



**KHORASAN STEEL  
COMPLEX COMPANY**



**IN THE NAME OF GOD**





## Strategic Orientations

### Point of 2026 view

Complete the steel production chain from Iron Ore Concentrate which will lead us to one of the enormous production unit in the country and Middle East with the capacity production of:

Iron Ore concentrate 5 million tpy

Pellet 5 million tpy

DRI 3.5 million tpy

Billet 3.5 million tpy

Constructional steel light profiles

1.3 million tpy

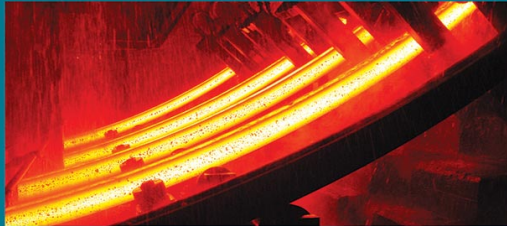
## Mission

Qualitative constructional steel production based on the latest national and international standards, expert personnel, consideration of environmental protection policies to get the maximum customer satisfaction, creation of constant value for stuff, shareholders and society and building an effective relations towards suppliers and partners.



## Khorasan Steel Complex at a glance

Khorasan Steel Complex according to the economic strategies of the government of Islamic Republic of Iran, industrial independence on strategic products, the most enormous steel production plant in the eastern zone which contain around 40000 tons of industrial structures, devices and equipment in



a ground area of 14 km<sup>2</sup> that located around 15 kilometer from North West of Neishabour has been established.



The target capacity of the Complex is expected to reach 2 million tpy which presently worked on 2 Direct- reduced iron (DRI) 800 thousand tpy each, steelmaking with the nominal capacity of 630000 tpy and light structural profile-rolling mills units with the capacity of 550000 tpy .

Meanwhile our second steelmaking unit with the capacity of 720000 tpy, pelletizing plant with the capacity of 2.5million tpy and Iron Ore Concentrating plant with the capacity of 2.5million tpy which located on Sangam Mine near Khaf are under construction.



The Complex includes 17 different units; DRI, Melt shop, Continuous Casting Machine (CCM) and Rolling mill (RM) as main units and 13 technical and peripheral units. Steelmaking starts from Iron Ore concentrating and pelletizing plant which uses as our raw material for the production cycle.

## Khorasan Steel Railway station

In consideration with social responsibility through reducing the burden of road traffic Khorasan steel complex starts to make an 18 kilometer branch on Mashhad-Tehran railway that has been connected to national railway on February 7, 2010. At the moment the company is providing the pellet requirements from Golgohar and Chadormalu pelletizing plant till the completion of the Sangan project through railway.



### Car dumper

The transported pellet through railway transfer and reload with car dumper unit with the capacity of 18 wagon per hour and then will be shifted to stack and declaimer by belt conveyer.



### Batching

The Railway as well as road transferred pellet are moved to a stacker with the capacity of 800 ton per hour and shifted to the Reclaimer with the capacity of 550 ton per hour and shifted to daily material bins with belt conveyer.

# Khorasan Steel Railway station







## Direct-reduced iron (DRI)

Iron Oxide (**Pellet**) transferred from daily bin fed to the top of the furnace and flow downward to be heated and converted to DRI based on **Midrex** method by high temperature ( 760 degree centigrade ) reducing gas (**CO,H<sub>2</sub>**). DRI will be shifted to product bins with belt conveyer by the capacity of 7000 tons each.

Reducing gas, containing mainly Hydrogen (**H**) and Carbon Monoxide (**CO**), can be generated from wide variety of energy source. Natural gas (**CH<sub>4</sub>**) can be reformed in the unique, highly efficient **Midrex** reformer witch contain 468 tubes in 1100 centigrade degree in presence of catalyst. The unit contains two modules with the capacity of 800000 tpy each.

## Cold Briquette production unit

Sponge Iron fines generated in DRI unit will be change to compressed and portable briquettes by adding necessary components to be used in steel making units.



