

EGGES



YOUR PARTNER for

**TURN KEY MINI STEEL
PLANTS & SOLUTIONS**

ABOUT EGES



EGES, Reliable high technology furnace supplier at affordable cost.

EGES is one of the major Medium Frequency (MF) Induction Furnace manufacturers in the world.

Established on 1975 and has been producing Induction Melting & Holding Furnaces since 1981 with a number of furnaces in 4 continents; 53 different countries.

In 1981 EGES has started to produce 50 kW converters. 75 kg furnace capacity. Since then EGES has developed its technology and steadily increased its melting capacity. In the last three years EGES reached up to manufacture 22 MW converters with 45-ton furnaces capacity. This benefits the medium and big size foundries that have been looking for best technology at affordable cost.

Also, EGES has started to install of Complete Mini Steel Plants up to 500.000 MTY capacities as Turnkey Projects responsible.

Major products and activities of EGES;

Products:

- MF Induction Melting and Holding Systems
- Specially designed Induction furnaces for Non Ferrous metals; low frequency for melting as aluminium, brass, copper and double frequency system for special applications.
- MF Induction Heating Systems
- IGBT frequency converters

Activities:

- Complete mini steel plants to produce billets, on turn key basis
- Complete foundries for steel, gray iron casting, non
- Modernisation of Induction Furnaces

Major products and activities of EGES;

Products:

MF Induction Melting and Holding Systems;

- From 100 kg to 45 ton capacity melting furnaces for Ferrous and Non-Ferrous applications, with 100 kW to 22 MW Power Supplies
- Holding furnaces up to 50 ton
- Drop-Down Induction Furnaces for Non Ferrous metal with crucible up to 1-ton capacity Frequency range of EGES systems are between 60 Hz - 10 000 Hz.

As well as classical MF Induction furnace, EGES also supplies MELT & HOLD System, EXTENDED POWER Systems (Power sharing system) and "TRIPLE FURNACE" System in order to meet foundries requirement for better productivity and for various applications with most economical investment cost.

Specially designed Induction furnaces for Non Ferrous metals;

EGES MF Induction systems have been in operation in Non ferrous foundries as well as ferrous foundries.

Copper & Copper Alloys,

Perfect alloying, Higher melting capacity, flexibility, Lower energy consumption, Less exhaust gas, environmentally friendly system properties make MF EGES systems perfect solution for Copper & Copper alloys Foundry industry.

Aluminium applications,

Besides standard Aluminium foundries, EGES systems are very successful for Aluminium recycling. EGES has also got wide experiences for melting Gold, Zinc & Zinc Alloys.

MF Induction Heating Systems

EGES is a leading MF heating Induction system producer for the capacity of 100 Kw- 10 MW power and 60-10 000 Hz frequency range.

EGES supplies different type of heating systems for different needs such as:

Billet Heating Systems, (Steel, Brass, Aluminium)
Eges MF Induction Billet heating systems have been in use in for a long time. Every system is designed

according to customer needs. Continuous Steel sheet heating systems for Galvanization lines. Galvanized coil production is made in continuous galvanic lines and with hotdipping method in some companies such as Assan, Demirsaç Galvanize etc. After surface cleaning and before the hot dripping unit EGES supplies special "MF Induction Continuous steel sheet heating system" The steel sheets can be in various thickness and width.

Activities:

Complete mini steel plants to produce billets, on turn key basis Since 1995, EGES produce specially designed induction furnace to produce steel billets. Starting from 2006, EGES also design and construct complete mini steel plants capacity up to 500 000 ton per year on turn key basis. Projects include MF induction melting furnaces, CCM (continuous casting machine), LRF (ladle refining furnace), cranes, laboratory equipment, and all necessary auxiliary equipment. Upon request metallurgical know how and technical training can be given.

Complete foundries for steel and gray iron Similarly, EGES design and construct foundries, for various application and various capacities.

