Product Range

Wind Solutions
Wind Solutions

Innovative solutions for renewable energies

For more than 30 years, Bonfiglioli has provided dedicated integrated solutions to the wind industry. The combined expertise in the designing and manufacturing of gearboxes in association with years of experience in application on wind turbines has enabled Bonfiglioli to become a global top player.

One out of every three wind turbines globally uses a Bonfiglioli gearbox.

The result is a complete package dedicated to the wind energy sector which seamlessly enables the control of energy generation, from rotor blade positioning with a pitch drive to nacelle orientation with a yaw drive.

Bonfiglioli has produced a completely integrated inverter solution for yaw drives and re-generator inverters to direct the electricity created by the wind turbine into the power grid.

Working closely with customers to develop tailor-made applications, Bonfiglioli uses its flexibility to deliver reliable, superior performance products, which comply with all worldwide standards. The largest companies around the world use Bonfiglioli Wind Energy Solutions.

Bonfiglioli also provides solutions for:

- DISCRETE MANUFACTURING & PROCESS INDUSTRIES
- ELECTROMOBILITY
- MECHATRONIC & MOTION SYSTEMS
- MOBILE

www.bonfiglioli.com
Over 30 years of expertise in the wind industry

- **1980**: Collaboration with "pioneers" of wind energy, Nordtank and Micon
- **1990**: Reinforced planetary gearboxes
- **2000**: Bonfiglioli integrates self-braking motors in planetary gearboxes
- **2005**: Reinforced planetary gearboxes with integrated pinion shaft
- **2003**: First supply of Bonfiglioli inverters for Yaw control
- **2006**: Start of wind production in Germany

The timeline highlights key milestones and technological advancements in the wind industry, showcasing Bonfiglioli's expertise and contributions over three decades.
Bonfiglioli expands line of yaw drives

2009

Bonfiglioli introduces new inverters for yaw control

2008

Bonfiglioli develops compact gearbox with integrated inverter

2010

START OF WIND PRODUCTION IN CHINA

2011

Further expansion of yaw and pitch drives for 7 MW turbines

2013

Bonfiglioli introduces products to better monitor gearbox performance

2016

Bonfiglioli launches its condition monitoring solution

2018

START OF WIND PRODUCTION IN BRAZIL

2014

TURBINES OFF-SHORE UP TO 12.0 MW

2012

TURBINES UP TO 7.0 MW

2011

TURBINES UP TO 12.0 MW

2010

START OF WIND PRODUCTION IN VIETNAM

2008

Bonfiglioli market share in wind exceeds 30%

2008
Standard Solutions
Bonfiglioli pitch drives’ wide range of output torques and gearbox sizes expertly meet the OEM requirements of wind turbines. Completely custom made, this product offers a flexible solution to wind turbine manufacturers. Recent new features like the integrated load cell and the torque limiter show that Bonfiglioli always thinks out of the box and continuously searches for the most cost-effective solution.

**Pitch drives**
with asynchronous induction motors

**Yaw drives**
with asynchronous induction motors and inverters

With a wide range of output torques and gearbox sizes, Bonfiglioli yaw drives excellently the OEM requirements of wind turbines. Completely custom made, this product offers a flexible solution to wind turbine manufacturers. Recent new features, like the integrated load cell and the torque limiter, show that Bonfiglioli always thinks outside the box, continuously searching for the most cost-effective solution.

- BN, BE & BX Series | AC motors
- Agile Series | Standard inverters
- Active Cube Series | Premium inverters
- AEC Series | Regenerative units

Also with integrated inverter
Bonfiglioli products are used in the latest state-of-the-art wind turbines to control the necessary functions of pitch and yaw drive systems. 700TW series planetary speed reducers (wind turbine yaw control gear motors) are used by a number of leading wind turbine manufacturers due to their advanced technical features, ensuring the highest level of performance.

