Modernization of Speed Monitoring
THM gas turbines

During normal operation the gas turbine is controlled by the power turbine speed adjusted to the requirements of the main process. Speeds exceeding the design limits may lead to significant damages to the gas turbine due to enhanced mechanical load on the bearings and the rotating components. In order to protect the gas turbine against overspeed damages the gas generator speed and the power turbine speed are continuously observed.

Modernization Solution
To modernize the speed monitoring of existing THM gas turbines MAN PrimeServ provides a current standard multi-channel speed measurement and overspeed protection system based on a Jacquet FT3000 evaluation unit with an internal 2 out of 3 voting logic for the gas generator and the power turbine speed:

- 3 speed channels for gas generator speed
- 3 speed channels for power turbine speed
- 1 speed channel for starter speed
- Internal relay voting 2 out of 3 for gas generator and power turbine speed
- 10 ms reaction time
- High integrity redundant system concept
- IEC 61508 SIL3 certified and API 670 compliant

To enable the 2 out of 3 voting within the modification a third speed probe is installed on both the gas generator and the power turbine. Additionally, the existing speed probes on
the gas generator, the power turbine and the starter are replaced by new ones.

Benefits
The new speed measurement and overspeed protection system provides reliable protection of the gas turbine against possible damages due to overspeed:

- Immediate tripping of gas turbine via safety related control system and programmable logic controller in case of overspeed
- High reliability due to high integrity redundant system concept and internal relay voting
  2 out of 3 for gas generator and power turbine speed
- Continuous monitoring of function of components
- Realization of safety requirements up to IEC 61508 SIL 3 level

Comprehensive Modernization
MAN PrimeServ provides comprehensive modernization concepts to modernize your equipment – no matter if you want to optimize reliability, operating costs, environmental sustainability or any other characteristic of the equipment. Please contact us for further information.