

SIGNAL TRANSFER SYSTEMS

FOR WIND POWER GENERATORS

PRODUCT



merseN

SIGNAL TRANSFER SYSTEMS

KEY COMPONENTS FOR WIND TURBINE PERFORMANCE

The Signal Transfer System is part of the electrical wind turbine pitch drive system. It allows the transfer of power and signal from the wind turbine nacelle to the hub. This key component has a direct impact on wind turbine overall performance.

To ensure wind turbine continuous operation, Signal Transfer Systems must:

- Be highly reliable
- Be capable of operating under all environmental conditions
- Require low and easy maintenance

WHY CAN YOU TRUST MERSEN?

- Mersen is an **integrated supplier**, which gives us the ability to design and manufacture the complete Signal Transfer System and offer as well maintenance, technical support and training onsite and in our plants.
- Mersen has over **100 year experience in electrical rotating machinery** gained in the field. We master the Tribology science and have an excellent knowledge in power and signal transfer.
- With our 2 manufacturing facilities dedicated to Signal Transfer Systems located in Germany and China, we can offer our customers **proximity service**.



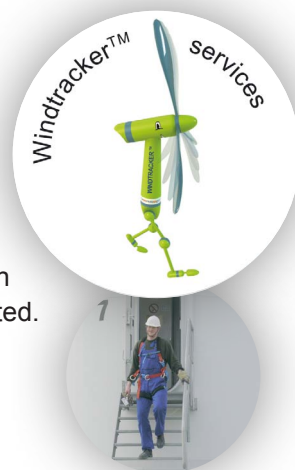
R&D FOR SIGNAL TRANSFER SYSTEMS

- Our objective: create innovative Signal Transfer Systems and keep on improving our solutions on a daily basis.
- Dedicated facilities: in addition to our R&D facility located in France, we have implemented a design & development facility in Germany, which is completely dedicated to Signal Transfer Systems study and continuous improvement.
- International R&D Team: 15 high level PhDs, engineers & technical people, each of them specialized in a specific competence area.
- Worldwide academic network: Mersen benefits from an extended network of partners (universities, external laboratories, competitiveness clusters...) with whom we work in order to keep on pushing innovation for Signal Transfer Systems.
- Dedicated test benches: we test our Signal Transfer Systems on test benches in real conditions. About 10 of our test benches are dedicated to contacts study (materials, lubricants, climate tests...); they rotate continuously up to 50 million rotations.



WINDTRACKER™, A SERVICE DEDICATED TO WIND POWER

- Our objective: support wind farm operators through a dedicated wind power service.
- Experts: the Windtracker™ teams are dedicated wind engineers and technicians that bring up tower services, diagnostics capabilities, specific technical support and training, allowing to optimize wind turbine performance. They have been trained and certified on the use of their own Personal Protective Equipment, on working at height, on wind turbine rescue (various descent systems). Our experts work in accordance with the Mersen safety policy and undergo regular physical examinations.
- Strong network: the Windtracker™ teams are supported by a large network of specialists, on the 5 continents, allowing us to respond to the needs of customers, wherever they are located.
- Large range of services:
 - » Up-tower interventions (onshore & offshore)
 - » Technical expertise, diagnostics & trouble shooting
 - » Customized solutions & system upgrades
 - » Technical training for students and professionals available on request





MERSEN SIGNAL TRANSFER SYSTEMS

- Mersen offers **3 different technologies** for reliable and high quality Signal Transfer Systems: **Wire, Brush and Hybrid systems**.
- Our solutions are all **developed and tested for a large range of wind turbines**, from hundreds of Kilowatts to 6 Megawatts.
- Mersen Signal Transfer Systems are developed for **onshore and offshore** wind turbines, they are **tested for optimum performance in a variety of load and environmental conditions**.
- Mersen can offer **customized Signal Transfer Systems** adapted to customers' specifications (different types of data transfer available - CAN BUS, ETHERNET, RS232, Power ring - fast connections...), from prototypes to manufacturing.
- Our Signal Transfer Systems are **designed and manufactured in compliance with international standards**: DIN, IEC, UL, etc... They are **tested to pass the most demanding IP protection tests** (up to IP65) and **shock and vibration tests** (IEC61373).

HYBRID SYSTEM

- The increasing power of existing wind turbines and the development of offshore wind turbines require pitch systems with higher nominal currents.
- Current transfer exceeding 100A is possible with the help of carbon brushes. By adding a wire system for the transfer of control signals the entire unit is turned into a hybrid transfer system.

Signal Circuits: Analog and digital signals (CAN, Ethernet, Profibus)

Power Circuits: 1A to 500A at voltage up to 690V

Features: Protection up to IP65, self-regulating integrated heater.

Custom mounting elements: plug-in coupling or contact clamps.

Optional transmission components: fiber optic rotary joints, pneumatic or hydraulic rotary joints.



WIRE SYSTEM

- While focusing on the standard transmissions of different currents and signals, Mersen modular Signal Transfer Systems are also fine-tuned to cover the individual needs of our customers.
- Wire systems, precision bearings, robust housings, and state-of-the-art electronics are the components that make up a first-rate transmission system.

Signal Circuits: Analog and digital signals (CAN, Ethernet, Profibus).

Power Circuits: 1A to 100A at voltage up to 690V.

Features: Protection up to IP65, self-regulating integrated heater.

Custom mounting elements: plug-in coupling or contact clamps.

Optional transmission components: fiber optic rotary joints, pneumatic or hydraulic rotary joints.



BRUSH SYSTEM

- New generation of Signal Transfer Systems
- Low maintenance
- Low dependence on material cost

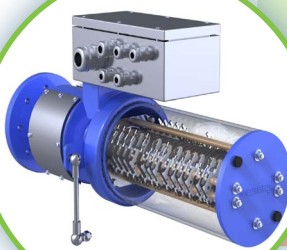
Signal Circuits: Analog and digital signals (CAN, Ethernet, Profibus).

Power Circuits: 1A to 200A at voltage up to 690V.

Features: Protection up to IP65, self-regulating integrated heater.

Custom mounting elements: plug-in coupling or contact clamps.

Optional transmission components: fiber optic rotary joints, pneumatic or hydraulic rotary joints.



MERSEN

Mersen provides a wide range of high performance solutions for electrical rotating machines: carbon brushes, brush-holders, slip ring assemblies, brush gears and current collection products. For more information, visit us at Mersen.com



A GLOBAL PLAYER

Global expert in materials and solutions for extreme environments as well as in the safety and reliability of electrical equipment, Mersen designs innovative solutions to address its clients' specific

needs to enable them to optimize their manufacturing process in sectors such as energy, transportation, electronics, chemical, pharmaceutical and process industries.

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