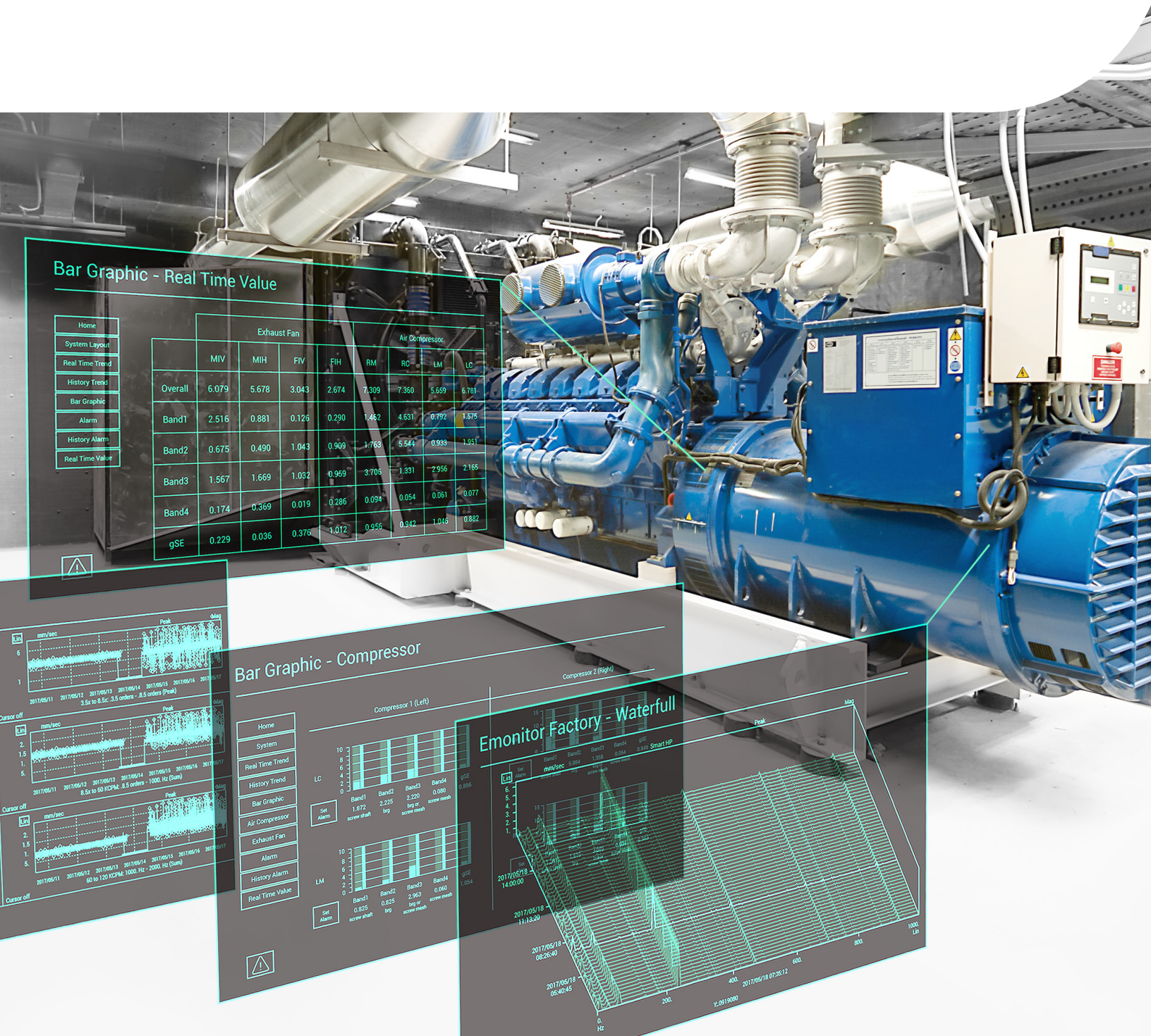


Application Story

Predictive Diagnostic Maintenance to Safeguard DUPS System in Semiconductor Factories



The client needed a predictive diagnostic maintenance solution for the eight units forming the DUPS system, with 24/7 remote monitoring and detailed record of the working status.

Overview

NEXCOM provides a predictive diagnostic maintenance (PDM) solution for Diesel Uninterrupted Power Supply (DUPS) system to ensure constant production in semiconductor factories during sudden power outage. By implementing a PDM system to evaluate and determine the health status of eight units forming the DUPS system at all times, the client can eliminate manual check-ups and gauge alerts from a remote location, resting assured that manufacturing machines receive continuous power for an uninterrupted production. Equally, system integrators can benefit from NEXCOM PDM starter kit to learn and assess rotating machinery applications.

Challenges

Semiconductor manufacturing plants require continuous power supply to operate uninterruptedly all the time. In order to achieve this, eight units of DUPS store energy under normal operation to keep the production running in case of power outages and until energy is restored. If the DUPS system fails to deliver, every second of downtime implies over a hundred million slipping away. Therefore, maintaining a healthy

