## Machinery Monitoring System/ Maintenance Support System

# CIESSNIK CIMANS

## 4 benefits of CMAXS

#### 1. Monitoring of Machinery Condition

- Early detection of machine abnormality and reduction of accidents through a next-gen monitoring System
- · Support daily maintenance work onboard

#### 2. Integration of Monitoring Systems

 Monitor M/ E, G/E and auxiliary machines all at once (Initial installation costs can be reduced)

#### 3. Information Sharing on Cloud Server

- Unitarily manage machinery condition of your fleet
- Share monitoring information with vessels/shipping companies/manufacturers

#### 4. Comprehensive Support

- CMAXS alliance partners\* provide technical support service to clients
- ClassNK CMAXS is a general term for comprehensive software developed by ClassNK in association with various M/E, G/E and auxiliary manufacturers.
- CMAXS makes "BIG DATA" gathered from vessels more valuable by combining "IoT", "Machine Learning" and a "Diagnostic System".
- ClassNK won the Lloyd's List Intelligence Big Data Award for its condition based monitoring suite ClassNK CMAXS at the 19th Lloyd's List Asia Awards in Singapore.
- \*CMAXS provides its service in cooperation with M/E, G/E and auxiliary manufacturers

Please refer the reverse side for CMAXS alliance partners



## **Machinery Monitoring System / Maintenance Support System**

#### <Procedure of Condition Monitoring/Diagnostic>

#### Measurement

"Data Collection" from sensors

#### **Anomaly Detection**

"Condition Monitoring/Diagnostic" catches slight condition discrepancies

#### **Troubleshooting**

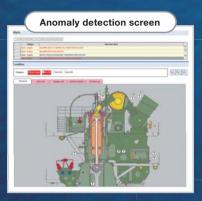
Identifies possible cause and repair methods

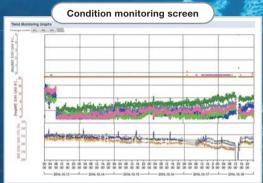
#### **Appropriate Maintenance**

Prevents problems through appropriate "Preventive Maintenance"

#### User's Value

Larger







#### <Benefits>

- · Diagnostic method combining manufacturer know-how and machine-learning algorithm
- · Early detection of machine abnormality and reduction of accidents by condition monitoring/diagnostics
- · Appropriate automatic troubleshooting system and identification of possible cause and repair work
- · Optimum preventive maintenance based on actual conditions
- · Monitor M/ E, G/E and auxiliary machines all at once through corporate operation with alliance partners
- · Information sharing between ship and office through a cloud server
- · Appropriate remote support from alliance partners to ships in distress
- · Framework for service with continually updated diagnostic parameters, content and functions

### **Others Systems**

#### **Planned Maintenance System**

- Makes maintenance scheduling and reporting simple
- Information sharing between ship and office
- Supports applying element 4 of TMSA

#### **Spare Parts Inventory Control System**

- Shortage of spare parts can be immediately identified
- Ship spare parts inventory can be precisely maintained
- Ship managers can easily request and compare quotes from different suppliers

#### **Abstract Log Control System**

- Tool for managing the deck and engine's abstract log data
- Graph of power curve, FO consumption etc. can be plotted using past data
- $\boldsymbol{\cdot}$  Supports applying IMO-DCS and EU-MRV

**Alliance Partners** 

**IHI Power Systems** 



MITSUI E&S



**DAIHATSU** 



For more information about this service, please contact us at:

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