INTEGRATION OF DSO CONTROL SYSTEMS AND TSO AUTOMATIC LOAD SHEDDING SYSTEM TO IMPROVE THE SECURITY OF THE NATIONAL GRID

TERNA is responsible for the transmission and dispatching of electric energy throughout the entire Italian territory, and therefore for the safe management of the balance between electricity supply and demand all the year round. The modern term used for this kind of company is: Transmission System Operator (TSO).

Usually some services are required to assure a good level of security of the National Grid, to face events where generation may be reduced or disconnected following a system fault to relieve localized network overloads, to maintain system stability, to manage system voltages and to avoid the so called “Black outs”.

One of the classical method to manage these situations is the “Load shedding”, a technique that today can be applied in a very modern way thanks to new technologies.

In this direction, TERNA developed a modern Load shedding application (called BME) that, connected to remote control systems of Distribution System Operators (DSO) makes possible a very effective automatic procedure for emergency situations.

ENEL Distribuzione, that is the main DSO of the Country, played a consistent role in the project as far as system integration is concerned:

• communication architecture has been developed taking into account all the requirements of the application;
• central System Software has been adapted to manage new activities and new events;
• peripheral units in Primary Substations have been powered (SW + HW) to support the new function.

The presentation describes the main functions of the application, the integration approach and system development, highlighting all the constraints of the project: maximum delay times, high reliability and system security.

The results coming from the pilot project in Naples and successive extensions to all the south of Italy, are also reported.