

These standards include:

- IEC 60870-6-1 Application context and organization of standards
- IEC 60870-6-2 Use of basic standards (OSI layers 1–4)
- IEC 60870-6-501 TASE.1 Service definitions
- IEC 60870-6-502 TASE.1 Protocol definitions
- IEC 60870-6-503 TASE.2 Services and protocol
- IEC 60870-6-504 TASE.1 User conventions
- IEC 60870-6-601 Functional profile for providing the connection-oriented transport service in an end system connected via permanent access to a packet switched data network
- IEC 60870-6-602 TASE transport profiles
- IEC 60870-6-701 Functional profile for providing the TASE.1 application service in end systems
- IEC 60870-6-702 Functional profile for providing the TASE.2 application service in end systems
- IEC 60870-6-802 TASE.2 Object models

## 2.4 Cyber Layer

The Cyber layer is formed by the IT system that provides operability to the system. The cyber layer is a hierarchical structure with different functionalities at each level:

- a. **Substation Level:** In modern substations the local control is based on IT systems and became the first level in the hierarchy. In some cases the information and operation capacity from few substations are concentrated in one of them becoming an elementary first level of the Control Centre.
- b. **Control Centres:** with a more sophisticated information coming from all substations which gives them a superior level of control capacity. Control Centres can be hierarchically located among them, with regional and central Control Centres.

In the following points a description of the functionality is included. Hardware and software will depend on the system supplier meanwhile the functions are similar in all cases.

### 2.4.1 Substation Level

The basic elements of the substation automation are the Intelligent Electronic Devices (IED) that incorporates one or more processors with the capability to receive or send data/control from or to an external source (e.g., electronic multifunction meters, digital relays, controllers).