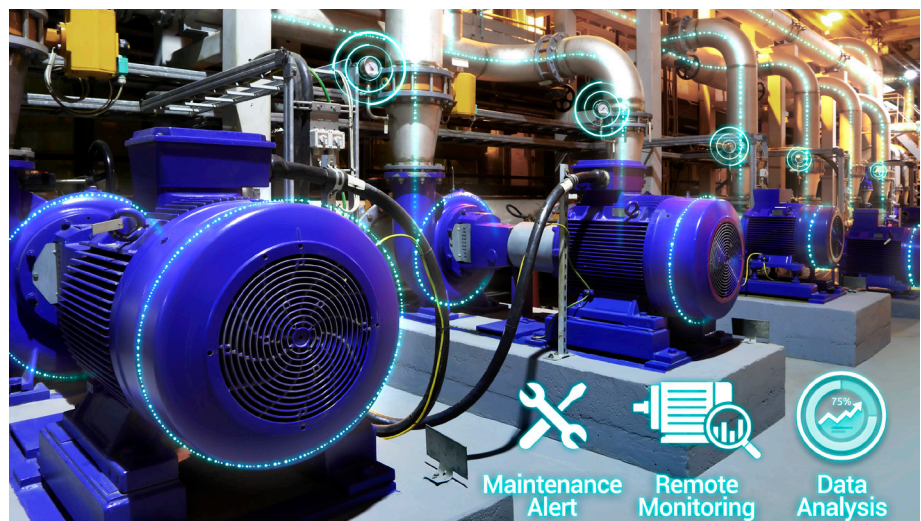
DUPS system ensures power supply for production.

Manual check-ups compromise DUPS system and give room to critical casualties. Personnel measure the four bearing housings in each active unit keeps record of their status once per month. However, when the DUPS system operates normally only two out of eight units are turned on and storing power into their correspondent batteries, leaving the other six unchecked during a measurement round. Bearings in bad condition can lead to unreliable power supply, occasional failure, and even explosion.

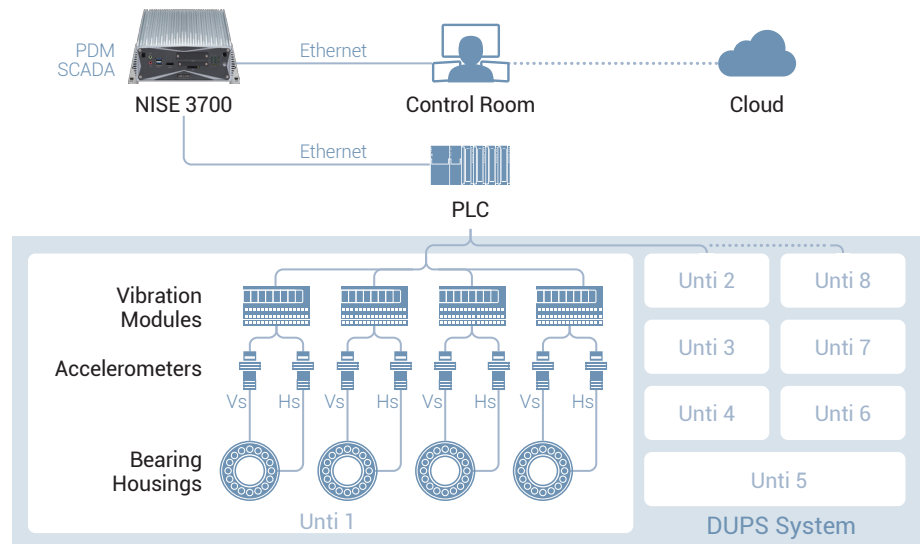
In this application, the client needed a predictive diagnostic maintenance solution for the eight units forming the DUPS system, with 24/7 remote monitoring and detailed record of the working status.

NEXCOM's Solution

The PDM solution continuously oversees each DUPS unit in the system. In order to begin collecting information, every one of the eight units in the DUPS system has four pair of accelerometers connected to four bearing housings to gather



Implementing vibration analysis in a DUPS system aids to replace machine parts timely to ensure its continuous operation for manufacturing factories.



their vertical and horizontal vibration frequencies. After that, 32 vibration modules interpret the inputs showing real time status throughout lamp indicators on a panel controlled by a single PLC. In a last stage, the NISE 3700 SCADA station completes the PDM solution for the whole DUPS system by storing, analyzing, and presenting different arrays of data in real-time, incorporating remote monitoring capabilities to assess irregularities in bearing behavior and prevent damages that endanger power supply.

NEXCOM's PDM system provides graphic user interface for storage, analysis, and representation of large amounts of data. A comprehensive solution with human machine interface (HMI) to offer real time data representation of values, trends, bar graphs, and plots such as waterfall, time waveform, spectrum, as well as the option to set conditional alarms triggered within a specific range of values. The high processing graphics capability allows handling abundant data to refer to historical patterns and evaluate the condition of a certain alert to separate false alarms from real issues that require revision and maintenance.

Solution Benefits

Implementing vibration analysis in a DUPS system aids to replace machine parts timely to ensure its continuous operation for manufacturing factories. The plant is able to produce without power supply failures relying on a healthy DUPS system that will continuously keep the engines running, alerting personnel from minor to severe anomalies given their incidence level. Moreover, automatic 24/7 data collection and storage revamps manual inspection, providing full records and remote monitoring, giving manufacturers a firm grasp on this valuable asset.



NEXCOM PDM starter kit

Based on the real project implementation know-how, NEXCOM designs a PDM starter kit that facilitates execution of predictive diagnostic maintenance for global system integrators. Oriented to rotating machinery, the education and training kit with simple

configuration for PDM is designed to simulate different states of the equipment in order to assess its behavior. The PDM starter kit represents the complete learning solution for system integrators to target a variety of industrial applications.



The Intelligent Systems

Founded in 1992, NEXCOM integrates its capabilities and operates six global businesses, which are IoT Automation Solutions, Intelligent Digital Security, Internet of Things, Intelligent Platform & Services, Mobile Computing Solutions, and Network and Communication Solutions. NEXCOM serves its customers worldwide through its subsidiaries in five major industrial countries. Under the IoT megatrend, NEXCOM expands its offerings with solutions in emerging applications including IoT, robot, connected cars, Industry 4.0, and industrial security.

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