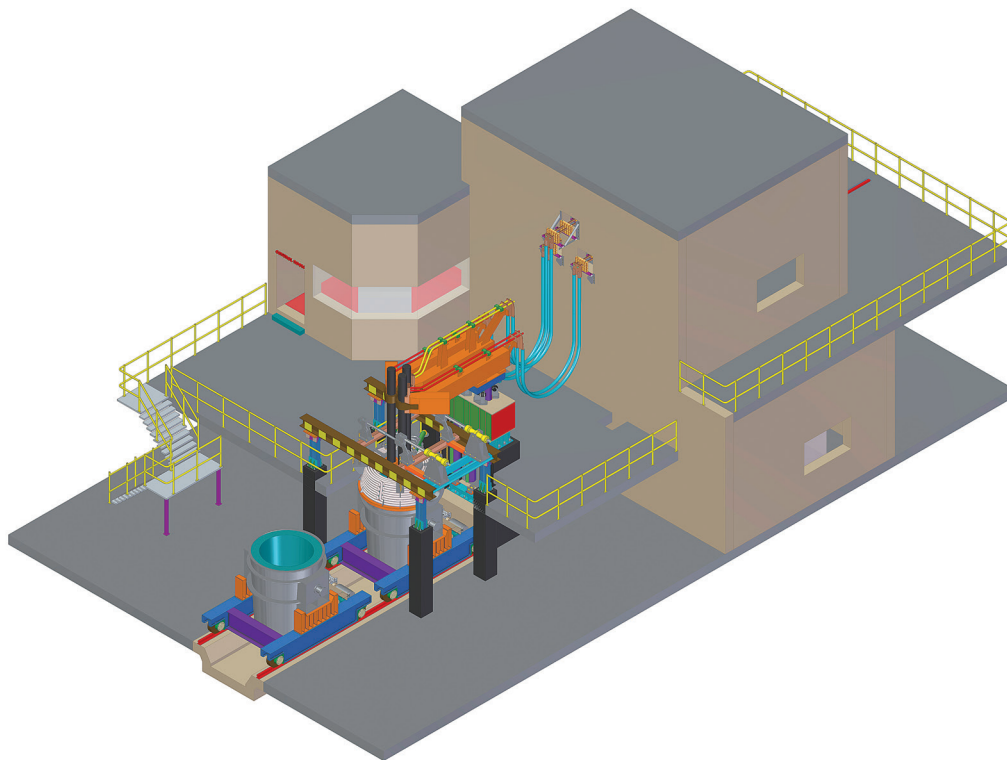
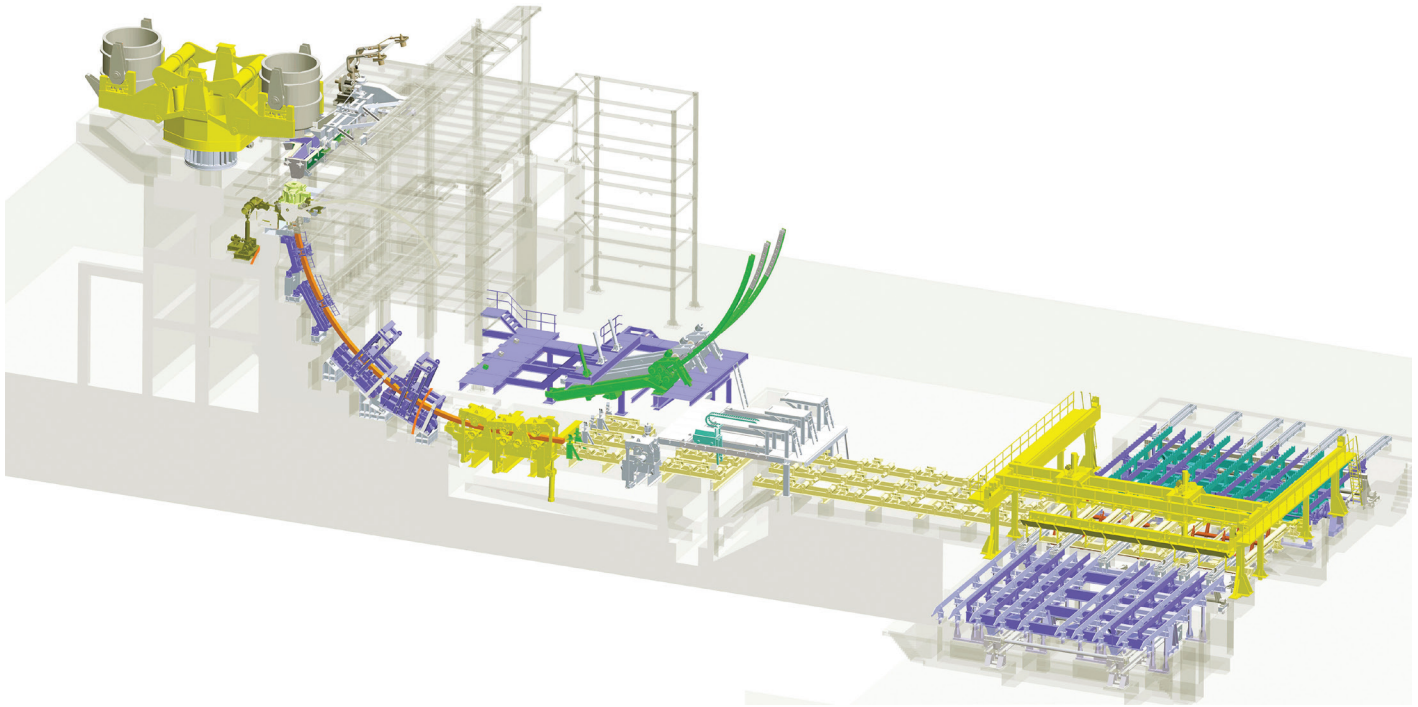
Modernisation of Induction Furnaces

