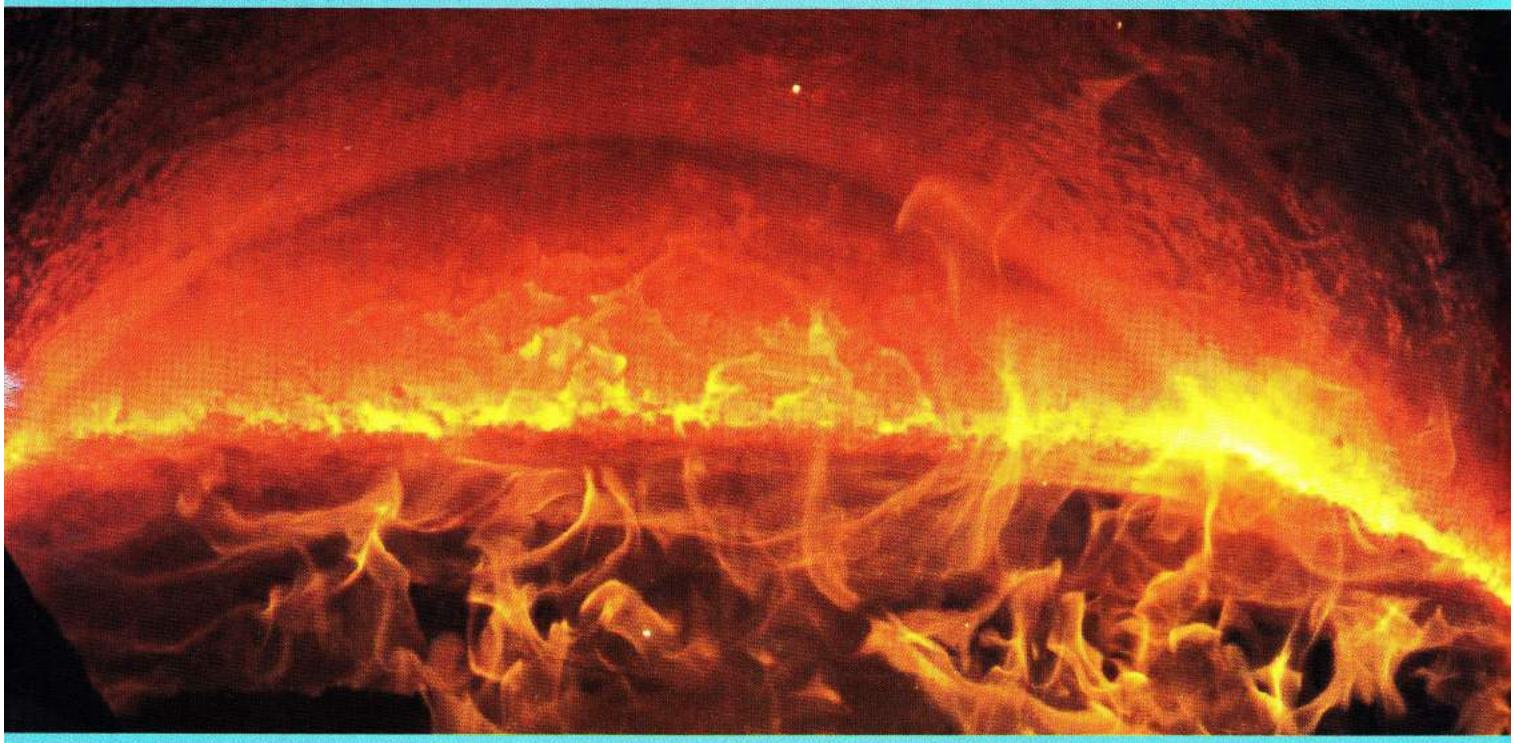
Production

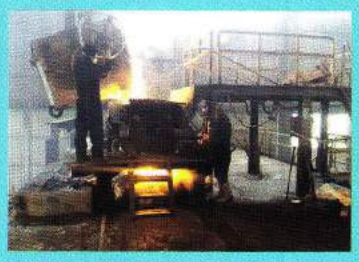
Steel Ingot Production

1. Melting Unit
2. Continuous Casting Unit
3. Quality Control Unit
4. Warehouse Unit

Specifications of Productionable Ingots								
Production Standard Length				3-12 m				
Standard Manufactured Size				150*150mm				
Grade	C	Si	Mn	P(max)	S(max)	Cr(max)	Ni(max)	Cu(max)
3SP	0.14-0.22	0.15-0.3	0.4-0.65	0.04	0.05	0.3	0.3	0.3
5SP	0.28-0.37	0.15-0.3	0.5-0.8	0.04	0.05	0.3	0.3	0.3
ST37	0.09-0.15	0.17-0.35	0.35-0.65	0.040	0.040	0.3	0.3	0.3
ST52	0.17-0.22	0.35-0.55	1.30-1.60	0.035	0.040	0.3	0.3	0.3

