



Movicon fires up the engines

Tata Cummins Pvt. Ltd. has chosen Movicon to control the Engine Line Manufacturing

Protocol Automation Technologies Pvt Ltd is a software solution house based in Bangalore, serving the Automation Industry with time tested quality products, services and support since they started operation in 1994. Protocol Automation Technologies has developed an engine line manufacturing project for one of the most important automotive companies in India: Tata Cummins Pvt. Ltd.

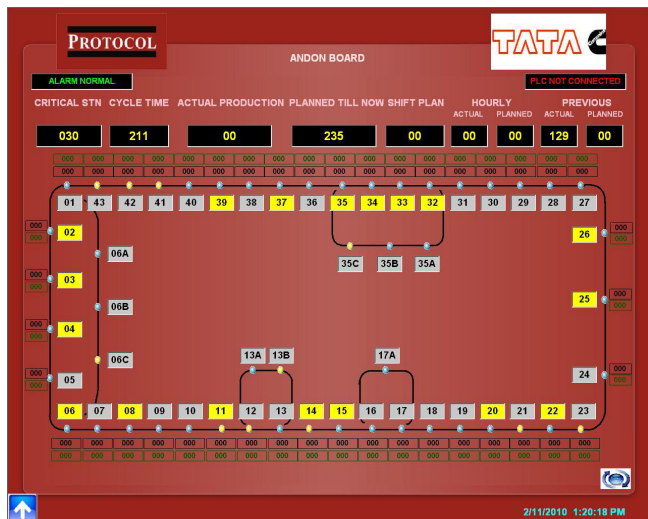
Tata Cummins Pvt. Ltd. is a 50/50 joint venture between Tata Motors Limited, India's largest automobile manufacturer, and Cummins Inc., USA, world leaders in design and manufacturing of diesel engines.

The entity manufactures high performance, reliable and durable mid-range (B&L) engines

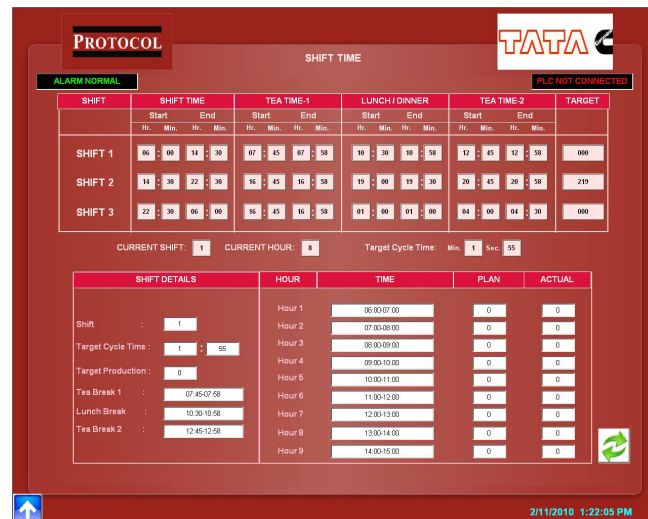
in the 75 to 400 HP range that not only comply with current and future emission norms but are also serviceable globally.

Established in the year 1994, the company started its operations with its state-of-the-art facility at the steel city of Jamshedpur.

Aligning itself with the world class manufacturing standards, Tata Cummins Jamshedpur has consistently exceeded customer expectations which resulted in increased annual sales and demands for further capacity. Expansion plans were finally put in place with the setting up of the second and third manufacturing facilities at the Cummins Megasite in Phaltan, Maharashtra.