**Standard Yaw & Pitch drives**

**700TW Series**

Bonfiglioli products are used in the latest state-of-the-art wind turbines to control the necessary functions of pitch and yaw drive systems. 700TW series planetary speed reducers (wind turbine yaw control gear motors) are used by a number of leading wind turbine manufacturers due to their advanced technical features, ensuring the highest level of performance.

**Gear ratios**
- 60 ... 3,000

**Applicable motors**
- Electric motors

**Key benefits**
- High transmissible torque
- High radial/thrust load capacity
- High shock resistance and designed for heavy duty
- Wide range of reduction ratios (from 60 up to 3000)
- High efficiency
- Compact dimensions
- Low weight
- Low cost

**Key Features**
- Flange mounted
- Output shaft: splined or with integral pinion
- Rugged construction
- High torque capacity
- Output shafts supported by heavy duty bearings

**Standards**
- Gears are designed according to ISO 6336
- Modular design
- In line or right angle design
- Different output versions
- Input for electric motor (IEC, NEMA and compact)

**Construction features**
- There can be from 3 up to 5 reduction stages (all of them with a planetary design), depending upon the total required reduction ratio
  - Each stage may have from 3 up to 4 planets (to increase the deliverable torque)
  - The gears are made of alloyed steel and are heat treated (case hardening for suns & planets, induction hardening or nitriding for internal toothed rings)
  - The planets are supported by roller bearings or full rollers track bearings to obtain an high efficiency during the phases of starting and running
  - The output housing is made by nodular cast iron and designed to hold the heavy loads generated during the machine's job

**Nominal torque (Nm)**

**Pitch drive**

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<tr>
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<th>703 TW</th>
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<th>706 TW</th>
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**Yaw drive**

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The indicated data are for reference only; please contact Bonfiglioli for more detailed information.
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## Technical data

**Pitch drive**

### Gearboxes for 1.0 to 2.0 MW wind turbines

<table>
<thead>
<tr>
<th>Wind turbine size</th>
<th>Pitch Drive number</th>
<th>Gearbox type</th>
<th>Max static torque</th>
<th>Electric motor type &amp; power</th>
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<td>MW</td>
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<td></td>
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<tr>
<td>up to 1.0</td>
<td>3</td>
<td>703 T + 706 T 4.5 + 16 [kNm]</td>
<td>BN 90 + 100 1.1 ÷ 3.0 [kW]</td>
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<tr>
<td>1.0 ÷ 1.5</td>
<td>3</td>
<td>705 T + 707 T 8 ÷ 25 [kNm]</td>
<td>BN 100 ÷ 132 2.2 ÷ 5.5 [kW]</td>
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<tr>
<td>1.5 ÷ 2.0</td>
<td>3</td>
<td>706 T + 709 T 16 ÷ 55 [kNm]</td>
<td>BN 100 ÷ 132 3.0 ÷ 75 [kW]</td>
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<tr>
<td>3.0 ÷ 4.0</td>
<td>3</td>
<td>707 T + 711 T 25 ÷ 80 [kNm]</td>
<td>BN 132 ÷ 160 5.5 ÷ 15.0 [kW]</td>
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<tr>
<td>5.0 ÷ 6.0</td>
<td>3</td>
<td>711 T + 712 T 80 ÷ 110 [kNm]</td>
<td>BN 132 ÷ 180 9.2 ÷ 22.0 [kW]</td>
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<tr>
<td>7.0 ÷ 8.0</td>
<td>3 ÷ 6</td>
<td>712 T 110 [kNm]</td>
<td>BN 160 ÷ 200 11.0 ÷ 30.0 [kW]</td>
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</tr>
<tr>
<td>9.0 ÷ 12.0</td>
<td>3 ÷ 6</td>
<td>712 T 110 [kNm]</td>
<td>BN 160 ÷ 200 11.0 ÷ 30.0 [kW]</td>
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</tr>
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</table>

