



+ Our customers - Transmission System Operators



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# Tennet TSO GmbH Optimal network management and maintenance

PSIcontrol    PSIpassage



# Strategic pioneer for optimal network management and maintenance



TenneT TSO GmbH with its head office in Bayreuth and with about 1,000 staff members is responsible for operation, maintenance and other developments of the 220 kV and 380 kV electricity transmission networks in large parts of Germany.

TenneT TSO GmbH is part of the Dutch system operator TenneT B.V. The company is responsible for about 10.700 kilometres of ultra-high voltage powerlines for efficient energy transmission over long distances. The network reaches from the Danish border to the Alps and with 140.000 km<sup>2</sup> it covers 40 percent of Germany. The management of all 380 kV and 220 kV networks from TenneT is carried out with a newly developed PSControl system.

Transmission system operators have been presented with new challenges from new legal requirements and changes in environmental conditions. With the aim to optimally use the transmission capacity of the network at all times without risking network outages, system operators are switching to intelligent software solutions for optimal network management. TenneT is one of the strategic forerunners.

Based on PSControl, which is the centrepiece of the new solution (NLS08), TenneT and PSI have closely cooperated to develop functions allowing for optimal management and monitoring of the network, which has made the supply situation much more secure and easier to guarantee.

The noteworthy system architecture ensures a high level of redundancy. Parallel operation at the different sites offers additional security. The system also features exceptional time response.

The new telecontrol technology is also equipped with comprehensive network protection calculations and functions for European energy exchange. In addition, TenneT trusts in PSI software and has implemented PSIPassage-T and PSIPassage-ACC for scheduling and controlling power management as well as unintentional deviation.

## Enhanced functions

- + Alarm management monitor,
- + Forecast calculations with analysis tools,
- + Day-ahead congestion forecast / intra-day congestion forecast,
- + Congestion management,
- + Dynamic network connection and dynamic network group reduction,
- + Intelligent solution for operational security.
- + OFP with voltage regulator,
- + KIVIAT diagrams for showing voltage distribution in the network groups,
- + Load frequency controller with connection to the Grid Control Cooperation,
- + Forecasts for network load, wind and PV infeeds,
- + Overhead powerline monitoring.