Engine Assembly Line Station



Shifts Management

Tasks

For its Diesel Engine Assembly Line, Tata Cummins Pvt. Ltd. had several requirements:

- To replace the previous SCADA and connect to the new Siemens S7 PLC via Ethernet and pick up data from 140 stations (installed on Main Line, Block Assembly, Head Service Assembly and Test Cell line).
- To provide two sets of redundant SCADA server system for both the assembly line, with dedicated Operator station for each line.
- To prepare applications with appropriate mimic screens as required on the central SCADA system as well as at each DET (Data Entry Terminals) location and Web Based View Client locations.
- To collect data from nut runners, IPV and Leak Test equipment using proprietary protocol via serial and Ethernet.
- To update ANDON display in Realtime with the Actual against Planned production data.
- To connect SCADA system to the ORACLE ERP system and update data in real time on Sales Order quantity update against planned/schedules, store all the data in a defined DB and in a required format.
- To update the "Lookup Table" data (component details maintained in an excel sheet) maintained by Cummins to the SCADA.
- BAR code scanning and BAR code label printing at selected stations across the assembly line.

Movicon Solution

Tata Cummins Pvt. Ltd. after evaluating different solutions chose Movicon from Progea to monitor in real time the Engine Assembly Line Manufacturing.

The system comprises:

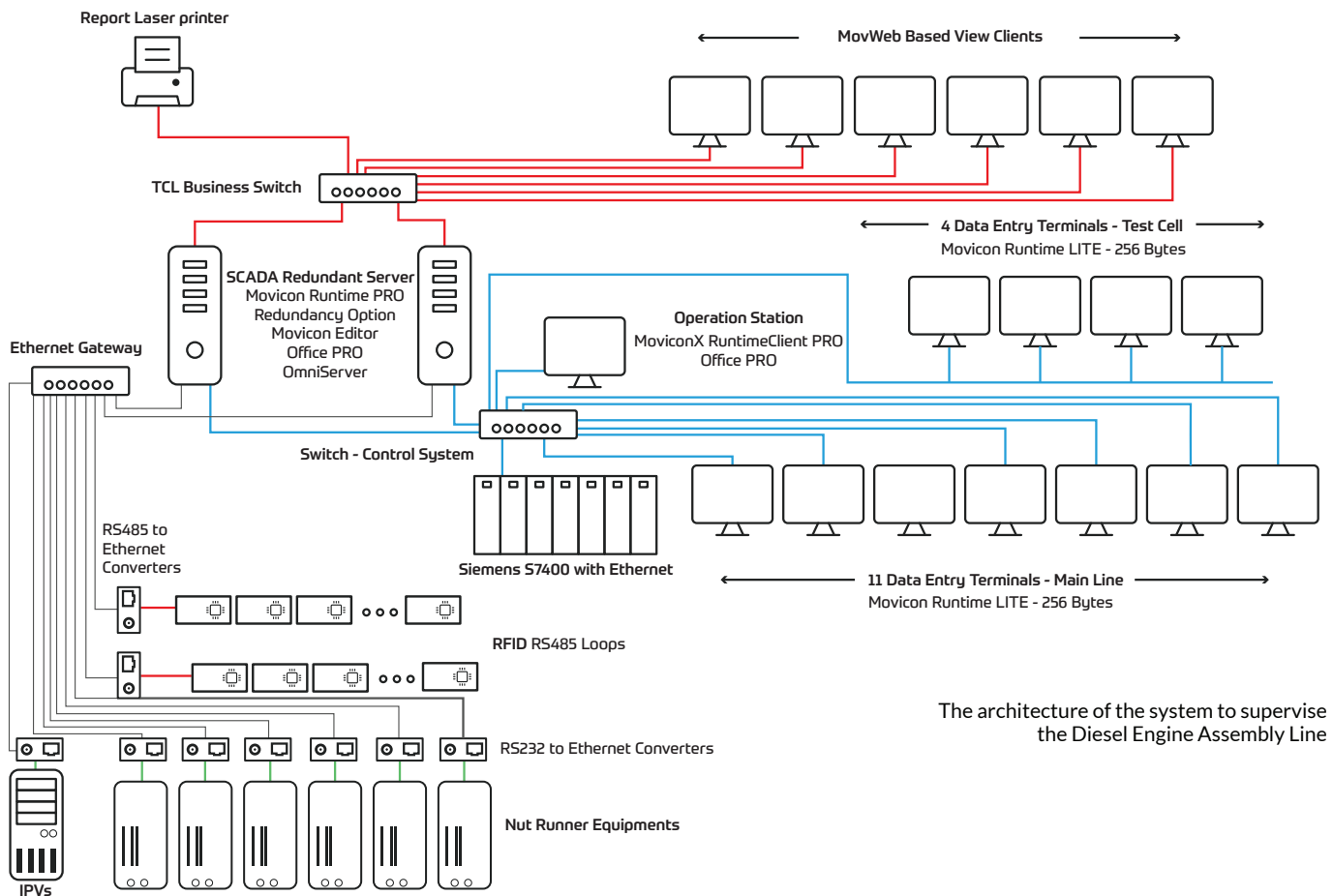
- Central SCADA system
- Data Entry Terminals (DET)
- View Clients (VC)

