

Electronic Speed Control

Retrofit for steam turbines



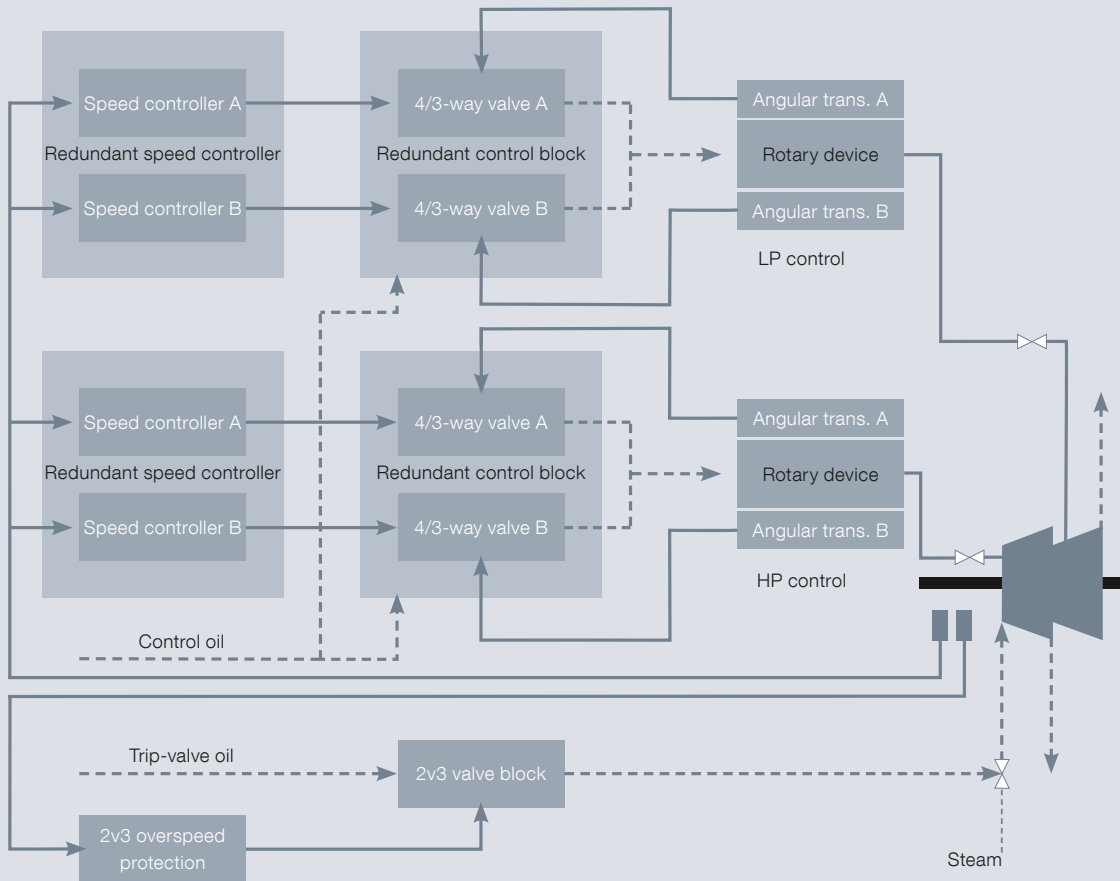
Electronic Speed Control

Improved protection for steam turbines



Steam turbine type DEK 710 equipped with the newly designed speed control system

In order to meet the new requirements of API 670 for control and protection systems for steam turbines, MAN PrimeServ has developed a new retrofit standard of a fully redundant electro-hydraulic speed control system and SIL certified electronic overspeed protection system. This retrofit solution is recommended to all customers with previous installations of simplex pneumatic-hydraulic speed control systems and hydraulic overspeed protection systems of steam turbines type DG/DK/DEG/DEK.



Retrofit scheme for extraction steam turbine type DEK

Challenge

The operation of steam turbines requires a reliable and accurate speed control and overspeed protection system. In order to meet the new requirements of API 670 for control and protection systems, MAN PrimeServ provides a new, fully redundant electro-hydraulic speed control system and fully electronic overspeed protection system as a replacement for the previous simplex pneumatic-hydraulic speed control systems and hydraulic overspeed protection systems.

Solution

The newly designed speed control system consists of a compact control block with redundant 4/3-way valves attached, a rotary device with angular transmitter and a speed controller. The oil supply will include bladder accumulator and double oil filter. In order to achieve maximum machine availability and safety during operation, the new overspeed protection system is fully electronic with 2-out-of-3 voting and SIL 3 capability.

The units are designed to replace previous types of simplex pneumatic-hydraulic speed control systems and hydraulic overspeed protection systems for DG/

DK/DEG/DEK steam turbines. It is therefore recommended to all customers with installations including such machines.

Advantages

- maximum machine availability and safety during operation by complete redundant design of the control loops
- single components can be replaced during operation without complete machine shutdown
- monitoring and visualisation of the machine via DCS (Distributed Control System)
- malfunction monitoring of single control loop components eases and shortens maintenance work
- automatic shock-proof switchover of the control loops with alarm
- cost efficient and SIL3 certified overspeed protection system
- E/H control of the trip valve via 2-out-of-3 logic
- compact design of the rotary device with minimised oil leakage (electronic speed control)
- control block oil supply equipped with double oil filter for maximum reliability
- IPC for datalogging in control cabinet

