Deck Mounted Electric Rotatable Propeller Drives

With Dynamic Positioning Interface Capabilities

For Ocean Going Barges – Ferries – River and Coal Barges - Passenger Vessels Pipe / Cabling laying Vessels and Wind Turbine Installation Barges
RiSEA Propulsion Marine Thruster and Propulsion Systems

...

Portable...

Deck Mounted Electric Rotatable Drives

With Dynamic Positioning Interface Capabilities

For Ocean Going Barges – Ferries – River Barges – Passenger Vessels, Pipe / Cabling laying vessels and Wind Turbine Installation Barges

PT RiSEA Propulsion Indonesia, part of the RiSEA Propulsion Group of companies is recognized as one of the world’s leading Electric Pelled Thruster and Propulsion Systems Manufacturer and introduces its unique Deck Mounted Electric Pelled Rotatable Propulsion Units for all types of Marine applications.

Image courtesy of Nautic Marine

.... Marine Solutions ....

Offering “Dynamic Rotatable Propulsion Units”....with its “Electric-Podded Technology”, RiSEA Propulsion offers compact designs, efficient, silent operation with low maintenance costs which are only a few of the remarkable properties....

- High Thrust to HP Ratio .... Maximum Efficiency.... No Hydraulic Drives
- Azimuthing with Draft adjustment... ability to be swiveled to the “Up” position
- Water Cooled
- Environmentally “Green” Friendly
- Proportional Thrust with VFD Drives...
- Effective Thrust Underway.....
- Excellent Maneuverability

Ship Shape

“Stay on course” with

PT RiSEA Propulsion Systems
Designed especially for vessels that require deck or stern mounted propulsion systems, the PT RiSEA Propulsion Indonesia Deck Mounted Rotatable Electric Propulsion Systems combines full Maneuverability with effective azimuthing propulsion. The system is ROBUST with little required maintenance and is... RUTHLESSLY RELIABLE

<table>
<thead>
<tr>
<th>Propulsion “L” Leg</th>
<th>Power Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• L” Drive with electric motor built in</td>
<td>• Enclosure with Diesel/Gen Set</td>
</tr>
<tr>
<td>• Emergency “Kick Up” protection</td>
<td>• VFD Drive - Air Cooled</td>
</tr>
<tr>
<td>• Ability to adjust Draft position</td>
<td>• Fire Protection System</td>
</tr>
<tr>
<td>• Ability to “Swing Up” 90 degrees</td>
<td>• Local Control and Engr Panel</td>
</tr>
<tr>
<td>• Steering or Fully Azimuthing</td>
<td>• Fully Class Approved</td>
</tr>
</tbody>
</table>

Electric Power Available for other supply when not at full power
SIDE...........TRANSOM..........DECK MOUNTED

The RiSEA Propulsion - Deck Mounted, Rotatable Propeller Drives are available from 175 Kw up to 4000 Kw are of a very heavy duty construction, offering 360 degree continuous steering in either rotation, built-in, Podded Electric Thruster units offers high thrust performance in a very efficient and compact drive package. The Electric Podded Thruster is controlled with a variable frequency (VFD) motor controller for full speed control.

The unit incorporates our unique transmission kick-up device which is specifically designed for protection in shallow water or beaching applications

The Rotatable Propeller Drive can offer full height/depth adjustment to allow operation in shallow draft application.

Diesel/Electric Podded type Thruster Systems are preferable over the Diesel/Hydraulic type Thruster Systems for the following reasons:

- The Hydraulic Drive Type System is old technology
- Low Hydraulic Efficiencies
- High Maintenance
- Low Reliability
- Hi-Noise
- Possibility of Oil spillage

Set-Up & Commissioning:

Plug and Play Wiring......
- System components are furnished with pre-fabricated cables.
- Components “plug and play” with minimum set up
- Commissioning is a simple step-by-step process. No computer or special tools are required

- DP Interface
- No Dry-Docking Required

PT RiSEA Propulsion Indonesia Systems offers compact designs, efficient, silent operation with low maintenance costs which are only a few of the advantages......

- High Thrust to HP Ratio .... Maximum Efficiency
  + Hydraulic Efficiency... 75-80%
  + Electric Efficiency........... 94%
- Full Azimuthing with the ability to be swiveled to the “Up” position
- Water Cooled & Environmentally “Green” Friendly
- Full Proportional Thrust with VFD Drives...
- Less moving parts….increased reliability
Electrical Power Management and Propulsion System

The electrical power available in the Generator-Sets can be used in various configurations and modes of operation. The power plant can automatically or manually adapt to the power demand and start or stop the right diesel generator.

The Chief Engineer can choose to use different generators, just to keep the running hours of the equipment equal. In case a generator fails or is not available, the thrusters can still operate at reduced power but retain the DP Mode of operation.

The AC electrical propulsion engines have the advantage they are low maintenance machines and very quiet with little vibration. The power management system can be programmed such to ensure the most efficient, maintenance friendly and most environmentally friendly operational mode is achieved.

The ultimate goal is to keep the generators running at their most efficient power range determined by the typical diesel characteristics with maximum fuel efficiency, and this is programmed into the power management system.

Automated power management simplifies the operation of the electrical power system by monitoring the electrical loads on the propulsion systems and starting and stopping generators as needed. Generator paralleling is provided as well as seamless transfers between generators.

