

Application of SCADA system in Steel Industries

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Abstract- SCADA system is envisaged for the steel plants Electrical and Instrumentation automation network world wide now a day. SCADA system is Supervisory Control and Data Acquisition system, SCADA system is based on PLC system, The SCADA system uses PLC to collect the data from field instruments and equipments used in Industrial Process system. The SCADA system has been developed by companies who are members of Standardization committees e.g. OPC, OLE for the process control and include trends of IT technologies.

The major application of SCADA system in steel plants is to supervision, online control of field instruments and equipments which are spread throughout the plant area and these instruments and equipments play the main role to obtain desired quality output of the plant. This paper describes SCADA system in terms of their Application, Architecture, and their interface to the process Instruments and Equipments hardware and Software process control, the function and application of SCADA system development they provide to steel plants. Due to Industrial standards and their characteristics which very important for plant operation point of view, the SCADA system has accepted by major of the plants.

1.1 INTRODUCTION

SCADA is the acronym for Supervisory Control and Data Acquisition. SCADA is the software package for monitoring online process parameters and function of plant operational equipments in technological manner. In plant SCADA system generally installed in control room.

SCADA system having three types of working station in control room, First working station is Operating station; in operator station the users can only do real time process parameter monitoring function. The second type is called Engineering Station in such type of work station users can able to do process parameter monitoring function as well as modification if process needs modification and only authorized users can modify the control sequence, control logics, instruments or equipment parameters etc. as per process requirement if required. Then the third type of work station is called server station. In this station users not monitoring or engineering any process parameters but all the SCADA system software have stored in server as backup data when in any main stations e.g. Engineering and Operating station any control block is malfunctioning then from server data uninstall the corrupted program and install it.

In SCADA system all these work station connected through a centralized controller system normally we called it Programmable Logic Controller (PLC) or Distributed control System (DCS) through Ethernet cables via Ethernet switch. SCADA system software and application software processed by the PLC / DCS / RTU system and display on SCADA system for process parameter monitoring.

All the Field instruments such as Pressure Transmitters, Flow Transmitters, Level Transmitters, Temperature Transmitters, Limit Switches, Position switches are connected to SCADA system via Screened pair cables from field up to input output cards of PLC panel. The input output signals in plant generally analog and digital type so that the input output cards are installed in Programmable logic controller panel. These Input output cards are communicated with processor (CPU) via. Fiber optic cables, the quantity of input output cards depend upon the no. of signals in the plant operation. These signals through PLC and in different work station we monitor online process parameters. Now a day SCADA system has come with unlimited tag nos. so that we can monitor unlimited tags in the SCADA system. The SCADA software used to run on DOS, VMS and UNIX, recently SCADA vendors go to NT. SCADA can also run on LINUX.

In Fig-1 below shows the diagram of typical SCADA system, which contains 1 no. PLC System, 4 nos. Remote Terminal Units, 3 nos. of operator station, Radio modems and other field level operational process Instruments and Equipments.