### Gearbox type & Series

- **707T3N+BN132 Series**
- **707T3N Series**

The indicated data are for reference only; please contact Bonfiglioli for more detailed information.
## Yaw drive

### Technical data

<table>
<thead>
<tr>
<th>Wind turbine size</th>
<th>Yaw Drive number</th>
<th>Gearbox type &amp; Max static torque</th>
<th>Electric motor type &amp; power</th>
<th>Inverter type &amp; power</th>
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<tr>
<td><strong>MW</strong></td>
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<tr>
<td>up to 1.0</td>
<td>2 x 4</td>
<td>706 T + 709 T 15 + 55 [kNm]</td>
<td>BN 80 + 100 0.75 + 2.2 [kW]</td>
<td>AGL / ACU size 1-2 0.75 + 2.2 [kW]</td>
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<tr>
<td>1.0 + 1.5</td>
<td>2 x 4</td>
<td>709 T + 712 T 55 + 110 [kNm]</td>
<td>BN 90 + 112 1.1 + 4.0 [kW]</td>
<td>AGL / ACU size 1-2 1.1 + 4.0 [kW]</td>
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<tr>
<td>1.5 + 2.0</td>
<td>4 x 6</td>
<td>709 T + 714 T 55 + 150 [kNm]</td>
<td>BN 100 + 132 2.2 + 5.5 [kW]</td>
<td>AGL / ACU size 2-3 2.2 + 5.5 [kW]</td>
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<td>3.0 + 4.0</td>
<td>4 x 8</td>
<td>710 T + 714 T 60 + 150 [kNm]</td>
<td>BN 100 + 132 3.0 + 9.2 [kW]</td>
<td>AGL / ACU size 2-3 3.0 + 9.2 [kW]</td>
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<td>5.0 + 6.0</td>
<td>6 x 8</td>
<td>714 T + 716 T 150 + 250 [kNm]</td>
<td>BN 132 + 160 7.5 + 15.0 [kW]</td>
<td>AGL / ACU size 3-4 7.5 + 15.0 [kW]</td>
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<td>7.0 + 8.0</td>
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<td>716 T + 718 T 250 + 400 [kNm]</td>
<td>BN 132 + 180 9.2 + 22.0 [kW]</td>
<td>AGL / ACU size 3-5 9.2 + 22.0 [kW]</td>
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<td>9.0 + 12.0</td>
<td>8 x 16</td>
<td>716 T + 718 T 250 + 400 [kNm]</td>
<td>BN 132 + 180 9.2 + 22.0 [kW]</td>
<td>AGL / ACU size 3-5 9.2 + 22.0 [kW]</td>
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<table>
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<tr>
<th>Type</th>
<th>Peak static torque</th>
<th>Range of ratios</th>
<th>Available pinion module</th>
<th>Weight</th>
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<td>600-5,000</td>
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<td>600-5,000</td>
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</table>

The indicated data are for reference only; please contact Bonfiglioli for more detailed information.
The IEC-normalized BN motors comply with all the applicable international standards, including the EMC and LV Directives. They are available in the 0.06 - 30 kW range in the foot and the flange mounting version, the latter in both the IM B5 and the IM B14 configuration with generally two brake options offered, DC and AC supply. Lastly, all motors are inverter duty.

### BN/M Series

The IEC-normalized BN motors comply with all the applicable international standards, including the EMC and LV Directives. They are available in the 0.06 - 30 kW range in the foot and the flange mounting version, the latter in both the IM B5 and the IM B14 configuration with generally two brake options offered, DC and AC supply. Lastly, all motors are inverter duty.