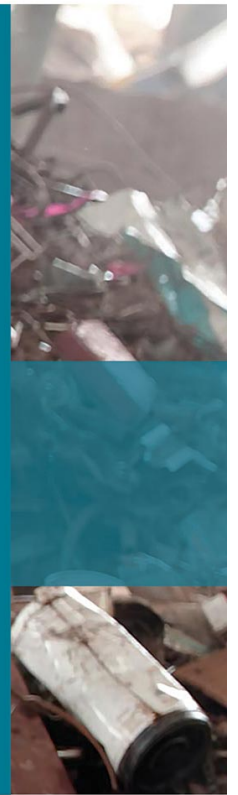


## Scrap processing unit

In this part, various types of scrap will be leveled according to their weight, impurity and will be kept to use in melting procedure.

## Raw material transportation

Based on accuracy and fast movement of raw material to melting areas this unit is equipped by mechanical instruments and belt conveyer to added extra components for melting procedure which controls automatically.





Scrap processing unit

## Melt Shop

The DRI stored in product bin and scrap transferred with belt conveyer and magnetic crane to 110 ton Electronic Arc Furnace (EAF) and will be fused using electrical power (120 MVA ). During production all necessary additives will be added to fusion in order to take intended characteristics.

This unit is capable to use DRI and scrap as raw material with the capacity of 630000 tpy.

Under processing product will be checked to reach the technical specifications and after adjusted, transfers to ladle furnace and then will shifted to ladle rotating machine applying overhead crane and become ready for foundry.





## Continues Casting Machine (CCM)

Fused steel which is ready for foundry by 6 continuous foundry lines, to transform in to standard steel billets having cross section of 130\*130, 150\*150 and 180\*180 mm and different length. Nominal capacity of this unit is 630,000 tpy and presently is working with the capacity of 700,000 tpy.



## Rolling Mill unit (RM)

Billets which have been produced preheat in the furnace to reach the target temperature and passed through 20 stands which have been located horizontally and vertically. This unit equipped with the latest technology which able to expedite the process of changing the product size and level in the fastest possible time and also contain cooling line and cooling bed, straightening line, packing, enumeration and weighting on the production line.

The unit is planned for 550000 tpy of light structural profiles including Plain bar and Screw-Thread Ribbed bar, Angle bar, Flat Square and Channels.