Another of EGES successful services for casting industries is modernization of induction furnaces. EGES modernise and transforms the Line frequency (50 Hz) furnaces to Medium Frequency furnaces. EGES also replaces old fashion MF converters to a new generation MF converters.

During modernization of furnace system, LineFrequency (50 Hz) furnace body, and if possible furnace coils are being utilised. Existing cooling system and hydraulics are also integrated to the system.

With the modernization the customers can save up to 40 % in investment cost and increase molten metal capacity almost double after modernization depending on the application

DESIGNING AND PLANNING STEEL SHOP
BUILDING ACCORDING TO CAPACITY AND
CUSTOMER REQUIREMENTS, ALSO AREA OF THE LAND



BEST EQUIPMENT CHOOSING FOR MOST
EFFECTIVE WORKING

PROJECTS DESCRIPTION

1. Introduction of System
 - 1.1. Explanations for Each System
 - 1.1.1. Scrape Arrangement System
 - 1.1.2. Charging System
 - 1.1.3. Melting System
 - 1.1.4. LRF System
 - 1.1.5. CCM System
 - 1.1.6. Billet Cooling and stocking System
 - 1.1.7. Heating Furnace for Billet
 - 1.1.8. Rolling Milling System

1- Introduction

The system covers for producing of steel as 500.000 tons per annum by using related all process between scrap preparation and rolling mill system. The project mainly consists of;

- Scrape Arrangement System
- Scrap charging system
- Induction Melting system
- Ladle Refining Furnace (LRF) system
- Cast Continuous Machine (CCM) system
- Heating Furnace for Billet
- Rolling Milling System

All scraps which are collected by the truck or railway car are accumulated and arranged by the Gantry Crane at the scrap yard. Those scraps are loaded inside of charging bucket by using Charging Crane (Bucket Crane). The loading is realized by magnet that hanging of hook of crane and operated by Crane operator. The second Crane (Charging Crane) is used for loading into Crucible furnace by the bucket. Therefore, the loaded buckets are carried by the Charging Crane via each one furnace in order.

