Intelligent Machinery System

Overview

The Intelligent Machinery System is an integrated solution that combines advanced sensor technology, automatic control systems, real-time data processing, artificial intelligence algorithms, and remote communication technologies. It is designed to provide intelligent monitoring, health management, and decision-making support for key machinery such as the propulsion system, power generation system, shafting, and auxiliary devices.

Building upon existing condition monitoring of diesel engines, generators, shaft systems, and auxiliary equipment, the system expands both the breadth and depth of monitoring in accordance with Intelligent Machinery System standards. By incorporating additional sensors, signal acquisition devices, and health evaluation algorithms, it establishes comprehensive situational awareness, enabling multi-system integrated monitoring, fault prediction, and trend analysis. This enhances the safety, reliability, and intelligence of vessel operations, provides scientific decision support for ship management, and contributes to the advancement of smart shipping.

System architecture

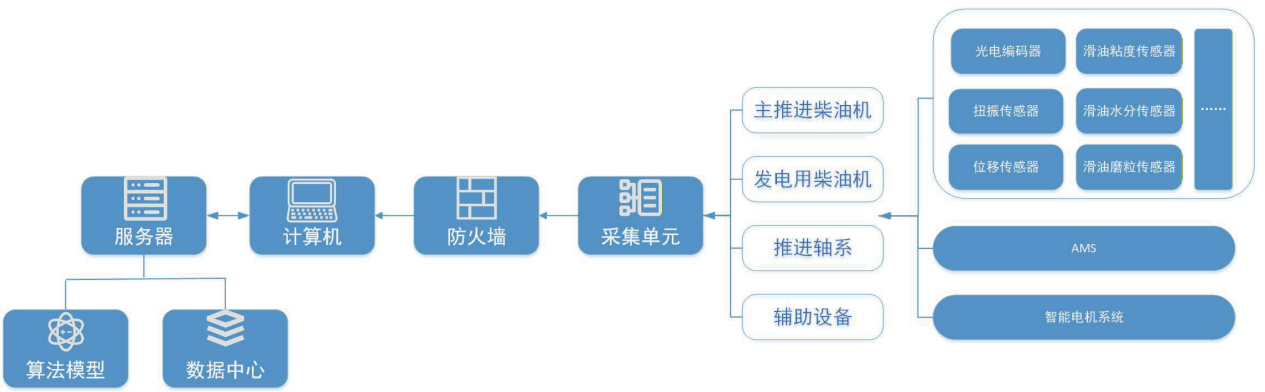

Figure 1 The Intelligent Machinery System

Product features

- Monitoring equipment faults in the machinery and supporting intelligent decision-making;
- Enables health assessment and analysis of the diesel engine system;
- Enables health assessment and analysis of the generator system;
- Enables health assessment and analysis of the shafting system;
- Enables health assessment and analysis of the auxiliary systems.;

Product function

- Vibration monitoring and analysis of the main propulsion diesel engine;
- Real-time online monitoring and analysis of lubricating oil condition in the main propulsion diesel engine;
- Enables health assessment and analysis of the generator system;
- Health assessment and decision support for the main propulsion diesel engine;
- Vibration monitoring and analysis of the generator diesel engine;
- Health assessment and decision support for the generator diesel engine;
- Vibration monitoring and analysis of the shafting system and gearboxes;
- Health assessment and decision support for the shafting system and gearboxes;
- Motor fault warning and localization.;
- Fault warning and localization for typical pump units;
- Health assessment and decision support for auxiliary equipment;
- Historical trend analysis of key parameters of machinery.;
- Fault statistics of machinery;
- machinery data reports and maintenance reports;

Product technical parameters

- System Indicators
  - System False Alarm Rate: ≤15%
  - System Miss Alarm Rate: ≤15%
  - System data storage duration: ≥1 year

software interface