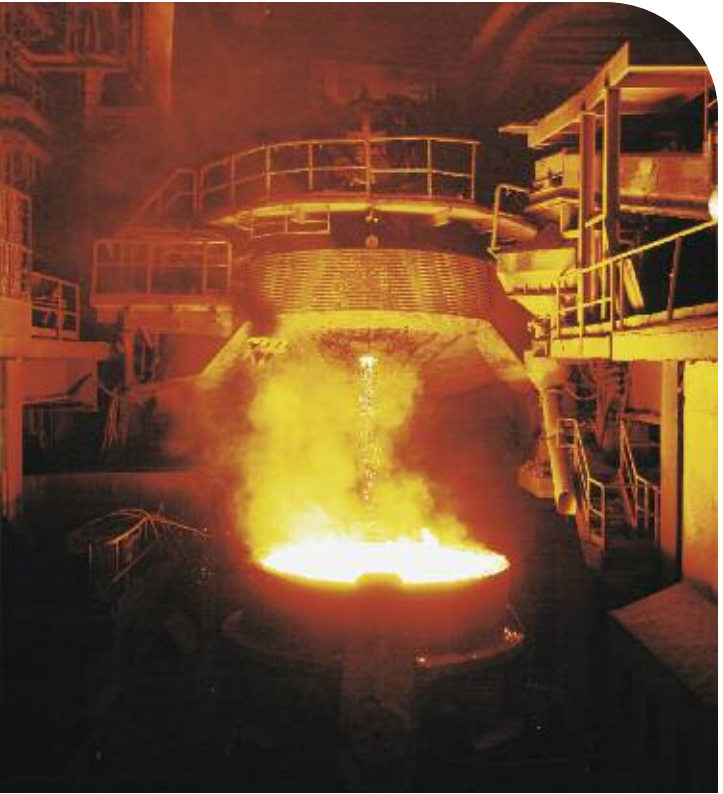


İÇDAŞ, TURKEY

Steel Plant Designed by SMS Concast





MELTSHOP

GENERAL DATA

Annual production

1'800'000 t of Good Billets (2007)

Product mix

Billets 150 mm sq., 180 mm sq.,
200 mm sq.

Steel grades Low and medium C-Steel
(rebar/SBQ grades)

Raw material

Charging ratio 100% Steel scrap

MAIN EQUIPMENT DATA

The technological equipment of this plant (Scrap preheating, EAF, LF CCM) was entirely supplied by SMS Concast taking into consideration most of IÇDAŞ design suggestions, such as:

- Maximized rate of energy input and reduction of power-off times
- Single bay design
- Controlled metallurgical operation by a superior automation system
- Continuous high yield, thus efficiency
- Optimized cost control
- Newest technology

PARTICULARITY

The scrap is brought by ship and unloaded in the harbor. After transforming the scrap into Good Billets the ships are reloaded. These short transportation distances are positively influencing the overall performances of the plant.



CONCEPT

SCRAP YARD

Radio-controlled scrap bucket cars optimize the charging cycle with maximum operational flexibility.

DUST COLLECTOR AND SCRAP PREHEATING

Complete primary suction line with water cooled combustion chamber, hairpin cooler and vertical cyclones. Complete secondary suction line with canopy hood, horizontal cyclone and bag filter. Independent scrap bucket preheating system, using the hot off-gas of the EAF to reduce the electrical energy consumption. The installation consists of four bucket positions, two canopy headers and one booster fan.

EAF

EBT-type furnace with large tapped steel capacity. ConsoTech oxygen injection system, off-gas analysis (laser detector).

LF

Water cooled roof, conductive electrode arms, automatic temperature and sampling device.

