

# Modernization of Positioning Devices

## THM gas turbines



MAN PrimeServ provides a direct drive concept to modernize the positioning of the inlet guide vanes, the fuel control valve and the dilution air flaps.

To aim at achieving a reliable operation of the gas turbine at the required operating point as well as at preventing instable operating states of the gas turbine during the start-up and run-out procedures the supply of air and fuel into the gas turbine is adjusted via the inlet guide vane system, the fuel control valve and – for units with DLN combustion system – the dilution air flaps. To further improve the reliability and the maintainability of these components MAN PrimeServ provides a modernization solution based on a direct drive concept with servo actuators.

### **Modernization Solution**

For several years now MAN Diesel & Turbo uses the direct drive concept as standard for all new THM gas turbines as well as for the modernization of existing units. The servo actuators enable a very fast and reliable positioning due to their high torque, an integrated feedback signal and an easy calibration. Additionally, as the servo actuators directly act on the hinged brackets of the inlet guide vane positioning mechanism, the valve cone of the fuel control valve and the shafts of the dilution air flaps, the number of mechanical components is significantly reduced for a maximum ease of maintenance.

Within the modernization MAN PrimeServ adjusts the inlet guide vane positioning mechanism, the fuel control valve and the dilution air flaps to the corresponding actual technical standard with direct drive. The multi-axis servo controller and the servo drive modules necessary for actuating and controlling the servo actuators are integrated into the existing



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control cabined and connected via Profibus to the programmable logic controller. Additionally, the software of the programmable logic controller and the visualization system are adapted correspondingly.

### Benefits

The direct drive concept for the positioning of the inlet guide vanes, the fuel control valve and the dilution air flaps further enhances the reliability and the maintainability of the gas turbine unit:

- Small overall size with less mechanical components
- Fast and reliable positioning
- Integrated feedback signal plus additional external position feedback as redundant monitor
- Simple resolver feedback calibration by homing run
- Motion loop integrated in servo controller
- Highly reproducible positioning
- EEX-d certification according to ATEX standard

### 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 anything else. Please contact us for further information.

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### MAN Diesel & Turbo

86224 Augsburg, Germany

Phone +49 821 322-0

Fax +49 821 322-3382

mtprimeserv@man.eu

www.mandieselturbo.com