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Improving Efficiency and Reliability of a Cooling Water Supply System in a Wire Manufacturing Process by Speed Controlling the Pumps

Author:

Dieter Klefoth
Manager Service & Maintenance
Deutsche Gießdraht GmbH
46446 Emmerich, Germany

Co-Author 1:

Patrick Uebelherr
Sales Engineer
KSB AG
51377 Leverkusen, Germany

Co-Author 2:

Stefan Seemer
Project Engineer
KSB AG
67227 Frankenthal, Germany



Summary

The production of wires needs several cooling procedures to manufacture high quality material. The cooling process as such uses water out of a big main basin. Because of the different need of water quantity and pressure the pumps which pump the water have several, changing duties during the whole manufacturing process. That means they have to be adapted in flow and pressure depending on the current steps of the manufacturing process. Beneath the main basin a pressure collector is installed which has to be fed by the cooling system.

Out of this situation and in order to have the best available efficiency and reliability it was quite clear to install frequency inverters to continuously vary the speed of each pump in the system as required from the process. Additional requirements were that the pumps had to be controlled via a central process control system; further requirements had to be fulfilled like for instance adaptive, self optimization of the load dependant switch on and off procederes. Also the installed automated valves had to be incorporated in the pump control software in order to optimize the complete system and not only suboptimize single components. That means all active components had to be taken into account.

The installation was realized in 2006 and 2007.

The paper describes the system and how the demand of better efficiency and higher reliability in this application have been realized. Last but not least the results are presented.