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Primetals Technologies extends intensive cooling section on ThyssenKrupp hot strip mill

- **Power Cooling process produces high-strength steel grades in a wide range of thicknesses**
- **High cooling rates save alloying elements**
- **Power Cooling produces grades that would otherwise require a plate rolling mill**
- **Extension of the intensive cooling section completed within five months**
- **Acceptance achieved after successful commissioning**

Primetals Technologies has completed work for ThyssenKrupp Steel Europe AG on expanding the intensive cooling section of hot strip mill 2 in Duisburg-Beeckerwerth. The "Power Cooling" system from Primetals Technologies, operational since December 2010 and substantially enlarged in 2014, has passed its acceptance test. The system cools all steel grades including high-strength steel grades quickly and reliably in a wide range of thicknesses. The aim of the expansion work is to develop new materials that require higher cooling rates and thus helps ThyssenKrupp Steel gain a technological edge over competitors. ThyssenKrupp Steel Europe now runs its hot strip mill to produce materials that could only previously be made on plate rolling mills, and uses the intensive cooling system with great success for many grades that used to be cooled only in laminar mode. The high cooling rates and precise temperature control allow exact adjustment of the microstructure. Consequently, smaller quantities of alloying elements are needed to produce certain steel products.

Primetals Technologies installed and commissioned the first stage of the Power Cooling system on hot strip mill 2 in December 2010. A total of 16 cooling headers were installed above and another 16 below an eight-meter section of the run-out roller table. In intensive mode, the height-adjustable headers can provide around 6,200 cubic meters of cooling water per hour at a pressure of about three bar. The 2014 extension doubled the maximum water flow rate. A second group of headers was installed directly downstream of the existing intensive cooling section. The resulting Power Cooling system now features a total of 32 headers above and below an 18.5 meter section of the run-out roller table. Four booster pumps, each rated at 375 kilowatts, feed the cooling system. They can raise the laminar pressure to a

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maximum of three bar to achieve the full water flow rate. The capacity of the associated water management system was increased to a continuous output of 9,000 cubic meters per hour. This means that the first 18.5 meters of the cooling section can achieve cooling rates some five times higher than those of the original laminar cooling section. The conversion work was completed on time during a 14-day plant shutdown.

Depending on the thickness of the strip, the Power Cooling technology from Primetals Technologies can achieve cooling rates of up to 400 Kelvin per second. Such high cooling rates are required, in particular, for the production of higher and high-strength steels in the upper thickness range of up to 25.4 mm. The intensity of cooling can be regulated in the cooling section to achieve the desired microstructure of the rolled material with high precision.

ThyssenKrupp Steel Europe AG is the head company in the European carbon steel activities of ThyssenKrupp. The company is one of the world's leading producers of high-quality flat steel. Hot strip mill 2 in Duisburg-Beeckerwerth produces six million metric tons per annum, which is one of the highest output capacities in the world. ThyssenKrupp Steel Europe is continually modernizing this plant to produce many types of modern, high-quality steel for use in the automotive industry and for pipe production.



Power Cooling unit in operation

This press release and a press photo are available at
www.primetals.com/press/

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