BELDEN
SENDING ALL THE RIGHT SIGNALS

Solutions for wind farms

Belden offers complete, integrated solutions for reliable, cost-effective operation of modern wind farms – both onshore and offshore.

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The wind of change is blowing through the power generation industry. High availability, secure, managed network infrastructure is decisive to success today and tomorrow.

Benefit from Belden's multifaceted solutions for today's wind power applications – onshore and offshore.

Integrated solutions for wind farms – onshore and offshore

As one of the world's leading suppliers of connectivity solutions for wind power stations, Belden meets the highest customer requirements and standards, even under the most challenging conditions. With a wide portfolio of innovative products from the Belden, Hirschmann™ and Lumberg Automation™ brands, backed by our outstanding solution and service expertise, we offer our customers reliable, cost-effective solutions for their wind power stations.

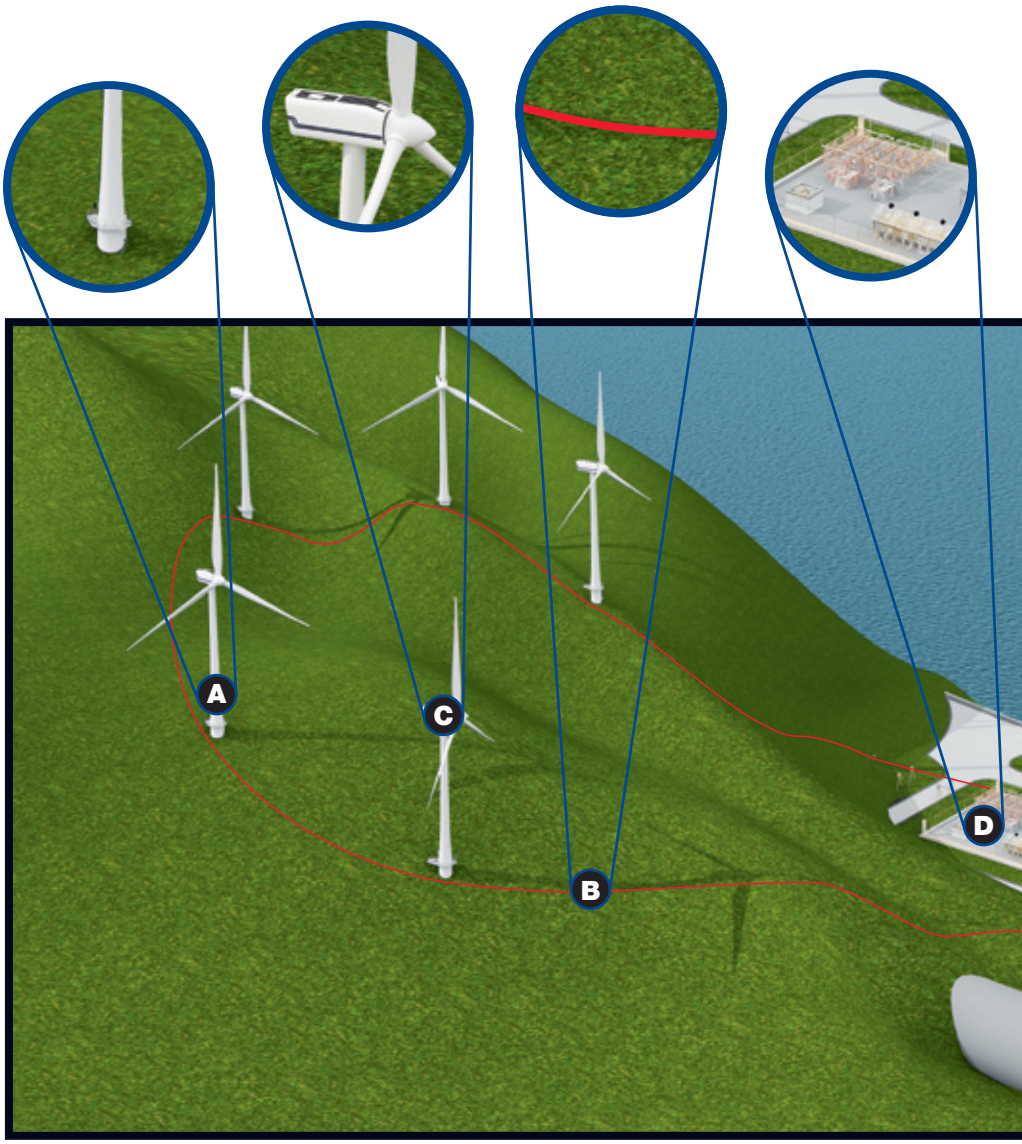
Whether for complex cabling in the turbines, at extreme temperatures, with vigorous vibrations and electromagnetic interference, Belden can optimally address all needs and requirements with its wide portfolio of solutions – all the way through to remote maintenance.

