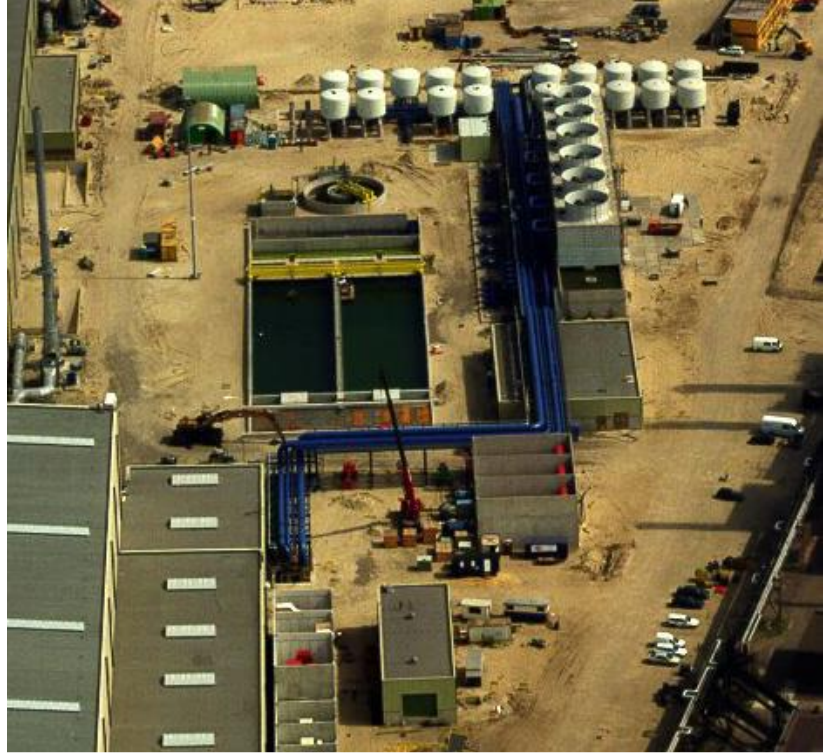


# Water Treatment Plant

## Direct Sheet Plant Hoogovens Staal

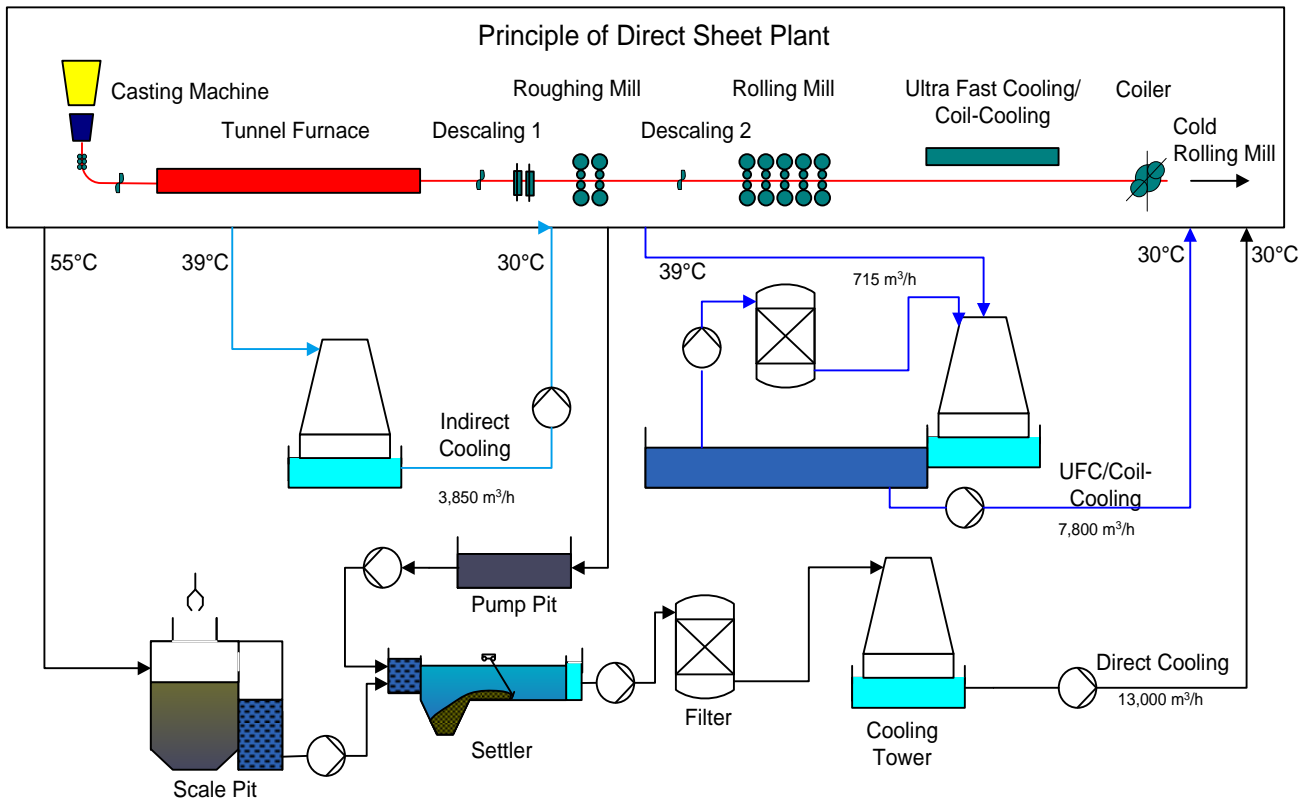


Bamag is an international EPC contractor for water and wastewater treatment plants as well as thermal processes. We design, supply and operate your plant. We are...

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Lurgi Bamag was awarded a contract for engineering, supply, erection and commissioning of the Water Treatment Plant for the new Direct Sheet Plant of "Hoogovens Staal" in IJmuiden, Netherlands.

Designed to treat a total throughput of some 25,000 m<sup>3</sup>/h in three separate circuits, the Water Treatment Plant will ensure the complete cooling water recycling in the new Direct Sheet Plant. Annual capacity of the mill is 1,400,000 metric tons of steel. The process steps involved are separation of mill scale and oil by sedimentation and filtration, recooling of the water from the various cooling circuits and recirculation to the Direct Sheet Plant.



### 1. Objective

Complete Water Treatment of Direct Sheet Plant

- Design data

Throughput	1 <sup>st</sup> circuit	3,850 m <sup>3</sup> /h
	2 <sup>nd</sup> circuit	7,800 m <sup>3</sup> /h
	3 <sup>rd</sup> circuit	13,000 m <sup>3</sup> /h

### 2. Plant concept

The three circuits are:

- 1. Closed Circuit

Closed circuit cooling water supply for equipment cooling, consisting of plate type heat exchanger and secondary circuit induced - draft cooling tower, circulating pumps and chemical feed to cooling tower and closed circuit.

- 2. UFC/Coil Cooling

Open circuit cooling water supply for product cooling, consisting of: side stream filtration, induced - draft cooling tower, chemical feed to cooling tower and pumping stations.

