ZERO EMISSION TECHNOLOGY
Leading the way with wind assisted ship propulsion

Anemoi deliver advanced wind assisted propulsion systems to the global shipping industry. These improve efficiency by reducing fuel consumption and harmful emissions by 5-30% on retrofits and new builds.

Following extensive R&D in January 2018, Anemoi delivered the world’s first Rotor Sail System installation on board a globally trading Bulk Carrier.

Anemoi was incorporated in 2015, with head-quarters in London, UK.

How Rotor Sails work

For 100 years, Rotor Sails, also known as Flettner Rotors, have been successfully used to harness wind power to assist vessel propulsion. This proven technology capitalises on the aerodynamic phenomenon known as the Magnus Effect. They comprise vertical cylinders, driven by the wind to rotate and generate thrust. This increases efficiency by reducing fuel consumption, bunker costs and harmful emissions.

The Anemoi Rotor Sails use advanced materials and are designed, manufactured and finished to the highest marine quality standards.

Rotor Sails are fast becoming a preferred wind propulsor in commercial shipping with attractive ROIs.

System layout - Scalable in size and power

Anemoi Rotor Sail Systems are scalable in size and power. This optimises installations across the world fleet as retrofits or new-builds.

Operation is fully automated and controlled from the bridge, with all system data recorded in real time for shore-based monitoring. Making the vessel “wind ready” requires installation of structural foundations and cabling that can be completed as part of a new build or retro-fit project.

Technical Information

<table>
<thead>
<tr>
<th>Rotor Diameter (m)</th>
<th>3</th>
<th>3</th>
<th>3.5</th>
<th>3.5</th>
<th>4</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>Rotor Height (m)</td>
<td>18</td>
<td>21</td>
<td>21</td>
<td>24.5</td>
<td>24</td>
<td>28</td>
<td>30</td>
<td>35</td>
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<tr>
<td>Typical total height above deck (m)</td>
<td>20</td>
<td>23</td>
<td>23</td>
<td>26.5</td>
<td>26</td>
<td>30</td>
<td>32</td>
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<tr>
<td>Survival wind speed</td>
<td>70 m/s (136 knots, Force 12)</td>
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<tr>
<td>Operational Temperature (degC)</td>
<td>-10 to +45</td>
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<td>Rotor max speed (rpm)</td>
<td>310</td>
<td>310</td>
<td>265</td>
<td>265</td>
<td>230</td>
<td>230</td>
<td>185</td>
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<tr>
<td>Maximum Thrust Generated (kN)</td>
<td>120</td>
<td>140</td>
<td>165</td>
<td>190</td>
<td>215</td>
<td>250</td>
<td>330</td>
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<td>Tower Material</td>
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<td>Rotor Material</td>
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<td>Design Life</td>
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<td>Control system</td>
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<td>Ice Class</td>
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<td>Folding System</td>
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<td>Rail System</td>
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<td>Digital Health Monitoring (DHM)</td>
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</table>

Anemoi Deployment Systems on limited deck space

Our range of unique, patented Deployment Systems, make it possible to install Rotor Sails on vessels with limited deck space, loading and unloading gear or other operational restrictions:

1. Fixed System
   Rotors can be permanently fixed to the deck.
2. Rail System
   Rail mounted rotors are transported along or across the deck by independent Rail System.
3. Folding System
   Folding Rotors can be lowered into the horizontal position.

For more information contact us at enquiries@anemoinmarine.com
Delivering economic and environmental benefits
With increasingly strict environmental regulation being imposed on the shipping industry, wind power is a safe, clean energy source.
Install Anemoi Systems to achieve enhanced Energy Efficiency Design Index on your new build.

Anemoi systems are proven, efficient and cost-effective solutions for reducing harmful emissions and fuel consumption.

Fuel savings up to 30%
CO₂ reduction up to 30%
SOx reduction up to 30%
NOx reduction up to 30%

Easy operational monitoring and control
Anemoi’s fully automated Control System uses intelligent algorithms to autonomously control the rotor. The Bridge Control Unit provides a simple interface for users to monitor the rotors. Remote real time monitoring at a shore-based location is also available.
Our proven deployment systems have been designed for easy operation and have no impact on port operations.

Data Analysis to improve performance
Anemoi conducts extensive analysis of environmental and performance data. This forms the basis of our in-house research and development. The land-based prototype and sea-going installations harvest data across a range of demanding environmental and operational conditions.
Anemoi’s data processing and analysis expertise is embedded in the selection of powerful modelling and control software tools offered.

Project delivery with full support
Anemoi offer full professional support throughout the lifecycle of the project.
Considering Rotor Sails as a technology option?

We’ll work with you and deliver:
• Designed and certified in accordance with leading classification society rules
• Our network and experience to provide value at every stage of the project

FEASIBILITY STUDY ➤ DETAILED DESIGN ➤ VESSEL PREPARATION ➤ EQUIPMENT MANUFACTURE ➤ SYSTEM INSTALLATION ➤ OPERATION & MAINTENANCE

For more information contact us at enquiries@anemoimarine.com

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