

# SWISS STEEL

Steel Plant Designed by SMS Concast





# MELTSHOP

## GENERAL DATA

### Annual production

520'000 t of Good Billets

### Production route

EAF, LF, VD, CCM

### Production mix

Billets 130 mm sq. to 160 mm sq.

Steel grades Low alloy  
Cold heading  
Free cutting  
Spring  
Machine structural

### Raw material

Charging ratio 100% Steel scrap  
(70% train, 30% truck)

## HISTORICAL DATA

### Main equipment delivered by SMS Concast

- 1963 Worldwide first curved mould continuous casting machine (CCM)
- 1971 4 strand CCM
- 1998 Replacement of the 4 strand CCM by a new 3 strand CONVEX CCM
- 1999 Electric Arc Furnace (EAF)
- 2000 Billet Marking Machine (BMM)
- 2001 Final Electromagnetic Stirrers (F-EMS)
- 2002 Vacuum Degassing station (VD)
- 2005 Optical Product Recognition system (OPR), for product identification and traceability
- 2007 CCM revamp, including 1 additional strand



# CONCEPT

## EAF

Spout furnace with siphon tap hole for slag retention

## VD

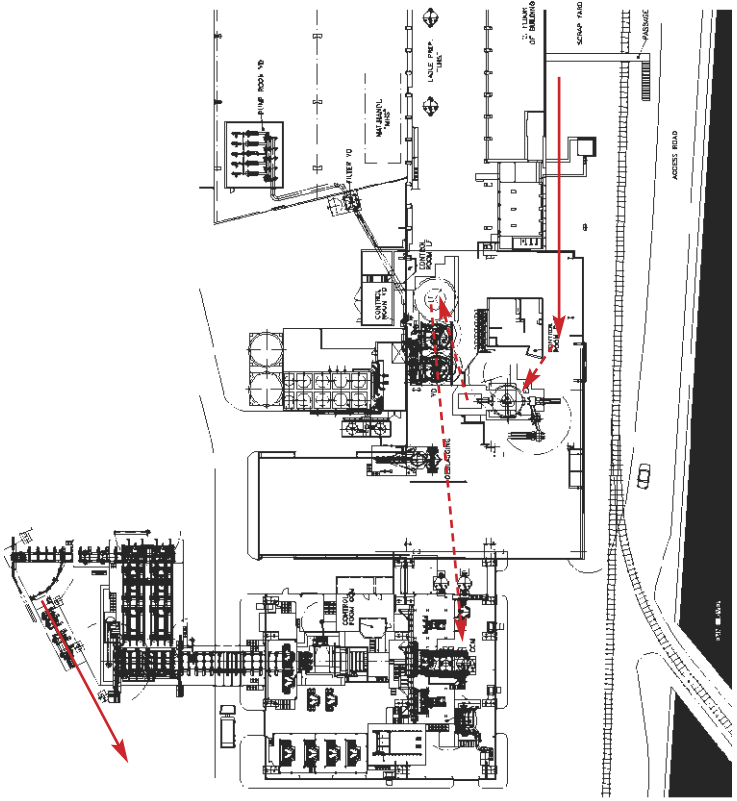
Twin-tank design with mechanical vacuum pump

## CCM



State-of-the-art SBQ-Caster equipped with a full range of supplementary features, such as SMS Concast's automatic stopper control system, mould and final stirrers, complex automation system, product marking and tracking system, a.s.o.



# PLANT LAYOUT



**Material flow:**

-  transport by rail
-  transport by over head crane



# ELECTRIC ARC FURNACE

<b>Type</b>	AC full platform, Spout design
<b>Average heat size</b>	70 t nominal
<b>Hot heel</b>	10–15 t
<b>Shell diameter</b>	5,9 m
<b>Shell volume</b>	75 m <sup>3</sup>
<b>Electrode arms</b>	Conductive type (Cu)
<b>Electrode diameter</b>	610 mm
<b>Electrode regulation</b>	Digital hydraulic type
<b>Transformer</b>	75 MVA, max. 860 V
<b>Scrap charges</b>	2 buckets (50 t and 38 t)
<b>Tap to tap time</b>	54 min
<b>Power on</b>	38 min
<b>Consumption figures:</b>	
<b>Electric</b>	440 kWh/t Good Billet
<b>Oxygen</b>	16 Nm <sup>3</sup> /t Good Billets
<b>Carbon</b>	5.5 kg/t Good Billets
<b>Electrode</b>	2.0 kg/t Good Billets
<b>Shell life time</b>	20 days (> 450 heats)



# VACUUM DEGASSING

<b>Type</b>	Twin tank, single cover
<b>Nominal ladle capacity</b>	70 t
<b>Tank diameter</b>	4,75 m
<b>Vacuum pump type</b>	Multi stage, dry, mechanical pump
<b>Number of units</b>	14
<b>System volume</b>	232 m <sup>3</sup>
<b>Suction capacity</b>	80 kg/h at 0.5 torr
<b>Pump-down time</b>	< 4 min to 0.5 torr
<b>El. energy consumption</b>	< 1 kW/t liquid steel
<b>Dedusting system</b>	Vacuum cyclone / bag filter





# CONTINUOUS CASTING MACHINE

<b>Type</b>	CONVEX® 16-8 CCS
<b>Radius</b>	8 m
<b>Number of strands</b>	4
<b>Strand distance</b>	1'200 mm
<b>Section range</b>	130 mm sq. to 160 mm sq.
<b>Cast section size</b>	150 mm sq.
<b>Billet length</b>	10,8–11,3 m
<b>Ladle support type</b>	Asymmetric turret with lifting/lowering and weighing system
<b>Tundish car type</b>	Semi overhead with lifting/lowering system
<b>Tundish shape</b>	T-type
<b>Tundish content</b>	18 t
<b>Mould type</b>	CONVEX Technology®
<b>Electro magnetic stirring</b>	Mould and Final-EMS
<b>Casting speed</b>	2,8–3,4 m/min
<b>Dummy bar type</b>	Rigid
<b>Cutting device</b>	Hydraulic shears
<b>Cutting force</b>	380 t
<b>Cooling bed type</b>	Hydraulic turnover
<b>Max. load</b>	100 t



# NOBLE PRODUCTS

<b>Mechanical stopper</b>	Auto start (combined with Co60 level detection system)
Tundish shroud	SEN (Submerged entry nozzle)

<b>Mould stirrer type</b>	Height adjustable
Installed power	400 A (415 V)
Apparent power	288 kVA, 2–8 Hz
Cooling water cons.	10 m <sup>3</sup> /h

<b>Final stirrer type</b>	Fixed
Installed power	500 A (415 V)
Apparent power	360 kVA, 10–30 Hz
Cooling water cons.	12 m <sup>3</sup> /h

## **Billet marking machine**

Marking time	8 sec
Cycle (billet to billet)	20 sec
Digit height	8 mm
Approx. life time	2–3 months
String length	10 digits (yyhhhsnnc)

<b>OPR</b>	Optical product recognition at caster and rolling mill
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## SMS Concast AG Headquarter



**SWISS STEEL**

Providing special steel solutions



Headquarters

**SMS Concast AG**

Tödistrasse 9

8027 Zurich

Switzerland

Tel: +41 44 204 65 11

Fax: +41 44 204 69 21

sales@sms-concast.ch

www.sms-concast.ch