

Southern Railways Traction Power Monitoring & Control

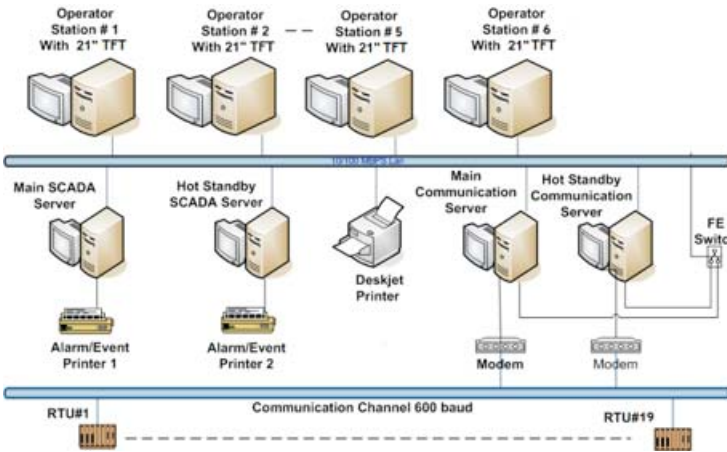


Indian Railways uses SCADA system for monitoring and control of Traction Power system which is responsible for providing power to the electric trains. Power is directly tapped from grid at Traction Sub Stations(TSS) located along the railway line. Sectioning & Paralleling Post(SP) are provided to isolate power distribution between two TSSs and Sub sectioning and Paralleling post(SSP) are used to isolate the faulty sections.

The 300 km long AJJ-JTJ Broad Gauge Section of Southern Railways is controlled from a control room located in Chennai. Southern Railways entrusted Synergy Systems and Solutions with the contract against a press tender of Design, Supply, Erection, Testing and Commissioning of Supervisory Control and Data Acquisition System for control of 25KV single phase, 50 Hz AC traction power supply. The complete system including hardware and software was prototype tested prior to dispatch including testing of offered RTUs at governmental labs.

'...SCADA System compliant to RDSO standard specifications...'

Traction Power data is presented using Single Line Diagrams(SLD) of each of the 19 posts separately using Circuit Breakers(CB), Breaker Mains(BM), Transformer Tap Positions. SCADA system consists of 3 TSS RTUs, 4 SP RTUs and 12 SSP RTUs.



Reports & Trends: Trends of selected analog parameters is shown with **1 second** resolution. The following additional information is also displayed

- Maximum, Minimum & Average Value
- Precise Values for all the curves

The following reports have been provided:

- CB Tripping: Records the daily trippings along with the reason.
- Analog Report: Voltage and Current of all the 18 posts. The operator can select the post as well as parameters for display.
- Historical Events: Events can be filtered on time, text and post.

SIRIUS is configured in dual redundant configuration with redundant SCADA and Communication Servers, ready to takeover in case of failure of the online server.

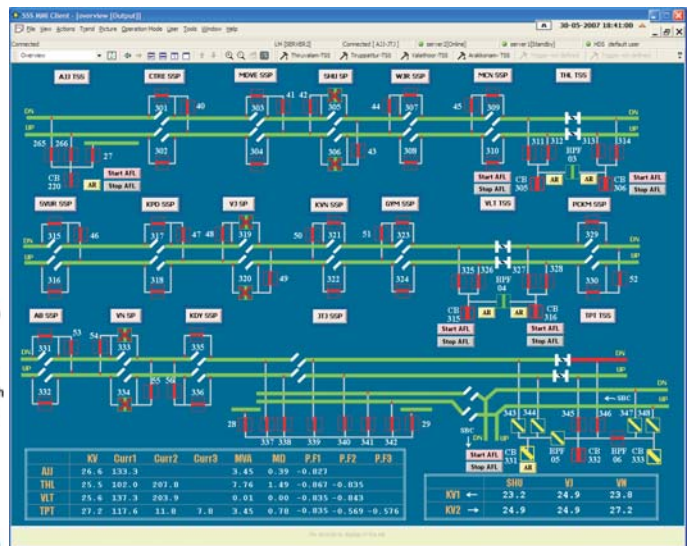
'...Power Block, Auto Fault Localization (AFL), Maximum Demand, Time Sync, Reports...'

Data synchronization is achieved between the servers in real-time over Local Area Network.

Time synchronisation was achieved thru' master clock.

The following railways specific applications were implemented:

Power Block: For day to day maintenance, Power Block is granted on a section or sub-section that cuts off the power of the section. The command automatically opens the associated BMs of the section and starts monitoring. An alarm is generated on the expiry of power block period.



Auto Fault Localization: AFL process automatically segregates the faulty section in the Event of tripping of associated CB at TSS. The process, disconnects all subsections by opening the associated BMs and then connects each sub section one by one to the TSS by operating the BMs. When the CB trips again, then the last subsection connected is the one having the fault.

Maximum Demand: The Railways is given a pre-determined power it can draw from the grid. Railways is not allowed to exceed this limit for more than 15 minutes. The SCADA system alerts the operator by raising an alarm in case the current demand remains higher than the Maximum Demand.

The project was successfully commissioned in May, 2007.