ETRANS utilizes the benefits of PSGuard:

▲ Due to dynamic network monitoring, the operators can react correctly and in good time to critical operating conditions

▲ The line thermal monitoring provides additional operational and planning safety for the HV transmission system

▲ ABB’s RES 521 PMUs offer high measuring accuracy, user-friendly remote parameterization and low installation efforts

Based on the visualization of the voltage phase angle difference, an increase in the security of the north–south corridor is achieved.
ETRANS is the independent coordination company for the Swiss extra high voltage transmission grid and performs services and specific tasks on behalf of the European UCTE grid. The enterprise is independent from particular interests and organizations engaged in trading, supply and production. Based on its comprehensive know how, tools, infrastructure and information, ETRANS acts as a trustee in the interest of the optimal organization of the Swiss and the European grid.

The PSGuard wide area monitoring system at ETRANS
Optimal transmission combined with operational und planning safety

The goal of the project with deployment of the WAM system in the Swiss transmission network was to monitor the impact of heavy power transfers on the north–south axis (main transmission path). The direct phasor measurement and calculation of the voltage angle difference provides information on the loading of the corridor. A phase angle difference of 1° here reflects an increase in the transmission capacity of approx. 100 MW.

High-resolution measurements of voltage phasors, i.e. magnitude and phase angle, taken by PMUs at selected locations are transmitted to a central workplace. Based on the calculated voltage angle difference, the loading of the north–south corridor of the Swiss transmission grid is visualized there. The derived information enables the network control centre to react early and appropriately.

“The dynamic condition monitoring is a valuable support for our operators and protection engineers”, Dr. Walter Sattinger, PSGuard project manager at ETRANS, said.

The results of the line thermal monitoring (LTM), with PMUs at both line ends, provide additional accuracy in determining the mean line temperature and changes in temperature—with reduced investments compared with conventional LTM. This opens interesting new possibilities for verification during operation. Thus it can be seen, that ΔT = 3° C, i.e. the average temperature of the line rises from 46 to 49°C—as a consequence of the increase in power transfer by 200 MW within 30 minutes.

Clear relationship between phase angle and line flow to guarantee n-1 criteria in case of reclosure.

For more information please refer to the responsible ABB sales engineer for your country or to the address mentioned below