Two Melting system provides molten metal within 40 minutes by the reason of the tap to tap. The slag of inside of Molten Metal which is taken by operator from inside of the Induction Melting system. In order to carry Molten Metal through to Ladle Refining Furnace that is used Ladle with slide gate system.

The ladle that has molten metal comes by the ladle car under the electrode of the Ladle Refining Station. The Temperature of Molten metal is increased up to 1660 C by the DC Arc system. Ladle refining of liquid metal to achieve clean steel is a proven technology. Its main objectives are homogenization of chemical composition and temperature of steel, desulphurization, and removal of inclusions, lowering gas contents, adjusting temperature for tapping and to carry out trimming.

After finishing all process at the LRF system, then the Ladle is carried on the Cast Continuous Machine by the required capacity Crane. CCM which has been equipped by the turret system carries out non-stop producing steel billet. And also, Steel billet size is depending of assembled mould size as 100x100,125x125 or 130x130. Normally CCM

has been equipped to use different mould size between 100 and 200 mm. In order to manage tap to tap producing steel billet and to reach the target capacity (as per day) then CCM is designed one, two, three or more strands.

The length of steel billet is cut automatically by the Automatic Gas Cutting System which is equipped on the CCM as 3 or 6 meters during stripping on the strands. After that steel billets come on the cooling platform by cooled water. The cooled steel billets are carried by the required capacity Cranes through to stocking area.

Finally, Cooled Steel billets are ready for transferring the Rolling Mill System. But before mill, all billets charged into reheating furnace with hydraulic pusher. The billets will be reheated in the furnace up to hot rolling temperature which is around 1200 – 1250 °C. Billets moved through discharging mechanism side by pusher-force from charging side and will be discharged after heating by mechanical ejector.

Rolling process achieved in 11 stands founded next to each other. Group is driven by a required power AC motor. Flywheel passes driving from motor to gear box and trio-pinion box. There are specific grooves on the rolls heated billet comes to the group from furnace and placed by guides in grooves. While billet passed between grooves on the rolls, cross-section of billet decreases pass by pass, this is hot rolling process. Product type changes related to groove shapes on the rolls and pass numbers as range between diameter 32 -10 mm.

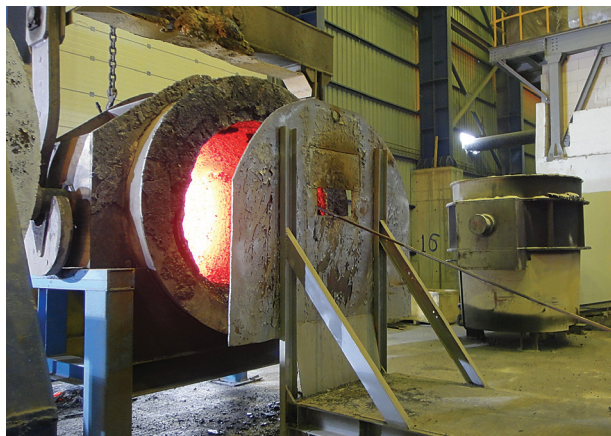
Rolled product temperature is approx. 900-950 °C after finishing stand. It goes to a platform (cooling bed) by roller way for cooling until become proper for packing.

SUITABLE
EQUIPMENT SETTLEMENT
FOR MINIMUM MANUPLATION



FILTERING SYSTEMS FOR
COUNTRY'S CONDITION
AND STANDARDS.