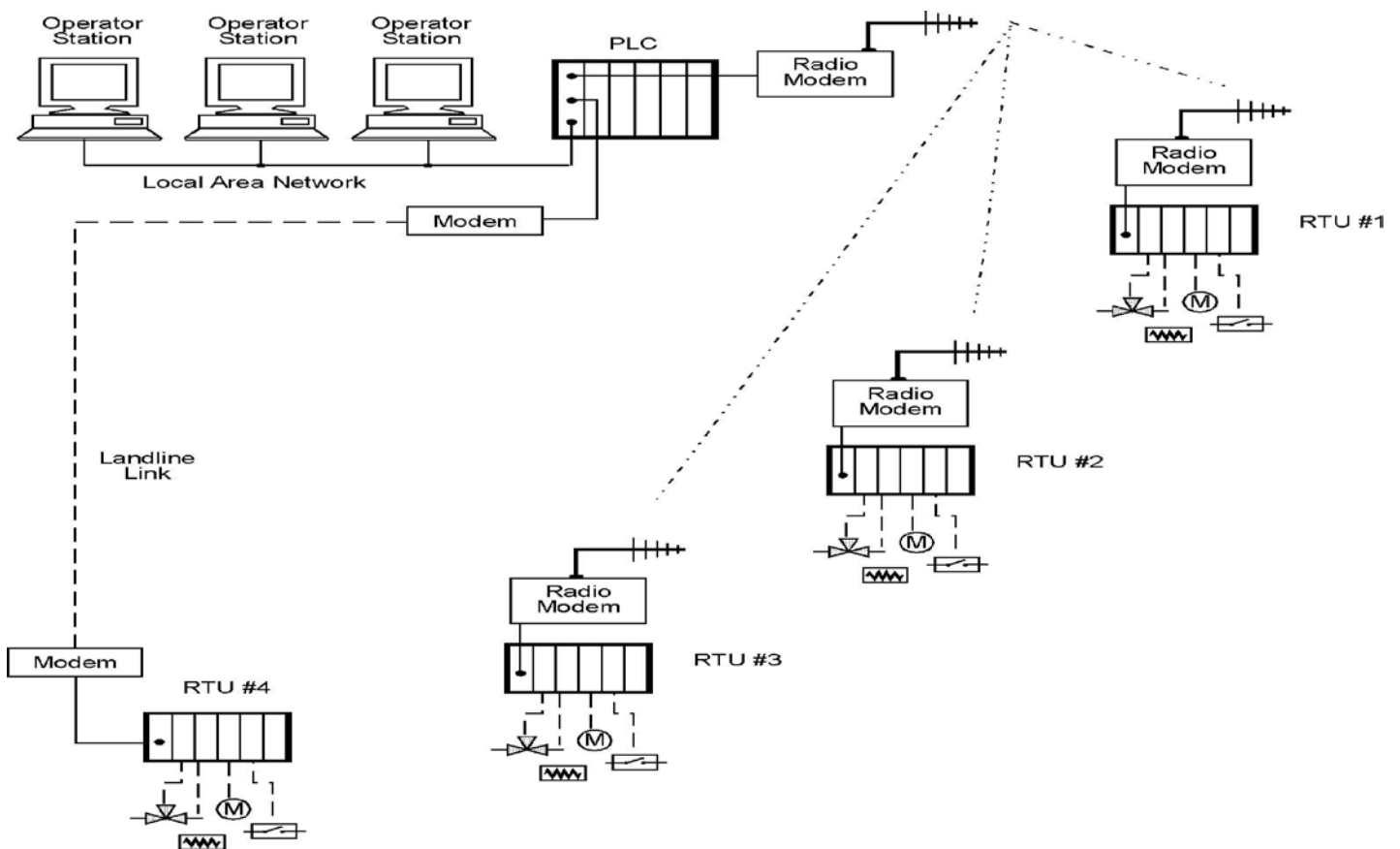


Fig 1:- Diagram of Typical SCADA system

1.2 Why SCADA system

In Integrated steel plant for process monitoring and control function SCADA is best system, some features are as follows which makes SCADA system best in industry:-

1. SCADA is fully software package computer based system which control primary equipments, records and store very large amount of process data.
2. SCADA system allows to plant engineer to interact real time process data form level 0 equipments, field sensors etc.
3. The operator assist computer based SCADA system for monitoring process data that recommended action keep system safety.
4. Remote terminal unit is the main source of process data this create online image of the system.

1.3 Benefits of SCADA system:-

1. Good functionality, Easy under stood by plant operator, and exhaustive development facility.
2. The amount of specific development that needs to be performed by the end users is limited, especially with suitable engineering.
3. SCADA is reliable and robust system that's why it is used in critical industrial process environments where reliability and performance is priority. In well established framework specific development is performed by SCADA system that enhance reliability and robustness of the system.

1.4 Hidden or confidential –

SCADA system doesn't have any such type of features which provided confidentiality of communication. If the lower level protocols do not provide confidentiality than that intercepted communications may be easily read.

1.5 Authentication

SCADA system has security features, protected by passwords that restrict the persons who are not authorized for access the system.

1.6 CONCLUSION

This project we learn about Application of industrial SCADA system, configuration of industrial SCADA system, equipments involved for completion of industrial SCADA system, software needed for industrial SCADA system, working of industrial SCADA system, basic process parameters indication and control process parameters by industrial SCADA system.

By adaptation of SCADA system in industry the major advantage for plant engineers that is very fast troubleshooting , Fast maintenance of plant, Save raw material of plant, increase quality of the output or final product and save time and money of organization.

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1.8 REFERENCES

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