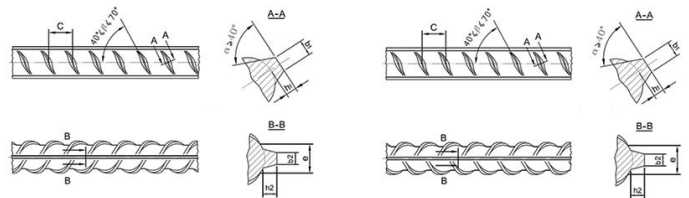




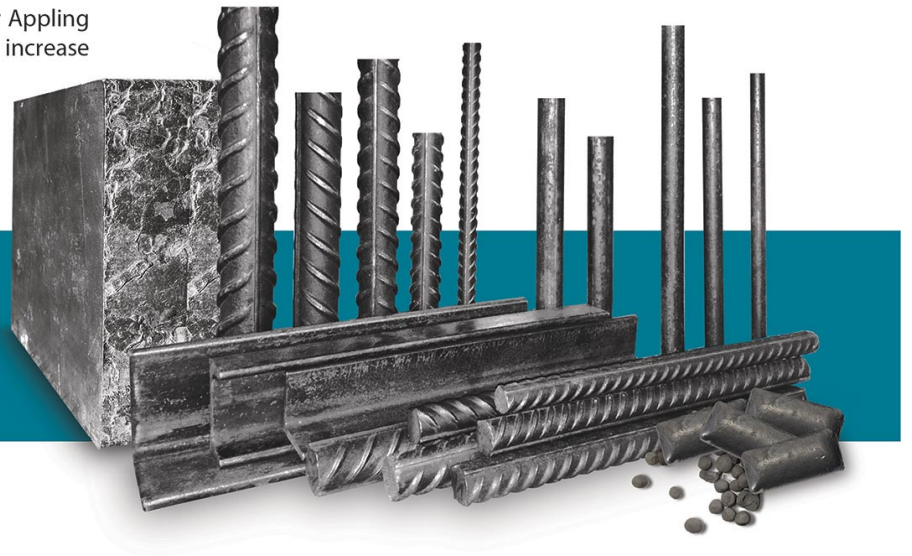
## Standards and variety of products

Khorasan Steel Complex products specified based on the 3132 qualification certificate from Iranian Standard and Industrial Research Institute (ISIRI) (2nd. revision, Jul. 2013 Hot-rolled steel bars for reinforcement of concrete -specification and test methods) in three groups: Plain Bar (240),Screw-Thread Ribbed Bar (340) and Ribbed Bar(400).

The complex is capable to produce Ribbed Bar Appling 'Quench\_Temper' heat operation method to increase the mechanical characteristics.



## Products



# Products Specifications

Bend test		Tensile test				
Mandrel diameter	Nominal diameter	Min of Elongation (A5)	Min of Tensile Strength N/mm <sup>2</sup>	Min of Yield Strength N/mm <sup>2</sup>	Characteristic	Classification
3 d	≤ 16					
6 d	16 < d ≤ 32	25	360	240	240	Plain Bar
7 d	32 < d ≤ 50	18	500	340	340	Screw-Thread Ribbed Bar
Bending angle 160-180		16	600	400	400	Ribbed Bar

Chemical composition based on cast analysis-Maximum values of mass fractions, in percentage							
Max 'C' equivalent	'S'	'P'	'Mn'	'Si'	'C'	Characteristic	Classification
-	0.050	0.050	0.75	0.55	0.22	240	Plain Bar
0.050	0.045	0.045	1.30	0.60	0.32	340	Screw-Thread Ribbed Bar
-	0.045	0.045	1.60	0.60	0.37	400	Ribbed Bar

Chemical Composition based on product analysis-Permissible deviation of the product analysis in percentage by mass		
Permissible deviation in product analysis from the specified limits of the cast analysis	Specified maximum value in cast analysis	Chemical Elements
+ 0.02	≤ 0.25	'C'
+ 0.03	> 0.25	
+ 0.05	≤ 0.60	'Si'
+ 0.06	≤ 1.65	
+ 0.08	> 1.65	'Mn'
+ 0.005	≤ 0.050	
+ 0.005	≤ 0.050	'S'

Table of size and weight for Screw-thread Steel Bars based on National Standard NO.8132									
Weight for One meter (kg/m)		Rib spacing (mm)			Max height of ribs longitudinal (mm)	Transverse Rib height (mm)		Nominal cross-section area (mm <sup>2</sup> )	Nominal diameter (mm)
Tolerance %	Nominal	Max	Min	Nominal	Min of ribs height from 1/4 of middle (mm)	Min of ribs height in the middle (mm)			
±6	0.616	7.5	5.5	6.5	1.5	0.45	0.65	78.5	10
	0.888	8.3	6.1	7.2	1.8	0.54	0.78	113	12
±5	1.21	9.7	7.1	8.4	2.1	0.63	0.91	154	14
	1.58	11.0	8.2	9.6	2.4	0.72	1.04	201	16
	2.00	12.4	9.2	10.8	2.7	0.81	1.17	254	18
	2.47	13.8	10.2	12.0	3.0	0.90	1.30	314	20
±4	2.98	15.2	11.2	13.2	3.3	0.99	1.43	380	22
	3.85	17.3	12.8	15.0	3.75	1.13	1.63	491	25
	4.83	19.3	14.3	16.8	4.2	1.26	1.82	616	28
±4	6.31	22.0	16.2	19.2	4.8	1.44	2.08	804	32

DRI	
Avg MD ≥ 92	Avg C ≥ 1.8

Briquette				
Special weight	Approximate dimensions			
3.7 gr/cm <sup>3</sup>	Volume 20 cm <sup>3</sup>	Thickness 26 mm	Width 34 mm	Length 43 mm

Billet					
Greade			with Section		
5SP	St 50	St 44	St 37	180×180 mm	150×150 mm
OR Based on Customer orders					