#### Degree of protection
- Standard IP55
- Standard for brake motors IP54

#### Conformity
- Efficiency - IEC 60034-30
- Low Voltage Directive
- Electromagnetic Compatibility

#### Power supply
- @50 Hz: 230/400, 280/480, 400/690
- @60 Hz: 265/460, 280/480, 330/575, 380/660

#### Mounting options
- IM B3, IM B5, IM B14

#### Brake types
- AC & DC brakes

#### Brake-related options
- Manual release lever
- Soft-start flywheel
- Capacitive filter
- Brake separate power supply
- Brake functionality check (micro-switch)

#### Key benefits
- Reduced operating cost
- Energy saving
- Complete solution (gearbox and motor)
- Control flexibility
- Flexibility
- Global motor

#### Key features
- Compact version
- Inverter duty ready
- Multiple-speed motors
- Certified motor (DOE, NRCan, CCC, etc.)

#### Power (kW)

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<tr>
<th>Motor</th>
<th>Power (kW)</th>
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<tbody>
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<td>BN 160L</td>
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<td>BN 200L</td>
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Other sizes available.

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Asynchronous IE2 Three Phase motor

The IEC-normalized BE motors comply with IEC 60034-30:2008 (efficiency classes) and all the applicable international standards, including the EMC and LV Directives. They are available in the 0.75 - 22 kW range in the foot and the flange mounting version, the latter in both the IM B5 and the IM B14 configuration. Lastly, all motors are inverter duty.

Degree of protection
- Standard IP55

Conformity
- Efficiency - IEC 60034-30
- Low Voltage Directive
- Electromagnetic Compatibility

Power supply
- @50 Hz: 230/400, 280/480, 400/690
- @60 Hz: 265/460, 280/480, 330/575, 380/660

Mounting options
- IM B3, IM B5, IM B14

Motors
- 3 phase asynchronous

Motor options
- Thermistors and thermostat sensors
- Independent forced cooling
- Incremental, sin/cos absolute single/multi-turn encoders
- Tropicalization
- Anti-condensate heaters
- Up to IP65 protection

<table>
<thead>
<tr>
<th>Power (kW)</th>
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<tr>
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<tr>
<td>BE 180M</td>
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<tr>
<td>BE 180L</td>
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Other sizes available.

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Asynchronous IE3 Three Phase motor

BX/MX Series

The release of the new BX/MX motors is a further expression of our regard for the environment. The BX/MX motors fulfill IE3 efficiency class requirements, according to the international standard IEC 60034-30. The “X” of the new BX/MX motors stands for “excellence” in efficiency, being IE3 the top efficiency rating currently formalized by global standards. Lastly, all motors are inverter duty and generally 3 brakes options are offered.

Degree of protection
- Standard IP55
- Standard for brake motors IP54

Conformity
- Efficiency - IEC 60034-30
- Low Voltage Directive
- Electromagnetic Compatibility

Power supply
- @50 Hz: 230/400, 280/480, 400/690
- @60 Hz: 265/460, 280/480, 330/575, 380/660

Mounting options
- IM B3, IM B5, IM B14

Brake types
- AC & DC brakes

Brake-related options
- Manual release lever
- Soft-start flywheel
- Capacitive filter
- Brake separate power supply
- Brake functionality check (micro-switch)

Motors
- 3 phase asynchronous

Motor options
- Thermistors and thermostat sensors
- Independent forced cooling
- Incremental, sin/cos absolute single/multi-turn encoders
- Tropicalization
- Anti-condensate heaters
- Up to IP65 protection

Power (kW)

<table>
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<tr>
<th>Motor</th>
<th>Power (kW)</th>
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<td>BX 90S</td>
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The indicated data are for reference only; please contact Bonfiglioli for more detailed information.
The Bonfiglioli Active Cube is a frequency inverter offering both compactness and flexibility. This specific solution is adaptable on a wide range of machines, starting from servo to heavy industry applications. The broad support for various field bus systems and the standardized interface for motion control applications make Active Cube an excellent jack of all trades for your application needs.

**Active Cube Series**

The Bonfiglioli Active Cube is a frequency inverter offering both compactness and flexibility. This specific solution is adaptable on a wide range of machines, starting from servo to heavy industry applications. The broad support for various field bus systems and the standardized interface for motion control applications make Active Cube an excellent jack of all trades for your application needs.

