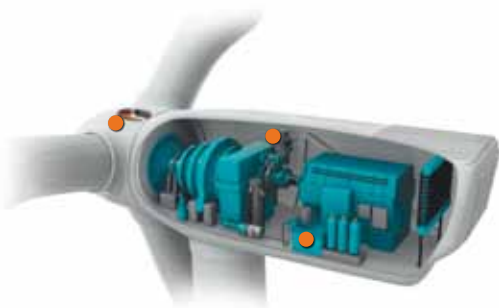


Hydraulic Solutions



Power and Motion

PMC Windsyn offers a full range of hydraulic solutions to all Power, Motion and Control functions in a modern wind turbine, regardless if these are integrated systems or stand-alone solutions. We have the experience and technical know-how to support the whole process from early design to installation and operation.

Power units

There are many benefits to be gained by selecting hydraulic solutions. When choosing a hydraulic power unit in a wind turbine to provide power for pitch control, other functions like yaw drive or brake systems can be integrated, reducing the total number of systems required, and thus reducing the overall costs.

Power units for pitch, yaw and brake can be delivered as independent sub-systems for single purpose use, e.g. if it is more beneficial to the overall design.

Oil cooler and heating elements can be integrated in the power unit when the wind turbine is working in a high/low temperature environment.

Furthermore, hydraulic solutions are characterised by a low weight-to-power ratio.

Hydraulic Solutions for Wind Turbines



Pitch Control

We have specialised in hydraulic pitch control, and by means of this technology we believe to have the optimum solution for the two major functions in the pitch system:

- Positioning the blade in the correct position for optimum output during normal operation
- Ensuring a very simple, fast and highly reliable emergency stop function.

In addition to the precise positioning of the blade via the hydraulic cylinders, a number of benefits relates to the use of hydraulic systems:

- Full torque in all situations, regardless of blade position
- Pitch systems are not sensitive to cold climate conditions, as heating elements can be added to all relevant parts of the system
- Individual, fast reacting and easy to recharge power backup via emergency accumulators to each cylinder.

One major benefit of the hydraulic pitch system is the very short start-up time after an emergency stop. The wind turbine is ready to restart production after only a few minutes, when recharging of the emergency accumulators has been completed.

Brake systems

Hydraulic brake systems can be delivered as stand-alone systems or as an integrated part of the power unit used for pitch/yaw.

Hydraulic brake systems can be delivered:

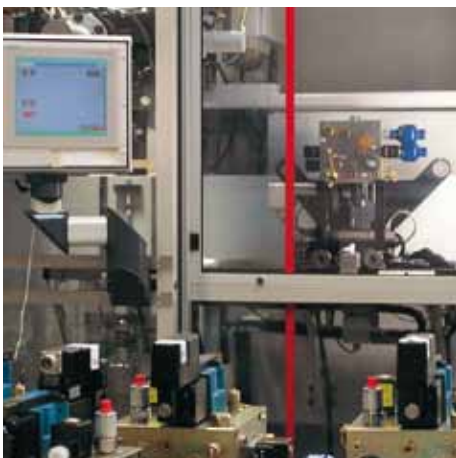
- As single or double string systems
- For high/low temperature, or in combination
- With customised operational characteristics.

Yaw systems

Hydraulic yaw systems can be delivered as stand-alone systems or as an integrated part of the power unit used for pitch/brake.

A hydraulic yaw system offers advantages over traditional systems, thus being very powerful but still gentle to the yaw gears/ring:

- Full torque on yaw drives are available from standstill
- Torque is evenly distributed between yaw drives in all working conditions, also at start-up
- Yaw drives dimensions are not dictated by the brake-down torque of the electric motor.



PMC Windsyn is a division of PMC Group AB and has its head office near Copenhagen, Denmark. We work in the global market serving customers in the WTG industry.

PMC Windsyn is a leading solution provider, and through more than 25 years we have developed our core competences within design and production of complete hydraulic systems for pitch, brake and yaw as well as complete systems for lube oil conditioning and cooling. Strong resources for R&D and logistics are explicitly allocated to PMC Windsyn.

From idea to installation

PMC Windsyn offers thorough consultancy and often participates, together with our customers, in product development as an active, integrated partner. Our highly qualified employees specialise in their specific product areas and are up-to-date with all the latest products and knowledge to ensure that you have access to extensive experience and wide-ranging expert knowledge.

Capacity

Our customers are serviced from our ISO certified and LEAN compliant production set-ups. A 10,000 square metre plant near Copenhagen, Denmark; a 10,000 square metre plant in Qingdao, China; and a 4,000 square metre plant in Denver, USA are at our disposal. Furthermore, we have entered into a partnership with Winstar in India.

We have extensive experience and in-depth knowledge of delivering complete systems to leading, global wind turbine manufacturers.

We collaborate with the most innovative and professional suppliers in the industry, and being a strategic supplier we are capable of delivering world-wide.

Strategic Profile



PMC Windsyn operates in the growing global wind turbine market, where we have obtained a leading position and has made a global footprint through the last 25 years.

PMC Windsyn covers the need for complete hydraulic systems for pitch, brake and yaw as well as complete systems for lube oil conditioning and cooling through application of fluid power and allied technologies. In close collaboration with customers and suppliers we combine systems, components, service and consultancy into customised, functional and highly reliable solutions.

We strive to become a world-class supplier, as well as a world-class designer of hydraulic/lubrication systems for wind turbines.

PMC Windsyn's objective is to be an integrated partner in the supply chain whilst improving the continual upward profitability for ourselves and our partners.

pmcwindsyn

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Power, Motion & Control

PMC Windsyn is the centre of all wind turbine related activities within the PMC Group.
PMC Group is the leading hydraulic group in Northern Europe with the world as its workplace.