Azimuth Thruster Control System

CPP or FPP driven by electric or diesel motor

Mega-Guard ACS:
- Azimuth Thruster Control System
- Steering control
- Pitch control for CPP
- RPM control of electric or diesel motor
- Clutch control for diesel motor
- Motor start and stop
- Back-up control
- Serial interface to VDR
- Option: telegraph system
- Option: DP/JOY interface
- World wide service network
- Class type approved

YOUR GUIDE TO SHIP AUTOMATION AND NAVIGATION
The Mega-Guard Azimuth Thruster Control System (ACS) fully automates from bridge the control of the azimuth thruster. The azimuth thruster can be equipped with CPP or FPP and can be driven by electric or diesel motor. The Azimuth Thruster Control System fulfills the rules of the classification societies and includes steering control, remote control, safety, steering and RPM/pitch indication and a back-up control system. The Azimuth Thruster Control System is often used in combination with a Mega-Guard Dynamic Positioning System. Operator Panels can be supplied for bridge fore, bridge aft, bridge wings and control room. Operator panels are equipped with a combined steering and RPM/pitch setting lever and a control display to select various operator modes and to indicate steering, RPM/pitch and motor load or amperage.

ACS Operator Panels on bridge and control room

Main components on each control position are:
- Steering and RPM/pitch setting lever including clutch control in case of FPP driven by diesel motor
- 8.4" TFT colour display equipped with steering, pitch, RPM and load indicators
  In addition, the 8.4" TFT is equipped with 12 control pushbuttons and various other indicators including alarms
- Back-up control of steering and RPM/pitch including clutch control in case of FPP driven by diesel motor
- Emergency Stop pushbutton

A VDR serial interface is provided on the bridge Operator Panel (NMEA0183 protocol). Two or more bridge panels are supplied in case of bridge fore and bridge aft. Dual wing indicators for steering, pitch, RPM and/or load, implemented on 5.7" TFT, are available as well. The wing panel can be extended with Steering and RPM/pitch setting lever and Emergency Stop pushbutton. Bumpless take over control is realized with line-up indication lamps on the 8.4" and 5.7" TFT colour displays or an electrical shaft (synchronization) between bridge levers can be supplied as an option.

ACS Operator Panel control functions

Pushbuttons are integrated on the Operator Panel with function indication on the 8.4" TFT colour display. The following typical functions can be selected:
- Start motor and stop motor
- DP/Joystick mode
- Load trim setting (%)
- Emergency mode selection
- Take over control from bridge fore to bridge aft and/or to bridge wings and vice versa
- Dimming mode selection
- Parameter mode selection
Back-up control of steering and RPM/pitch

The non-follow up back-up control is used as a back-up in case the steering control system and/or the remote control system fails. Typically the back-up control contains 6 pushbuttons on each control location:

- Non-follow up steering control; in order to select this mode
- Steering clockwise
- Steering anti-clockwise
- Non-follow up RPM/pitch control; in order to select this mode
- Increase pitch or RPM to ahead
- Decrease pitch or RPM to astern

Alternatively: RPM setting can be equipped with a potentiometer instead of pushbuttons. In case of FPP driven by diesel motor: back-up clutch control pushbuttons can be integrated as well.

ACS Control Cabinet

The ACS Control Cabinet is bulkhead mounted in thruster room. The ACS Control Cabinet includes a steering control system, remote control system, an indication system (steering, pitch, RPM, load etc), a back-up control system and a no break power supply with power distribution. Both the steering control system and the remote control system is built-up with a Control Processor and two I/O Modules:

- I/O Module with 18 digital inputs and 18 relay outputs
- I/O Module with 4 analog outputs and up to 20 free configurable I/O points (AI, AO, DI and DO)

Programming of ACS is in accordance with IEC61131 standard. Field cables are connected to the terminal strips on the I/O Modules. The Control Processor also supports serial interfaces which are supplied in case the motor or drive provides a serial interface or in case a serial interface is required with AMS. Two power supplies need to be connected to the Azimuth Thruster Control System:

- 230VAC main supply
- 24VDC back-up battery supply

The ACS Control Cabinet is equipped with:

- Dual indicator for steering, pitch and/or load implemented on 5.7" TFT
- Commissioning parameters can be set with the 5.7" TFT colour display
- Back-up control pushbuttons for pitch or RPM
- Back-up control pushbuttons for steering
- Emergency Stop pushbutton

All other components from the Azimuth Thruster Control System are fed from the power distribution logic in the ACS Control Cabinet. The Operator Panels on bridge and control room are connected to the ACS Control Cabinet via redundant Ethernet connection.

Option: Electric motor drive

Either a soft starter cabinet will be provided (in case of CPP) or a variable frequency drive cabinet will be provided (in case of FPP). Electric motors are supported from 250KW up to 3400KW with voltages up to 690VAC.
Mega-Guard Azimuth Thruster Control System

- Bridge Fore ACS Operator Panel
- Bridge Aft ACS Operator Panel
- Control Room ACS Operator Panel
- Engine Room ACS Control Cabinet

Mega-Guard Ship Automation and Navigation System

- Alarm Monitoring and Control System
- Valve Control and Monitoring System
- Power Management System
- Propulsion Control System
- Econometer System
- Dynamic Positioning System

Integrated Bridge System
- Heading Control System
- Fire Alarm System
- BNWAS Watch Alarm System
- Alarm and Monitoring System
- Navigation Light and Window Wiper System

Branch offices:
- Praxis Automation China
- Praxis Automation Korea
- Praxis Automation Singapore
- Praxis Automation India

Praxis Automation Technology B.V.
Zijlindijk 24A, 2352 AB Leiderdorp, The Netherlands
☎ +31 (0)71 5255 353   📧 +31 (0)71 5224 947
info@praxis-automation.nl
www.praxis-automation.com

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