POWER MANAGEMENT FEATURES:

- Auto start & seamless transfer to the main switchboard.
- Automatic parallel of each generator when loading increases
- Automatic rotation of generators on and off line to extend life
- Automatic seamless transfer to and from all power sources
- Failing generator’s pre-alarms automatically start & transfer to standby generator
- Generator pre-start alarm warns engine room/bridge personnel of imminent start.
### Model Selection

<table>
<thead>
<tr>
<th>Model</th>
<th>Unit</th>
<th>L200E</th>
<th>L275E</th>
<th>L350E</th>
<th>L500E</th>
<th>L800E</th>
<th>L1000E</th>
<th>L1200E</th>
<th>L1500E</th>
<th>L2100E</th>
<th>L3000E</th>
<th>L3500E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cont torque</td>
<td>MdaN</td>
<td>200</td>
<td>300</td>
<td>480</td>
<td>860</td>
<td>1950</td>
<td>3400</td>
<td>4100</td>
<td>7000</td>
<td>9000</td>
<td>13300</td>
<td>16000</td>
</tr>
<tr>
<td>Continuous Power</td>
<td>Kw</td>
<td>200</td>
<td>275</td>
<td>350</td>
<td>505</td>
<td>800</td>
<td>1072</td>
<td>1340</td>
<td>1610</td>
<td>2100</td>
<td>2815</td>
<td>4021</td>
</tr>
<tr>
<td></td>
<td>Hp</td>
<td>268</td>
<td>368</td>
<td>470</td>
<td>605</td>
<td>1072</td>
<td>1340</td>
<td>1610</td>
<td>2100</td>
<td>2815</td>
<td>4021</td>
<td>4682</td>
</tr>
<tr>
<td>Voltage</td>
<td>VAC</td>
<td>380/400/440/690 50/60 available options</td>
<td></td>
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<tr>
<td>Prop Dia Rev speed</td>
<td>MM RPM</td>
<td>1100 580</td>
<td>1175 540</td>
<td>1250 500</td>
<td>1400 450</td>
<td>1750 360</td>
<td>1925 325</td>
<td>2200 265</td>
<td>2475 250</td>
<td>2800 215</td>
<td>3450 180</td>
<td>3700 165</td>
</tr>
</tbody>
</table>

### Full DP Interfacing Capabilities - A Modular Dynamic Positioning System...

#### Ease of Installation with reduced costs...

With the electric motor designed as part of the thruster pod and water cooled, there are no requirements for forced air ventilation of the electric motor, no shafting requirements with couplings and alignments necessary.

#### Noise Suppression Technology...

Because the electric motor is designed as an integral part of the thruster hub and attached directly to the propeller shaft, there are no gears boxes or gear reductions providing maximum system efficiency with lower noise and vibration levels produced.

### Diesel-Electric Propulsion Offers Distinct Advantages...

#### Power Management, Fuel Economy, Redundancy and Less Noise Are Key Features.

For valid reasons, in recent years diesel-electric propulsion has gained remarkable interest over traditional propulsion within commercial shipping and yachting markets. Propulsion with the best possible fuel economy, lowest possible emissions, more flexible redundancy arrangements, considerable lower noise and vibration levels, diesel-electric propulsion offers significant economical, environmental and technical advantages.

By eliminating the need for a traditional, mechanical gearbox or hydraulic systems..... Operating performances are improved.

Every single diesel-generator set is connected to its own generator inverter. For maximum reliability and safety, main propellers and the on-board electric network can be powered jointly or by each single inverter.

There is no chance of drifting powerless in the event either a diesel-generator, electric propeller motor, or any one of the inverters malfunction. A diesel-electric system also offers flexibility of addition and expansion of auxiliary equipment like winches or cable laying equipment without adding more prime movers. Power cables can be routed much more easily through ship’s bulkheads and decks than traditional mechanical or hydraulic based systems.

Diesel-electric propulsion system is inherently more efficient that a mechanical drive system and therefore the vessel owners can use lesser horse power engines which equate to lower fuel bills, lower maintenance costs and lower emissions.
**Full Integrated Bridge Controls...**

PRS 2000 is a PLC based full follow up electronic remote control system for the ship's propulsion machinery; its primary purpose is the control of azimuthing electric podded thrusters, **Optional DP** interface, raise/lower functions and speed control.

PRS 2000 is an independent follow-up control system with integral time dependent backup control system. This means that each Azimuthing Electric Propulsor has an independent control system.

The system is self-monitoring and can display faults either with lamp on the alarm lamp panel or through a visual display on the program controller.

**Gen-Set Power Containers...**

**Each Marine Approved Container shall include the following equipment:**
- 1x Diesel/Gen Set
- 1x Engine Frame
- 1x Fuel Tank & Filters
- 1x Oil/Water seperators
- 1x Starting Batteries
- Charger
- Fire Suppression System
- 1x VFD Drive
- Air Conditioner
- Engineers Local Station

**Main & Common Switchboards...**

**Main Switch Board** with breakers for four (4) Gen-sets – Includes up to 10 additional breakers for optional use.

**With Optional Power Management System** for:
- Auto start & seamless transfer to the main switchboard.
- Automatic parallel of each generator when loading increases Automatic rotation of generators on and off line to extend life.

Automatic seamless transfer to and from all power sources.

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**Things Start Moving...**

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