

# Turbine Controller

Automation & Control  
Excitation

Power Plant Management  
Monitoring & Diagnosis

Protection

Synchronization

Turbine Controller

# NEPTUN

# Turbine controller



8 x 32 MW, Portile de Fier, Romania

## Flexible turbine control

State-of-the-art turbine controllers must meet the most stringent demands in terms of safety, economic efficiency, and availability. The basic requirements are a hardware platform suitable for industrial applications and the use of international standards.

Operation of the turbine controller is easy with the latest graphical software interfaces. In addition, efficient remote functions are needed for fast and easy maintenance and service access.

Operating reliability must be guaranteed under all service conditions, even with the most

difficult ambient conditions (for example moisture, EMC).

The sensor technology required to detect field signals should be designed to meet the highest standards.

The speed sensors, some of which are redundant, and the drift-free positioning of the servo-motor must guarantee low-error, maintenance-free operation. In order to guarantee easy maintenance, the mechanical design should feature a modular structure that can also be extended.



1 x 57 MW, Bradley Lake, USA



3 x 32 MW, Da Pu, China

## Strategic products

### TC 1703

The TC 1703, with modular design, offers all the advantages of a modern, scalable turbine controller for use as a stand-alone unit, but also as an integrated component within the power plant automation system. Powerful 32-bit microprocessor technology, integrated diagnostic functions and various configuration concepts guarantee excellent availability. Due to the modular system architecture, the turbine controller can be operated and parameterized centrally and also remotely. Efficient communication concepts guarantee easy integration into your existing plant. A modern plug-and-play concept is available to allow fast hardware change.

### CAEx plus

CAEx plus is a graphical user interface for programming according to IEC 61131-3 that features easy operation and user-friendly programming.



## Product range





# The comprehensive solution

## Controller application

The TC 1703 turbine controller is a universal unit suitable for all types of turbine. It can be used either as a standard controller with a conventional PID structure, as a higher-order controller with set values that can be adapted to the given parameters, or as a status controller.

## Controlling modes

- speed control
- load control
- discharge control
- water level control
- flow control

## Integrated control functions

- surge control
- adaptive cam control (ACC module)
- flow calculation (FCA module)
- and more

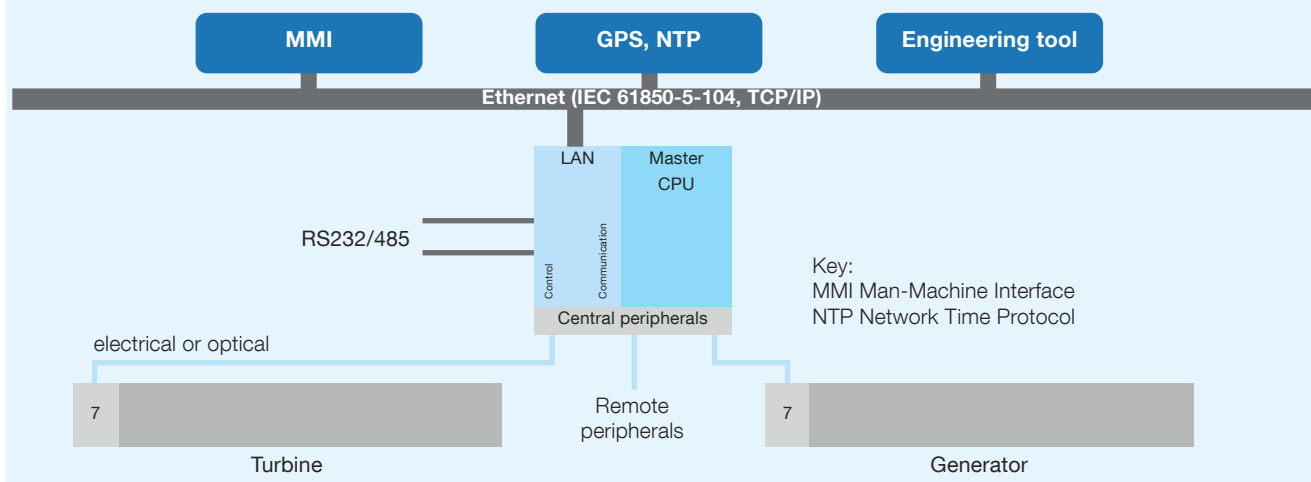
By integrating further machine protection functions, to the extent of setting up complete start/stop sequences, the TC 1703 can also be used as a compact control system.

## Design

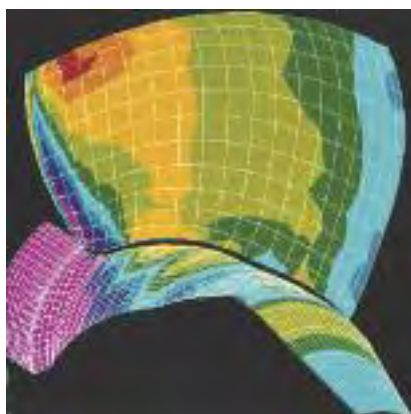
Since both the controller hardware and the standardized controller algorithm are modular, the application can be adapted individually to requirements in the power plant.

After a controller function test in the manufacturer's works, it is then installed and started up by our specialist engineers. Here, plant safety is the top priority. After-sales services, spare part guarantees, and training courses round off our delivery scope.

## System design



## Application example



# Your benefit

## Optimal use:

- with the latest operating and control concepts
- through easy expansion
- by applying international standards
- with self-monitoring system software

## Reduced costs:

- through direct process signal connection without intermediate terminals
- with remote diagnosis and parameter assignment
- through simple plug-and-play for hardware exchange
- with digital speed transmitter

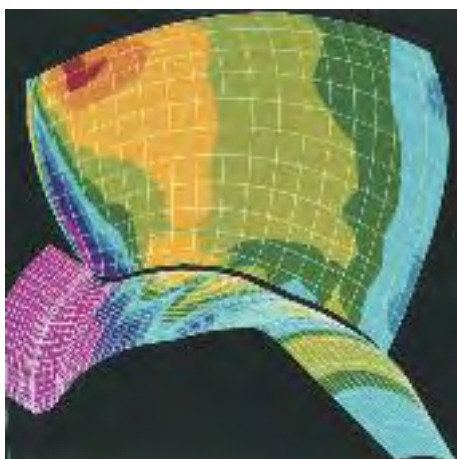
## Increased earnings:

- with optimum control modes and software library
- through fewer maintenance and service assignments on site

**NEPTUN** – the comprehensive solution for secondary systems can offer additional notable advantages in step-by-step expansion of your plant.

This gives you integrated advantages in addition to the current benefits of your turbine controller if additional components are used (for example excitation, synchronization, automation and control).

- Efficient communication standard (IEC 60870-5-104)
- Comprehensive system concepts for remote functions
- Central engineering toolkit
- Simplified plant configuration
- Less engineering and documentation required
- Minimum of additional infrastructure for signal communication
- Minimum of spare parts required
- Liquidation of previously tied capital
- Fewer maintenance and service assignments on site




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