Nominal diameter of plan Bars		
Diameter changes	Tolerance	Nominal diameter mm
Ovality must be within the 70% tolerance range	+ 0.3 - 0.5	22 > d
	+ 0.4 - 0.5	22 ≤ d < 28
	+ 0.4 - 0.7	28 ≤ d ≤ 50

Dimensions, Weight per unit length & weight tolerance			
Weight per unit length		Nominal Cross-Section area A <sub>n</sub> mm <sup>2</sup>	Nominal diameter d mm
Tolerance % of Plan Bar	Nominal Values kg/m		
± 5	0.616	78.5	10
± 5	0.888	113	12
± 5	1.21	154	14
± 5	1.58	201	16
± 5	2.00	254	18
± 5	2.47	314	20
± 5	2.98	380	22
± 4	3.85	491	25
± 4	4.83	616	28
± 4	6.31	804	32
± 4	7.99	1018	36
± 4	9.87	1257	40
± 4	15.42	1964	50

## Total Quality Management

**khorasan Steel Complex** applying the latest European technologies and equipment to get the highest satisfaction through:

### Customers:

In order to achieve the golden goals of the **Khoreasan Steel Complex** we have started the way with the latest existed international standards, equipment and facilities which drive the complex to get the **ISIRI-3132** certificate (**Iranian Standard and Industrial Research Institute**).

In consideration with market needs and customer satisfaction the Complex has **applied the ISO-9001:2000** system and also its 2008 revision.

The critical role of customers kindly forced us to apply **ISO-10002** standards which will lead us to provide an environment based on Reverence, Satisfaction and Honesty and to get the best result in Customer relationship management (**CRM**).

Using seven different laboratories in production line includes Raw material, DRI, CCM, RM and Calibration simultaneously obtaining the **ISO-IEC-17025: 2005** standard is another proof to produce accurate and qualitative products.

Our process and workforce that delivers consistent product quality translates directly in to increased productivity and lead us to get the '**GOST**' certificate.



### **Personnel:**

By focusing on the needs and demands of employees the company has got the **OHSAS-18001:2007** certificate and **ISO-10015:1999** in line with **ISO-9001** requirement's standard.

### **Suppliers:**

Based on the suppliers requirements **Khorasan Steel Complex** apply SRM system to get the maximum suppliers satisfaction through win-win policy.

### **Society:**

With the aim to systematically execute socially responsibilities the complex has got the honor to achieve the **(ISO-14001:2004)** to provide safe and calm environment.

To achieve the continues energy consumption control and prevent the spread of greenhouse gases the company apply to get the **ISIRI-ISO 50001:2011** as soon as possible .

### **Organizational process:**

Given the fundamental role of Information System in business life cycle, process and access to information with the support of latest IT models and with consultant and executive design the complex implement comprehensive and integrated information system which is called '**IS-SUITE**'. And will go to get the **ISO-IEC-27001:2013** on information security and accessibility.

The complex implements the **EFQM** model and its Iranian related standards which we have the honor to get the Crystal award in this filed.





## Expansion projects

In order to achieve the complex goals and consolidating the third pillar of country's steel production the Continuous Casting Machine (CCM) module two along with Ladle Furnace (LF) and Electric Arc Furnace (EAF) are under construction.

To complete the steelmaking production cycle two other project are under construction:

- Iron ore enrichment plant:**  
The project is located in Sanganeh site with the capacity of 2.5 million tpy
- Pelletizing plant**  
The project is located inside the Complex with the capacity of 2.5 million tpy.

# Expansion projects





## Environmental protection polices

With the aim to systematically execute socially responsibilities the complex had got the honor to achieve the **(ISO-14001:2004)** to provide safe and calm environment.

To achieve the continuous energy consumption control and prevent the spread of greenhouse gases the company applies to get the **ISIRI-ISO 50001:2011** as soon as possible.

Above mentioned polices lead us to provide environmental friendly community to execute the highly effective environment protection plans along with **(F.T.P)** , **(W.T.P)** and **Sewage** treatment installation and implementation.





# The flowchart of production, support and development processes of khorasan steel

