

## BEMAC - Distributed Control System

### Overview

We will introduce the dual distributed control system [BEMAC-DCS]. System controls and monitors each independence system such as voyage information, PMS (Power Management System), cargo handling equipments, ballast equipments, etc. Information is retrieved safely and speedy by using appointed network, and integrated operation status information are to be recognized by the system as one. The most advantage of the integrating information is not only to use for the maintenance like identifying the failure of the equipments, but also for the establishment of the advanced system for the environmental load reduction activities that is an EEOI analysis for SEEMP by using Big data.

#### ① High Performance

High speed sampling by the high-performance CPU is established. System provides a highly accurate First alarm to judge the failure factors.

#### ② High Control Functionality

Ship's equipment information are transferred

by high-speed and safety by redundancy. System stores customers' needed information as Voyage information, PMS, control for cargos, ballasts, valves, pumps and fans. For instruction on information which needed to be feedback, PID control system is equipped.

#### ③ High Reliability

HOT SPARE and HOT SWAP are available for the needs to exchange CPU and unit without turning off the power.

#### ④ Advantage

System accumulates the data of monitoring and control on the server. When retrieving the data, application for the maintenance like fault diagnosis and may set the unified operation order of the plant facilities. It provides high-performance service with the needs of customers like an EEOI analysis for SEEMP and the MRV of the greenhouse gas emissions. In addition, ship' data may be added into managing companies' Big data with its result to be applied for the energy saving management analysis.