**Power range**
- ACU210: 0.25 - 9.2 kW
  - single or three-phase 200 - 240V
  - 50 - 60 Hz (± 10%)
- ACU410: 0.25 - 400 kW
  - three-phase 360 - 480V
  - 50 - 60 Hz (± 10%)
  - Parallel connection up to 1,200 kW
- ACU510: 160 - 400 kW
  - three-phase 525V
  - 50 - 60 Hz (± 10%)
  - Parallel connection up to 1,200 kW
- ACU610: 160 - 400 kW
  - three-phase 690V
  - 50 - 60 Hz (± 10%)
  - Parallel connection up to 1,200 kW

**Enclosure**
- IP20 (EN 60529)

**EMC filter**
- Integrated up to 9.2 kW (EN 61800-3)

**Hardware features**
- Vector sensor less and closed loop control for Permanent Magnets, Induction and Synchronous Reluctance machines

**Type of control**
- Overload capacity
  - 150% for 60 seconds and 200% for 1 second

**Switching frequency**
- 2, 4, 8, 12, 16 kHz

**Optional communication modules**
- PROFIBUS-DPV1, CANopen, RS232, RS485, DeviceNet, EtherCAT™, PROFINET, VABus/TCP, Modbus TCP, EtherNet I/P

**Optional keypad**
- Removable keypad KP500 with copy function, Cabinet mounting kit and handheld for keypad

**Optional PC software**
- VPlus for Windows with motor setup, terminal monitor
  - Actual value window
  - Scope function
  - Parameter Storage

**Software features**
- Positioning function
- Rotary table control
- Master / Slave function with electronic gear
- Power failure regulation
- Function for lift, crane and winch applications
- Spindle control up to 1000Hz
- Traverse function for winders
- Volume flow control
The Agile Series of inverters by Bonfiglioli sets new standards in technology for a broad range of users. Agile inverters are particularly suited for the food & beverage, textile, wood, packaging and ceramic industries, where they can be used in a variety of medium complexity automation processes.

**Power range**
- AGL402: 0.25 - 11 kW
  3-ph 320 V... 530 V
  50 - 60 Hz (± 10%)
- AGL202: 0.12 - 3 kW
  1-ph 200 V... 240 V
  50 - 60 Hz (± 10%)
- 0.25 - 7.5 kW
  3-ph 200 V ... 240 V
  50 - 60 Hz (± 10%)

**Motor compatibility**
- Vector sensor less for Permanent Magnets, Induction and Synchronous Reluctance machines

**Overload capacity**
- Asynchronous AC motors
- Permanent magnet synchronous (brushless) motors

**Type of control**
Selectable control function:
- V/f control for asynchronous motors
- Sensor-less vector control for asynchronous motors
- Sensor-less vector control for brushless motors

**Degree of protection**
- IP20 (EN 60529)

**Hardware features**
- Power supply from common DC bus
- Integrated braking module
- Short circuit / ground fault protection
- Integrated Safe Torque Off safety system
- Plug-in and programmable control terminals
- 6 digital inputs, 2 multifunctional A/D inputs
- 1 multifunctional I/O, 1 digital output
- 1 multifunctional A/D/pulse output, 1 relay output (alarm)
- Available power outputs: +24 V DC, +10 V DC
- Optional separate 24 V DC electronic power supply
- Standard serial interfaces: RS-232, RS485, system bus
- Integrated Modbus

**Optional expansion modules**
- Resource Pack memory card

**Optional communication modules**
- PROFIBUS-DPV1, CANopen, RS232, RS485, DeviceNet, EtherCAT®, PROFINET, VABus/TCP, Modbus TCP, EtherNet I/P

