AEW Energie AG, grid operator in the canton of Aargau; Switzerland, operates multiple transformer substations for the regional power supply and is therefore responsible for all medium- and low-voltage network services in the region. AEW contracted ABB Switzerland to modernize the control and protection equipment for Dättwil substation. The concept was to devise a standardized AEW specific solution and thereby generate valuable synergies. The project has been executed to the AEW’s full satisfaction and will serve as the basis for the expansion for further substations to be modernized in years ahead.

Project
ABB teamed up with AEW to develop, execute and put into operation a plan for the modernization of the control and protection equipment for Dättwil substation. This concept will serve as basis for the expansion of very similar substations to be modernized in the future. AEW specified an overall system with a homogeneous protection and control equipment platform (IEDs), highly integrated functionality and standard operation for all IEDs.

The newly installed SAS605 station control technology, based on ABB’s RTU560 as the station unit, enables full flexibility in the configuration of the control system for the substation. The 110kV/16kV switchgear is operated by using a web-based HMI (Human Machine Interface) which is an integrated part of the RTU560 and features alarm and event recording functions. The RTU560 is a very rigid solution, easy to configure and operate. Standardized protocols are used for communication with the two higher-level network control centers.

AEW has been extremely pleased with ABB’s lean control and protection design by using equipment from the ABB Relion® series.

ABB solution
Station control has been realized by using ABB’s SAS605 unit with IEC 61850 communication for the control and protection equipment for the 110kV/16kV system.

The RTU560 hardware is executed redundantly. In case of loss of communication to one of the two control centers the RTU560 automatically switches to the redundant communication path.

HMI control is web-browser based and an integrated part of the RTU560.
The following ABB Relion® devices were used for the field control level for the 110kV/16kV switchgear:

- REL650 for 110kV distance protection.
- RET630 for transformer differential protection including transformer step-switch control for both transformers of 110kV/16kV.
- REF630 combination devices for control with back-up protection and switch failure protection for the 110kV installation.
- REF630 combination devices for control with distance protection.
- Bus-bar protection with directional logic in the legacy REF630 devices.

Customer feedback

Thanks to the standardized approach and use of a lean project team, the entire project was carried out efficiently, on schedule and to the fullest satisfaction of AEW.

AEW is able to use chosen approach for similar substations in future projects. This creates valuable synergies in the planning, realization and maintenance of the substations.

With this standardized solution, AEW is able to carry out future projects and put them into operation by themselves. ABB delivers the equipment and is available to provide assistance and support at any time. It is a win-win situation for AEW and ABB.

«We were highly satisfied with the overall planning and the very close and friendly collaboration with ABB throughout the entire project» Daniel Fondado said, Project Manager for Substations at AEW Energie AG.

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