- 3. Direct Open Circuit

Open circuit water supply for direct cooling of casting processes and finishing stands consisting of scale pit with oil removal, settler, sand filters, induced - draft cooling tower, chemical feed to the cooling tower and pumping stations.

### 3. Special process features

Mill scale removed from the water in the scale pit and sedimentation basin is recovered by overhead travelling crane and recycled to the sinter plant.

The scale pit is an approved special Bamag design installed in more than 50 previous plants.

The pressure filters are fitted with nozzleless filter bottoms and have given reliable performance in over 700 applications around the world.

Chemical treatment involved addition of the appropriate agents to the separate circuits for inhibiting water scale formation and corrosion, controlling slime and promoting flocculation.

The treatment plant is operated by an automatic process control system located in the mill central control room.

### 4. Wastewater Treatment

Backwash water from the pressure filters treated in a separate plant to reduce the COD from 900 mg/l down to below 40 mg/l.

Wastewater is routed through a pre-reaction chamber, in which flocculant is added, to a compact SEDIMAT clariflocculator. There polyelectrolyte is added to promote settling of suspended solids.

A proportion of the settled sludge is returned to the reaction zone as contact sludge.

Most of the clear water is recycled to the Direct Open Circuit as cooling water while 10% of the flow is separately discharged with effluent of the sludge dewatering process.

Sludge withdrawn from the SEDIMAT clariflocculator is collected in a tank and dewatered by a mobile dewatering system.