



PERFORMANCE IN ROTATION

DEUBLIN, the leading manufacturer of high quality rotating unions and electrical slip rings. For more than 20 years *DEUBLIN* is an approved and accepted development partner and solution provider to the wind industry.

Worldwide over 75.000 wind turbine pitch systems are powered using *DEUBLIN* products.

Reliable component function supports maximum turbine uptime along with minimum service cost. This combination of features results in a low total cost of owner ship (TCO).

Wind turbine manufacturers benefit from a global product availability with *DEUBLIN* production localized on four continents. To *DEUBLIN*, being a partner in the wind industry means utilizing only customized solutions that can meet highest expectations in

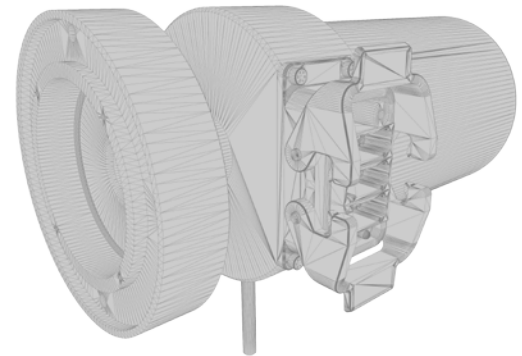
terms of reliability and longevity. The rotating union and electrical slip ring are critical components to the wind turbine hydraulic pitch control system.

DEUBLIN is constantly investing in talented people, modern machines and lean processes. The DPS culture includes lean Kanban production and Kaizen tools for continuous process improvements.

DEUBLIN rotating unions and electrical slip rings are at the cutting edge of technology today. Quality standards according to ISO 9001 and ISO EN 14001 are a cornerstone of our corporate culture.

DEUBLIN is an Authorized Economic Operator (AEO) offering lean logistic operation and simplified customs clearance.





SLIP RING

ELECTRICAL SLIP RING

DEUBLIN's versatile electrical slip ring designs can be easily configured for both power and signal channels and offer multitude connection options. The signal portion of the slip rings are designed for compatibility with Ethernet, Profinet, RS-232, RS-485, RS-422, CAN as well as generic sensing and 24V control signals. *DEUBLIN* slip rings are designed to ensure the integrity of the electrical signal as it passes through the slip ring. The power connection channels of the slip ring can operate up to 1000 VAC/DC at up to 250 amps continuous.

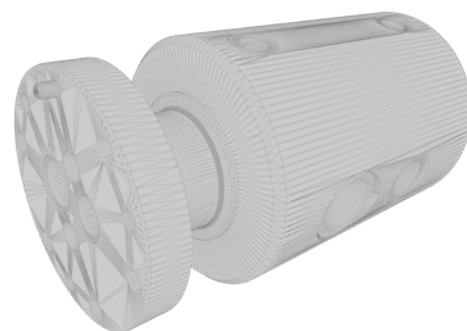
The slip ring enclosures can be designed to surpass the IEC-60529 IP-66 protection. *DEUBLIN* slip rings will continue to operate while exposed to mechanical shock and sinusoidal vibration limits of IEC-60721-3-3 class 3M5. *DEUBLIN* slip rings are designed for high reliability and long life.

DEUBLIN slip rings can be designed to operate in both hot and cold climates. They can also be utilized for auxiliary operations, for example blade heating.

KEY DATA

- › 0-35 rpm
- › -40 °C to +70 °C ambient operating temperature
- › High shock resistance
- › Multiple channels for data and power transmission
- › Easy lifting, light weight
- › Customized marking, tracking barcode
- › Customized connectors
- › Full integration with hydraulic rotating union





ROTATING UNION

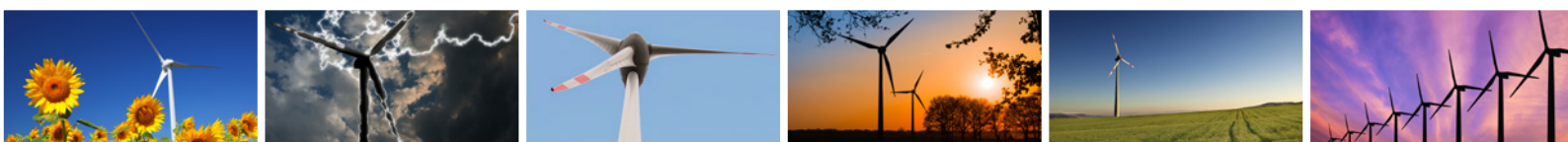
HYDRAULIC ROTATING UNION

DEUBLIN rotating unions allow reliable fluid flow between stationary and rotating systems. Approved technology combined with global availability makes *DEUBLIN* preferred supplier for many leading wind turbine manufacturers.

The rotating union is a precision mechanical component performing a critical function to turbine operation. Rotating unions must be designed considering a wide range of media, viscosities, temperatures and pressure ranges as well as fluid velocities, while meeting highest standards of reliability and service life.

KEY DATA

- › 0-25 rpm
- › 0-350 bar peak pressure
- › -40 °C to +70 °C ambient operating temperature
- › Corrosion classes up to C5M for severe off shore conditions
- › High shock resistance
- › Multiple passages for fluid and cable
- › Easy lifting
- › Customized marking, tracking barcode
- › 25 years design life



ROTATING UNION SERVICE PROGRAM

DEUBLIN offers a diversified union service program with **inspection, maintenance and repair**.

This service is available at five service centers located on four continents.

Maintained or repaired unions are returned with a refreshed 12 month warranty. Serviced goods are always analysed for future improvement plans.

YOUR BENEFITS WORKING WITH DEUBLIN

Approved high quality product that has a proven track record for a reliable performance over 20 years (TCO) in wind energy based on a 25 year design life.

Reliable components that secures the turbine uptime to ensure a maximum harvesting of wind energy.

Multilingual customer service teams

located around the world to support you when needed.

Global production foot print with localized manufacturing sites situated in Chicago/USA, Mainz/Germany, Dalian/China, Bologna/Italy and Sao Paulo/Brazil.

High supply chain safety, *DEUBLIN* has a low dependency rate on any single industry

segments which mean a strong asset for your risk management survey. All *DEUBLIN* sites run by globally aligned production methods and processes which support **global contingency plans**.

DPS *DEUBLIN* Performance System, Kanban inventory with lean production value streams ensure minimized stock and support a just in time delivery concept.



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