CCM

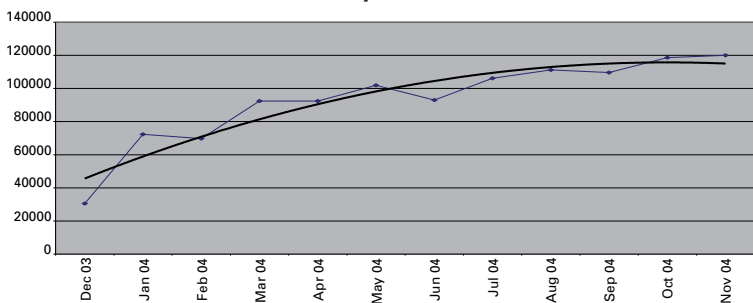
High production 6-strand SBQ-Caster using CONVEX mould technology, equipped with a full range of supplementary features, such as SMS Concast's automatic stopper control system, mould stirrers and billet marking producing 1.8 Mio tons of Good Billets per year.



START UP DATA

The start up phase to achieve the target of 1,5 Mio. tons per year (e.g. 125'000 tons per month) is shown in the following diagram.

Monthly Production

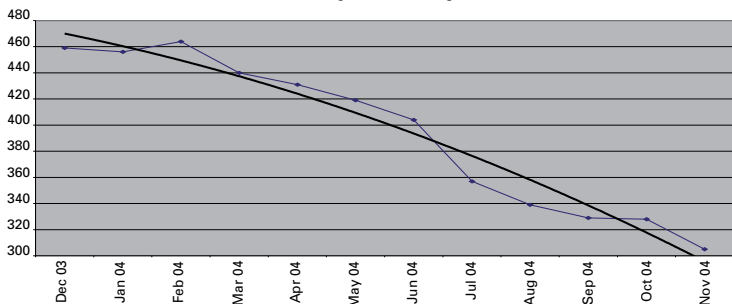


During 4 years of meltshop operation, a continuous optimisation of the process technology allowed to achieve outstanding results.

	(2003) Initial	(2007) Actual
Electrode consumption EAF	1,30 kg/t GB*	0,92 kg/t GB*
Electrode consumption LF	0,22 kg/t GB*	0,15 kg/t GB*
Electrical energy EAF	380 kWh/t LS*	280 kWh/t GB*
Electrical energy LF	22 kWh/t LS*	20 kWh/t GB*

