

Compressor Test Facility
(Manufacturing Industry)





Client Background

Client is globally identified for manufacturing of compressors. The Company is engaged in the design, manufacture, sale and service of a portfolio of industrial and commercial products as well.

Compressor Test facility ATE System was designed to test and provide calibration test certificate for their end user. The basic function of the ATE system is to acquire the data of different Subsystems of the Compressor. Test Facility, indicate the status of system safety Interlock and alarm signals, process parameters and allow the user to follow a predefined sequence of startup procedure & control the subsystems, during the process/test time and log the data. All these functions enable the user to improve the system operation, ease of functionality, control over the system, data acquisition and storage capability, safety, user administration and access, centralized monitoring and control capability.



Challenge

The client, who is a compressor manufacturer needs to have their products tested after manufacturing and obtain corresponding Quality certificates

Client requires a test facility which can be operated with different openings or capacities. Each opening was provided with defined flow meters, torque meters, suction & discharge pressure gauges, and vibration & sound sensors to test their compressor. The main objective of the test facility was

1. Provide the instrumentation for large numbers of channels
2. Develop the control system to test DUT under different environment conditions
3. Design automated ATE software to carry out required test for generation of calibration test certificates as per international standards.
4. Design an acoustic chambers to attenuate noise level during testing of rotary machines.

Engagement Journey

Started With



Extended To



Ongoing Support

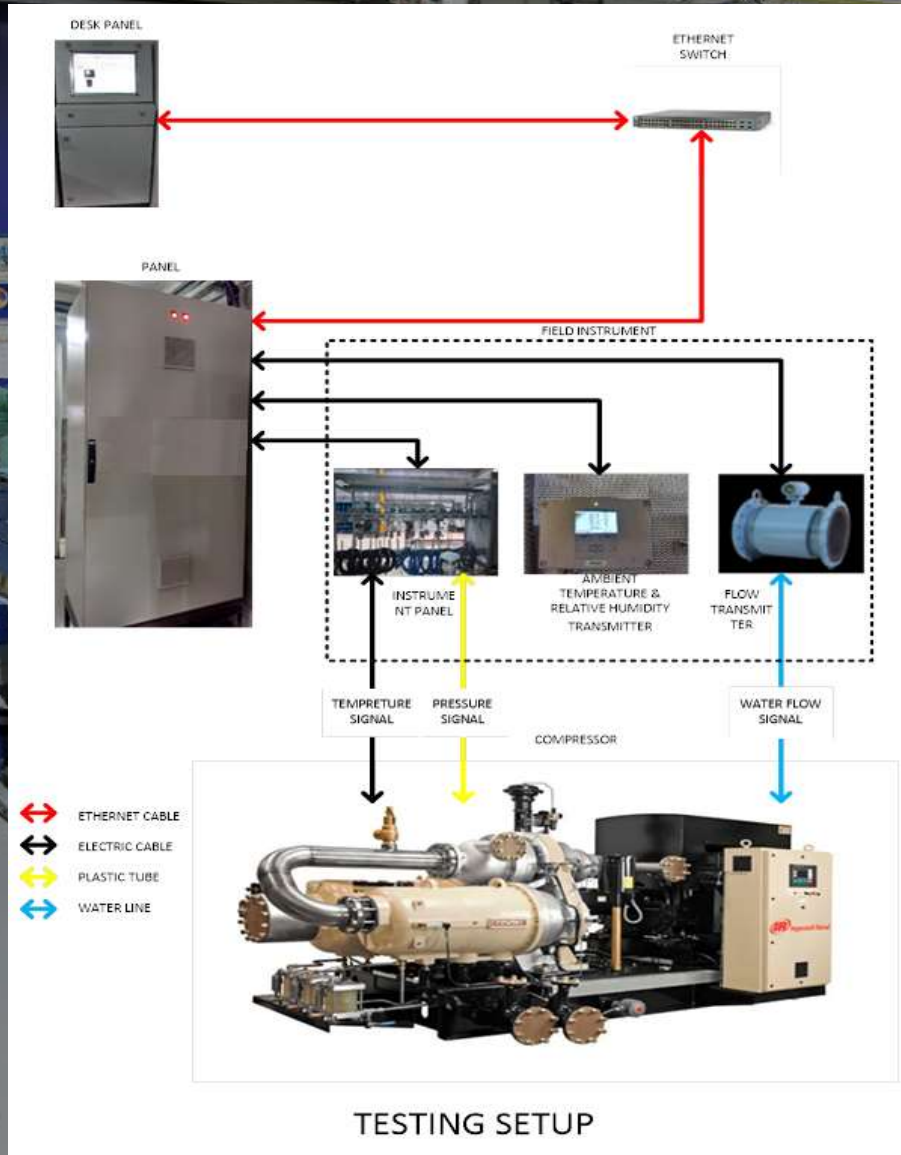


Solution

With the help of real time hardware, modular instruments and powerful ATE software, pump test facility system was design to provide the calibration certificate to clients end user. Real time control system was developed to acquire measurement data and to regulate field devices as per the system requirements. The system was designed to automate the entire testing facility for deterministic control with real-time data logging using real time hardware. FPGA based interlocking system to sense the safety interlocks status and generate the output. A CCTV system is installed for online viewing of test bed and the selection of appropriate sensors in the software.

GUI of Host Application software is designed to provide user with the features that will improve the control and ease of operation of the Compressor test facility.





Solution

The software should allow the user to run the application in Auto/Manual mode, configure limits, set-points and acquisition parameters, control the subsystems by monitoring the process parameters and alarms, Check the runtime status and operating parameters of the various signals and subsystems continuously, monitor the character/behavior of the various analog channels on a graph, Conduct the experiments in an easy and safe automated manner, and do post experiment analysis. It has the facility to bypassing the specific data acquisition channels if they are not physically available

The Compressor Test facility software generates the performance report, and the sample calculation reports at the end of testing for the end user to see the exact calculations. The software compares the performance report with different compressor standards for accepted rejection criteria.



Benefits

- Fully Automated Testing
- Reduce Human Errors
- Enhance Accuracy
- Highly Reliable
- Modular system for future upgradation





Benefits against alternatives

Implementing a fully automated compressor test facility using real-time hardware, modular instruments, and powerful ATE software offers several advantages over traditional and semi-automated testing methods. This approach ensures consistency and repeatability, minimizing variability caused by human intervention and thus enhancing the reliability of test results. Automation significantly reduces human errors, leading to more accurate data collection and analysis. Additionally, the system's modularity facilitates easy upgrades and scalability, accommodating future technological advancements and changing testing requirements. The comprehensive automation also lowers labour costs by reducing the need for manual intervention, allowing technicians to focus on more complex tasks. Overall, these benefits result in a highly reliable, accurate, and efficient testing process compared to alternative methods.



Value Proposition

Optimized Solutions has provided an intuitive solution for a Compressor Test Facility System. Our long history of developing high-performance real-time control and data acquisition systems, and in-depth knowledge of real-time hardware make the test facility system reliable, flexible and saves the operation cost of testing.