Complete onshore solutions from a single source

As a leading provider of Layer 2 and Layer 3 communication solutions, Belden offers a wide portfolio of maintenance-free products for long-distance connections in temperatures ranging from – 40° C up to + 70° C. Belden is ideally positioned to fulfill all requirements in today's onshore applications.

- monitoring wind turbine control data
- monitoring the generated energy
- operation of emergency telephones (Voice over IP)
- tower surveillance via video or IP camera
- remote wind turbine maintenance

Belden's innovative solutions are based on state-of-the-art FiberOptic technology and ensure the highest availability.



A Tower

BAT family

- wireless access points and clients
- bridge functionality
- redundant WLAN links for reliable data transfer
- IP67 protection class

B Cables

Tower Interconnect Cables A/I-DQ(ZN)(SR)H

- direct burial, duct or outside devices
- for inside and outside use FRNC/LSNH
- weather resistant
- protection from mechanical and rodent damage with or without metallic armour

C Turbine

SPIDER family

- entry-level switches in many varieties
- fiber to copper conversion
- unmanaged
- 2 to 8 (+2) ports plus optional optical fiber ports

Fieldbus systems and distributors

- fieldbus modules for AS-Interface, DeviceNet, CANopen and Profibus
- actuator/sensor distribution box
- IP67/IP69K protection class, vibration and shock resistant

Connectivity solutions

- actuator/sensor connecting and inter-connecting cables
- field attachable connectors
- M8, M12, M23, 7/8"
- valve connectors A, B and C design
- IP65 – IP69k protection class

D Substation

MACH1000

- rack-mount ruggedized switch
- maximum uptime in extreme environmental conditions
- extended temperature range: –40°C up to +85°C

RSR

- compact ruggedized DIN Rail Switches
- extremely high EMI resistance
- withstands tremendous shocks and vibrations

E Control room

MACH100

- modular fanless Industrial Ethernet rack mount switch
- hot-swappable modules
- optional redundant power supply

MACH4000

- Gigabit backbone routing switches
- up to 48 Gigabit Ethernet ports and three 10Gigabit Ethernet ports
- highly redundant

EAGLE20

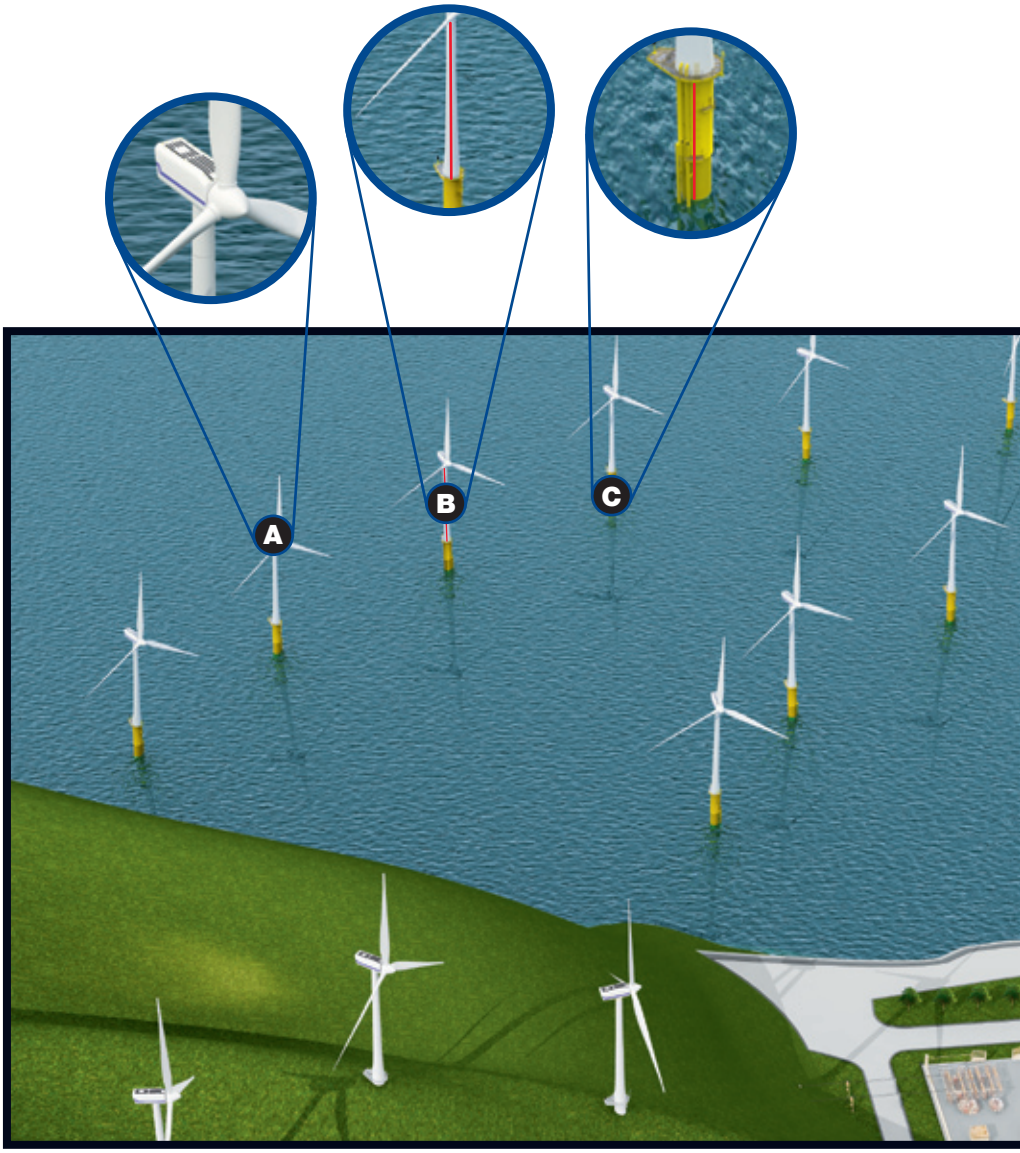
- high-speed VPN, firewall and routing solution
- transparent and routing mode
- various media connection options
- 9.6V up to 60VDC redundant inputs

