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CTEEP - Paulista Electricity Transmission Company

First substation in Brazil with HMI via Tablet and Smartphone

Context

Located in the center of São Paulo-SP, the Central substation is fed by two lines of 230kV and has two levels of secondary voltages - 88kV and 20kV. There are twenty-four 20kV circuits, and as a feature of the original design, it has a unique range of alarms for this sector. Thus, in the case of the shutdown of a circuit breaker, it is indicated in the control room a generic alarm "switch off in armored of 20kV". This requires the tecnician of the substation to go to the patio to identify the anomaly.

As the SE Center was already adequate and operated by remote control via CTEEP Operation Center, these alarms were individualized in the Supervision and Control System and, consequently, could also be used for local indication on the substation control room.

The substation currently has two operators per shift, and as a requirement of the NR10 norm, when there is a need to go to the courtyard of the substation, the two technicians must go together, leaving the operating room unattended.

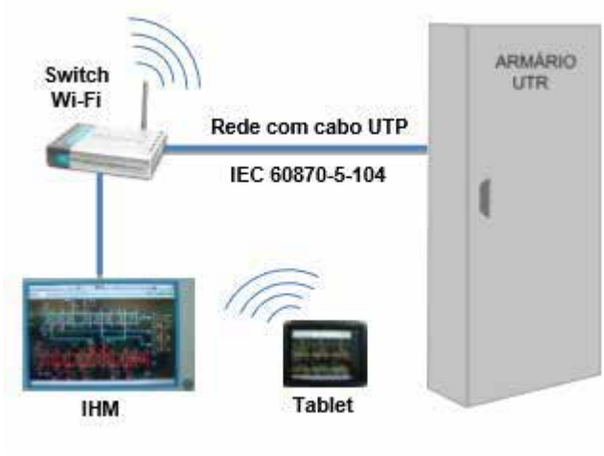
Challenges

Implement a SCADA system that makes the automation of the entire substation and avoid the problem of leaving the operating room unattended during an intervention on the patio with the two operators on duty.

To maintain the operation culture already in place in CTEEP, the new system should have the same functions as a standard HMI SINOCON, giving priority in its operation annunciators displays alarms in real time to the technicians who operate the substation, navigating the system through touch screen, acknowledging alarms in the same way the conventional alarm hives, and also available all substation information as a conventional HMI.

Implanted Solution

The figure below shows the deployed solution using SCADA Action.NET software on a computer with touchscreen and a switch with wireless network that is visible in the substation environment.



Besides an annunciator of alarms, the system is a complete HMI locally providing all the information that is implemented in the local UTR SSC, line diagrams of all sectors, signaling equipment, history log of alarms, events, measurements and graphs. The system always prioritizes the alarms going off, that is, no matter what the screen being used/consulted is, whenever there is an alarm that belongs to routine hive alarm, the system will display, automatically, this screen with audible alarm and a red color flashing alarm until it is recognized by the local operator. Thus the operating routines of a conventional alarm annunciator are properly maintained.

As an additional feature of SCADA Action.NET, users using smartphone or tablet (iOS or Android) through a freely available application, have access to all the screens of the SCADA wireless network.

Results

The solution, implemented in mid-2012, was the first transmission substation in Brazil with a SCADA containing mobility features.

When the technicians go to the courtyard of the substation, the tablet they have has access to all the features of the operation of IHM in real time.

When a change is made in the field and it is necessary to make an operational test, it becomes unnecessary to use radios for communication between the coach on the patio and in the operating room, once the technician in the field already has access to the HMI in the room of operation.

In this solution, it is possible that different users are logged independently, meaning the technician in the courtyard may have different permissions than the technician in the operating room.

The system remains operational since its inception to present day.