The central system which reads all data from stations via the central Siemens PLC will be the Server system. The Project Team of Protocol Automation Technologies installed redundant servers and one slave operator station in each line. On both servers the Protocol Project Team installed Movicon Runtime PRO license system with the following options:

- Editor
- Redundancy
- Web Licenses

The redundant functionalities taken care by Movicon will automatically switch communication, data storage etc.. If one server fails the other one makes the system reliable as the DET and View Clients are also connected to this network.

The DETs installed are licensed with Movicon Client Stations which will allow operators to enter data as well as view relevant data in lists or grids as required. These stations also have the capability to read data from RS232 ports from devices like Bar Code Scanners so that data can be updated directly into the system. They do not have any drivers so they will not have any



The architecture of the system to supervise the Diesel Engine Assembly Line

capability to talk to complex devices like PLCs but only communicate to single ASCII based devices. The redundant Movicon SCADA pair will communicate to the Siemens S7 PLC via a Control Ethernet Switch. The switch will have the main Siemens PLC and the SCADA redundant pairs linked to each other. There will be a second set of Ethernet cards required on the redundant servers which will expose the Server data to the Oracle system as well as the View Clients. The DETs will be linked to the central Servers by a third Ethernet network. The Engine Tracking System uses a Soft Logical tracking mechanism to track the engines on the line and updates the SCADA screens against each station with the necessary information. The IPV Equipment as well as the Nut Runners need to be brought to the Movicon SCADA servers using some Serial to Ethernet converters. The View Clients allow operators to access all the data on the Server System live, using a

standard Web Browser from any PC. Any PC with a Windows Operating System or Graphical Linux environment like RedHat will be able to view the data from the Servers. The Web Based Clients will allow two-way communications and are security protected so that only authorized personnel can access and change system files and data. The Movicon Servers store all data using Movicon's powerful DataLogger / Recipe engine and reports are presented using excel or pdf format. The reports are embedded within the Movicon environment thus ensuring security. The database Oracle as TCL has standardized on it. It is expected one week of data storage in case communication with the central ERP Oracle fails. Thanks to the Alarm Dispatcher module, the system also has the capability to send SMS or emails to concerned personnel as well as emails with the reports that are prepared on a schedule.

“The many capabilities of Movicon open the viewing and the interaction in any kind of device.”

Tata Cummins Pvt. Ltd.

The Benefits of using Movicon

Tata Cummins has used different SCADA solutions, but they have really appreciated the simplicity of redundant options available in Movicon. It’s very easy because it only needs a few steps to set up but is very powerful because it takes care of all the data and functionalities.

The flexibility of Movicon allows to distribute the server and client in different stations installed in different production lines. In addition, the HMTL5 capabilities open the viewing and the interaction in every kind of device.

Tata Cummins Staff is very excited about the Report Designer embedded in Movicon. It’s very powerful and easy tool compared to other SCADA solutions and is completely embedded in Movicon without any other license.

One of the very critical points in the project was the Database connection. Thanks to Movicon capabilities and the excellent support provided by the Progea support team, at the end Tata Cummins has integrated on Oracle all the necessary parameters in very short time.



Work Station Assembly Line Interface