BETTER SELECTION AND
ARRANGEMENT OF THE SCRAP
AND ALSO MOST PROPER AND
EFFECTIVE CHARGING



FASTEST FURNACE DISCHARGE
TO MINIMIZE HEAT LOSSES

1.1. Explanations for Each System

1.1.1. Scrape Arrangement System;

In order to storage for scrap on the open area, there is a crane with required capacity as called Gantry Crane. That Crane is used arrange and separate all scraps and serve to charging Crane.

1.1.2. Scrape Charging system

The Crane required Capacity as called Over Head Crane, is used to load scrapes in to bucket and to serve the another Over Head Charging crane for Induction Furnaces. That Crane will load in to Vibrating Charging car.

1.1.3. Melting system

Induction Melting system are consisting of two independent Melting System and with the required capacity Furnaces. The Capacity of each Melting system are have melting and auxiliaries as cooling and transformer system. The systems are provided molten metal for each 40 minutes. The cleaning of slag is done at the melting system.

1.1.4. LRF system (Ladle Refining Furnace)

The molten metal that is became up to 1500 C within induction system melting should be refined adding by Ferro alloying materials and increased up 1660 C by the arc technologies. The molten metal Temperature is increased by 4 C/minute during adding alloying ferrous materials into molten metal. Ladle Refining Furnace's power capacity of is provided by the transformer for liquid metal and the Crucible Capacity of Ladle. Arc technologies are supplied by 3 electrodes. Besides of above processes, Argon or Nitrogen gas is injected into molten metal from bottom of ladle, in order to provide homogeneity for the temperature and to get up some particples on the level of molten metal.

REFINING
AND REHEATING
OF LIQUID STEEL



FASTER AND SECURE
METAL TRANSFER



CASTING WITH
HIGH TECH METHODS

1.1.5. CCM system (Cast Continuous Machine)

The steel billets as the section of 125 x125 mm or 130 x 130 mm or etc. is produced continuously at that unit. By the helping of Turret system on the CCM could be able produce steel billet without stop it. Because of Turret system is used to put for second Ladle before first ladle is left on the CCM system by the operator. Then it gives advantage for flowing molten metal in to mould via Tundish and Ladle. Each strand has a desired capacity and the number of strands is chosen according to molten metal capacity that into crucible ladle. The length of steel billet could be cut by the automatically with gas cutting system as 3 or 6 meters.

1.1.6. Billet Cooling and stocking System

All cooled steel billets that are on the cooling platform of CCM are carried by the helping of overhead crane to stocking area. Steel billet blocks could be transferred 10 or 15 pcs by the required tons capacity cranes.

1.1.7. Heating Furnace for Billet

This is a pusher type furnace. The billets, coming from casting shop Furnace Nominal Capacity can be manufactured with desired capacity, charged into reheating furnace with pushers. The billets will be reheated in the furnace up to hot rolling temperature which is around 1200 – 1250 °C. Billets moved through discharging mechanism side by pusher-force from charging side. And will be discharged after heating by mechanical ejector.

1.1.8. Rolling Milling System

Rolling process achieved in 11 stands constructed next to the each other. The group is designed for 10 up to 32 Circular Bar with the nominal Capacity bar and rebar.

LONG LIFE
CASTING MOULDS



HIGH QUALITY PRODUCTS
ACCORDING TO REQUIRED
STANDARS



FINAL PRODUCTS



EGES since 1975

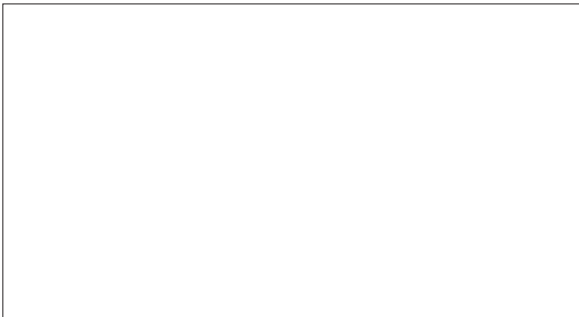


PREFERRED PARTNER FOR THE 21st CENTURY

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