**PC software**
- VPlus suite

**Software features**
- Permanent motor tuning
- Selective Multi-Motor Control (SMMC)
- Energy saving function
- Ready-to-use application masks
- Integrated maintenance wizard
- Alarm history
- Motor and inverter state memory
- Autodiagnostics
- Integrated PLC function with graphic development environment
- Integrated oscilloscope function
- Customizable units of measurement
Decades of experience in electronic industrial drives and renewable energy have enabled Bonfiglioli to offer an effective solution for recovering braking energy. This solution comes as the new Active Regenerative System inverters (AEC). In a large number of electrically controlled industrial applications, inertia in moving mechanisms can drive electric motors as they act as brakes. They convert kinetic energy into electrical energy. In a regenerative process, this energy is returned to the grid.

### AEC Series

- **Power range**
  - 9.7 ... 173.2 kVA
  - 3-phase 320V ... 440V
  - 45Hz ... 66Hz

- **Overload capacity**
  - 150% for 1 min

- **Operating mode**
  - Control mode selection:
    - Input and regenerative power with sinusoidal current
    - Regenerative power with square-wave current

- **Enclosure**
  - IP20 (EN 60529)

- **Main hardware features**
  - DC link connection
  - Adjustable input and regenerative power control
  - Short-circuit and earth-fault resistance
  - Configurable control terminals

- **Bus communication**
  - RS232, RS485, Profibus-DP, CANopen

- **Operating panel**
  - Removable KP500 keypad

- **PC software**
  - VPlus for Windows operating systems

- **Key features**
  - Input and regenerative power with sinusoidal current
  - Regenerative power with square-wave current

- **Software features**
  - Adjustable displacement factor (sinusoidal)
  - Harmonic distortion factor <3% (sinusoidal)
  - Adjustable DC link voltage (sinusoidal)
  - Power factor ~0.9 (square wave)
  - Automatic network synchronization
  - Operation independent of phase sequence
  - Performance and load characteristics curve

- **Hardware features**
  - Integrated dynamic braking module
  - DC link connection
  - Plug-in and programmable control terminals
  - 6 digital inputs, 1 multifunction input
  - 1 digital output, 1 multifunction output, 1 relay output (changeover contact)
Bonfiglioli Condition Monitoring System

Our technology is an innovative solution for constantly monitoring the health of a gearbox, particularly relevant for offshore wind applications where early fault detection is critical in increasing reliability as well as lowering operational costs, maintenance costs and reducing downtime.

Tailor-made IIoT platform

SMART MONITORING & MAINTENANCE FOR YOUR FULL MOTION CONTROL CHAIN WITH BONFIGLIOLI INVERTERS, MOTORS AND GEARBOXES

- Device sensorization & monitoring
- Edge & cloud computing
- Bonfiglioli dashboards & customized information

BONFIGLIOLI DASHBOARD
DYNAMIC LIFECYCLE MONITORING
PREDICTIVE MAINTENANCE
HEALTH DEVICE ASSESSMENT
Integrated Load Cell

Precise real-time load peak monitoring.

This solution integrates the load cell into the gearbox. The output signal from the transmitter can:
- Shut down the e-motor if necessary
- Reduce the input power (e.g. by frequency converter)
- Elaborate the information by customer PLC (e.g. creating working group graphic in real time)

Technical information
- The Load Cell is located between the e-motor and first stage of transmission
- It can be fixed with all IEC and gear stages just by changing the interface component

Applications
- Used in all applications with an e-motor where it is necessary to control and manage the input power, including:
  - Yaw Drives
  - Pitch Drives
Yaw & Pitch drives with Integrated Load Cell

700TW Series

For all applications of yaw and pitch drives for the monitoring of load peaks, Bonfiglioli offers its customers a solution that is protectively integrated into the gearmotor. The integrated load cell quickly and precisely measures torque and enables torque monitoring in real time. The system provides an automatic engine shut-down to protect the drive or reduce the capacity of the frequency converter and provides information to the PLC. The system also has an anti-seize function which prevents blockages.