* GB: Good Billet, * LS: liquid steel

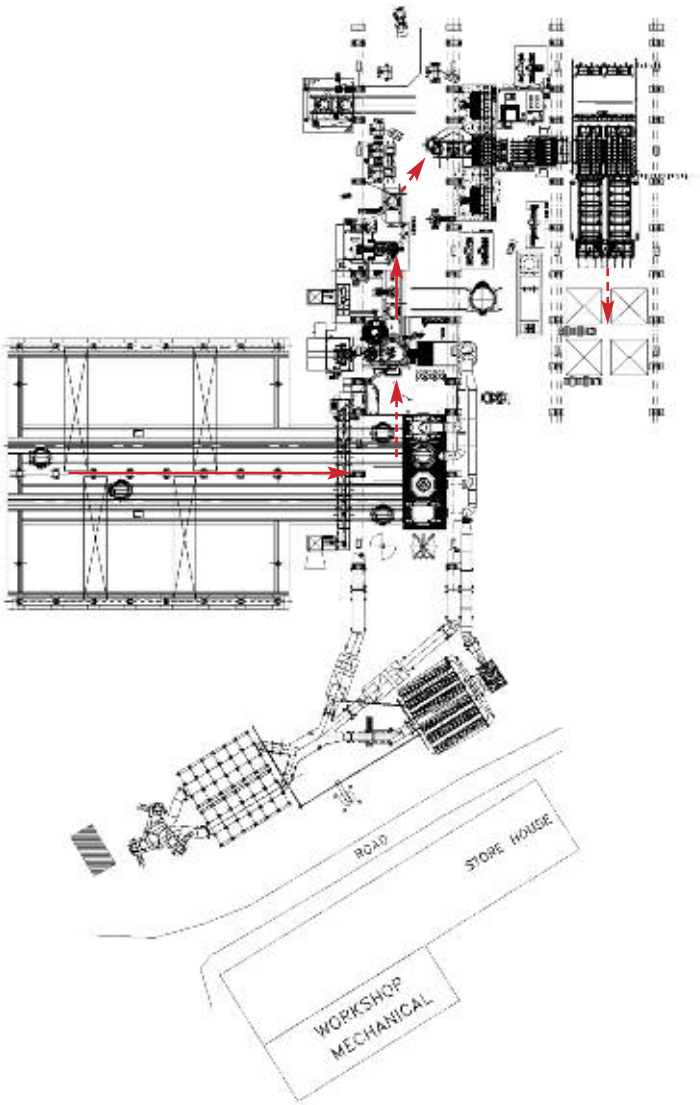
Electricity consumption



Consequently the production output in 2007 exceeded the design capacity by 20%.



PLANT LAYOUT



Material flow:

- transport by rail
- - - → transport by over head crane



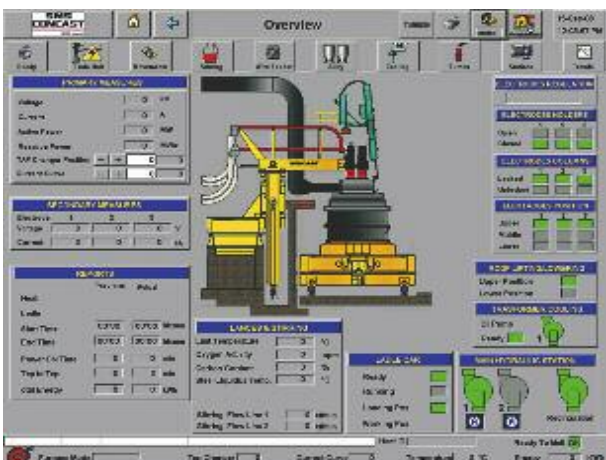
ELECTRIC ARC FURNACE

Type	AC full platform, EBT tapping
Heat size	180 t nominal
Hot heel	20 t
Shell diameter	7,8m/8,0 m
Shell volume	200 m ³
Electrode arms	Conductive type (Cu)
Electrode diameter	650 mm
Electrode regulation	Digital hydraulic type
Transformer	168 MVA
Scrap charges	2–3 buckets
Tap to tap time	43–47 min
Conso injector	– Wall installation 4 x 4'500 Nm ³ /h / 6 MW – EBT installation 2 x 4'000 Nm ³ /h / 6 MW
Power on	32 min (3 buckets)
Consumption figures:	
Electric	< 300 kWh/t Good Billets
Oxygen	48 Nm ³ /t Good Billets
Natural gas	5.2 Nm ³ /t Good Billets
Electrode	0.9 kg/t Good Billets
Shell life time	20 days (> 450 heats)
Refractory life	> 600 heats/campaign



LADLE FURNACE

Type	JIB Type CS 175
Nominal ladle capacity	175 t nominal
Electrode arms	Conductive type (Cu)
Electrode diameter	460 mm
Electrode regulator	Digital hydraulic type
Transformer	25 MVA plus 20%
Heating rate	4.0K/min
Stirring	Double argon porous plug
Ladle cars	Two cars with crane access on both sides of the ladle furnace
Consumption figures:	
Electric	0.45 kWh/t and K
Electrode	0.010 kg/kW





CONTINUOUS CASTING MACHINE

Type	CONVEX® 20-9 CCS
Radius	9 m
Number of strands	6
Strand distance	1'200 mm
Section range	120 mm sq. to 200 mm sq.
Cast section size	150 mm sq., 180 mm sq., 200 mm sq.
Billet length	6–18 m
Ladle support type	Turret with lifting/lower- ing and weighing system
Tundish car type	Full overhead with lifting/ lowering system
Tundish shape	T-type
Tundish flow regulation	Mechanical stopper mechanism
Mould type	CONVEX Technology®
Electro magnetic stirring	Mould-EMS (adjustable height)
Casting speed	2,8–4,4 m/min
Dummy bar type	Rigid
Cutting device	Torch cutting
Discharge	Overhead cross transfer
Cooling bed type	Hydraulic turnover
Product identification	Billet marking machines, one on each side of the turnover cooling bed



İÇDAŞ

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