Solutions for offshore applications under extreme conditions

Most offshore wind farms are located some distance from the coast. They are monitored and controlled from a central control room onshore. This very challenging application environment calls for highly reliable and extremely low-maintenance products, in order to ensure cost-effective operation:

- high-quality products and solutions
- highest system stability
- reliable network management
- very high resistance to corrosion
- extreme temperature resistance
- GL approval

For offshore power stations, ensuring the highest system stability and avoiding cost-intensive maintenance by ship or helicopter are decisive.

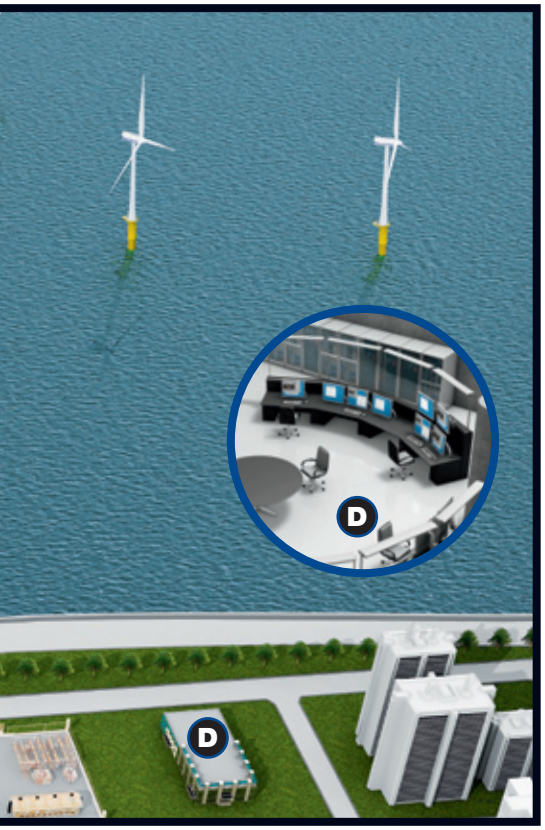


A Turbine

OpenRail family
- redundant power supply
- available in customized versions
- available with conformal coating

Fieldbus systems and distributors
- fieldbus modules for AS-Interface, DeviceNet, CANopen and Profibus
- actuator/sensor distribution box
- IP67/IP69K protection class, vibration and shock resistant

FiberExpress Systems
- FiberExpress Manager easy patch cords routing and management in a minimum space
- FiberExpress Bar: a compact, modular and resilient linking panel
- Optimax connectors for fast, secure and reliable field installable fiber termination



Connectivity solutions
- actuator/sensor connecting and inter-connecting cables
- field attachable connectors
- M8, M12, M23, 7/8"
- valve connectors A, B and C design
- IP65 – IP69k protection class

B Tower

Vertical connectivity solutions
- buffer very close to the cable to allow easy wiring
- optimax connectors for fast secure and reliable wiring

C Base

OCTOPUS family
- first manageable ruggedized IP67 PoE switch
- extended management by SNMP
- redundancy via HIPER-Ring/MRP and Rapid Spanning Tree
- access control via IEEE 802.1X

MICE family
- modular switch family
- extensive range of hot-swappable media modules
- maximum flexibility by comprehensive selection of media types
- supports a comprehensive selection of connectors
- MICE PoE media modules available

Fieldbus repeaters
- for the most common fieldbus protocols
- protocol specific fieldbus repeaters available
- predictive maintenance

microFX
- IP67 Ethernet connector
- industrial M12 technology
- optical and electrical contacts

D Control room

Network Management Software
- operator edition for network supervision
- engineering edition for device configuration
- OPC and ActiveX for SCADA integration

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Printed in Germany
DS 280 720-076/0106778 Edition 04/2009