Melting Unit



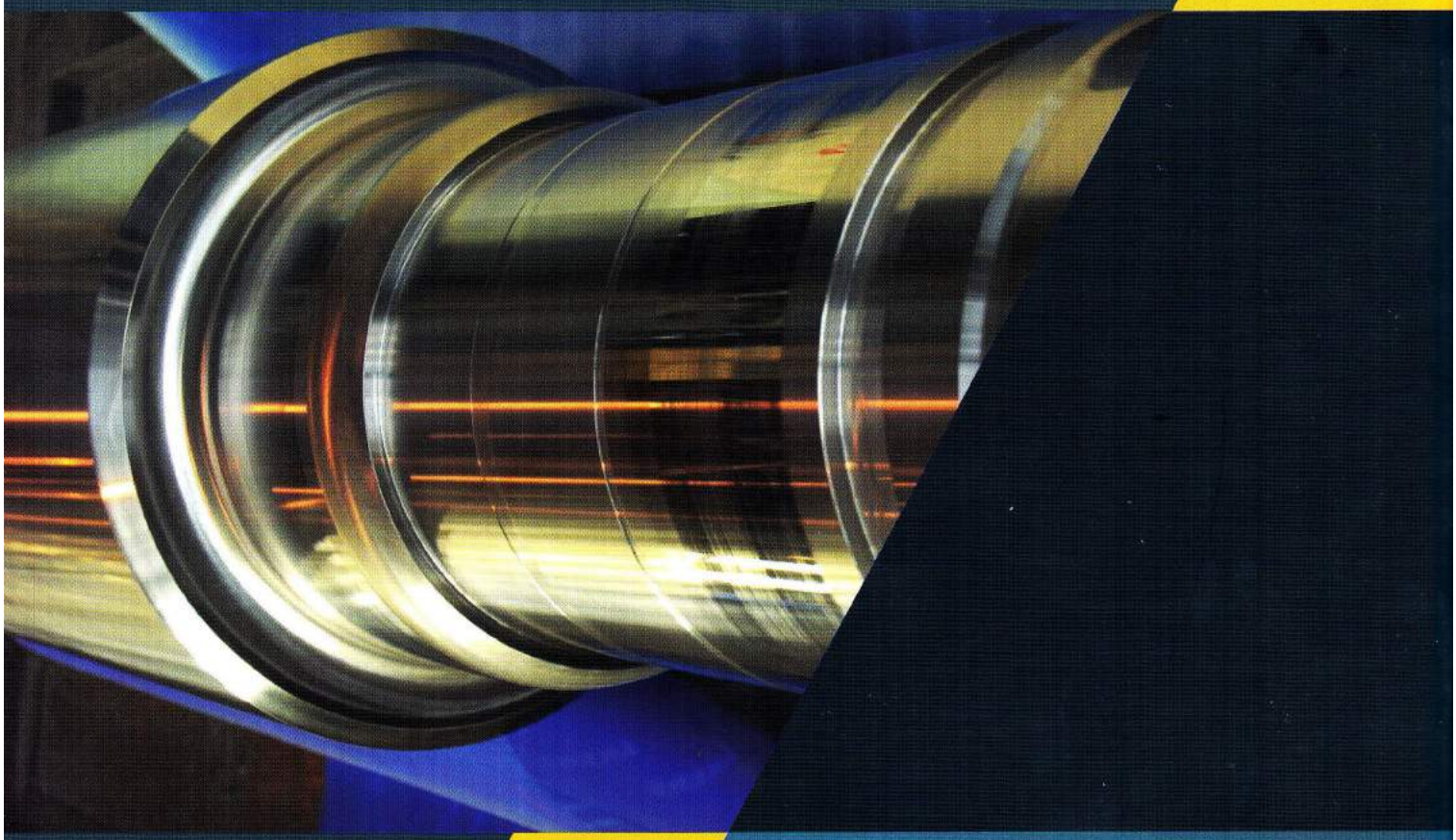


Continuous Casting Unit

The complex can produce 36,000 tons of constructional, carbon and low-alloy steel ingots per year by having continuous casting machines with two casting lines.

Manufacturing Engineering

This complex is able to design and manufacture all the equipment needed for melting and rolling factories, smoke ventilation system, all the equipment needed for waste processing, including all types of crumple presses in various tonnages, guillotine for cutting metal scraps and melt caldrons.



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