**Rated torque range**
- 8,000 ... 120,000 Nm

**Peak torque range**
- 5,000 ... 300,000 Nm

**Reduction ratios**
- 1:600 ... 3,000

**Key features**
- Located inside the gearbox to measure gearbox performance in real time
- Can be monitored remotely to immediately detect problems or potential failures
- Gives wind farm operators the ability to measure performance of individual components within the nacelle

**Gearbox configuration**
- Flange mounted
- Output shaft: with integral pinion (type: F, N, U)
- Rugged design
- High torque capacity
- Output shafts supported by high load capacity bearings

**Applicable AC motors**
- Compact motors and brake motors M/ME series
- IEC motors and brake motors BN/BE series

**Main brake features**
- AC/DC rectifier
- Double disc brake
- Microswitch
- Thermal sensors

**Main brake motor features**
- DC and AC brake
**Yaw & Pitch drives with Torque Limiter.**

*700TW Series*

For both Yaw and Pitch drive applications, Bonfiglioli has created a torque limiter which significantly reduces downtime in the case of stopping the transmission of wind turbines when peak torque has been reached and also reduces maintenance costs.

**Rated torque range**
- 8,000 ... 120,000 Nm

**Peak torque range**
- 5,000 ... 300,000 Nm

**Reduction ratios**
- 1:600 ... 3,000

**Gearbox configuration**
- Flange mounted
- Output shaft: with integral pinion (type: F, N, U)
- Rugged design
- High torque capacity
- Output shafts supported by high load capacity bearings

**Applicable AC motors**
- Compact motors and brake motors M/ME series
- IEC motors and brake motors BN/BE series

**Main brake motor features**
- DC and AC brake

**Main brake features**
- AC/DC rectifier
- Double disc brake
- Microswitch
- Thermal sensors

(*) The torque limiter is located inside an easily removable and replaceable cartridge, which is integrated into a worm gear. It is only possible in a right angle solution.

The indicated data are for reference only; please contact Bonfiglioli for more detailed information.
Next generation mechatronic yaw drives.

Integrated Agile

Integrated Agile inverters can be mounted directly to the motor and represent a very compact alternative to the traditional yaw system without inverter or with the motor supplied by a standard frequency converter installed in a cabinet. Using integrated Agile inverters, the performance of turbine yaw systems is enhanced, and additional benefits in terms of reliability, availability and system cost optimization can be achieved.

Power range
- 1.1 kW up to 11 kW

Power supply
- 3-Phase 320V ... 528V / 45Hz ... 66Hz

Type of control
Innovative control dedicated to open loop drives:
- Sensor-less vector speed and torque control for induction motor
- Sensor-less vector speed and torque control for brushless motor
- Sensor-less V/f scalar control

Enclosure
- Protection rating: IP65 (EN60529)
- Material: robust aluminum

Main standard features
- Built-in EMC filter for straightforward EMC compliance
- Integrated CANopen / RS485 Modbus / Systembus interfaces
- Integrated brake chopper transistor
- MMC memory cards for easy and fast start up / parameter copying
- Optional communication Modules: Profibus-DP, Ethernet-based field buses
- 6 digital inputs, 2 configurable A/D multi-function inputs, +24VDC input, 1 configurable I/O port
- 1 digital output, 1 configurable A/D/pulse multi-function output, 1 relay, +24VDC output, +10VDC output

Main software features
- Integrated Safe-Torque-Off function
- Four data sets
- Drive and motor status backup
- Static and dynamic energy saving functions
- Maintenance integrated assistant
- Integrated PLC functions with graphical editor
- Integrated scope function

Dedicated features for wind turbine yaw drives
- Fanless
- Long life: use of film capacitors
- Operation temperature range: from -10 up to 50°C (special version on request for colder climates)
- Resistance to harsh ambient conditions (corrosion, high humidity)
Yaw drives with motor, brake and inverter integrated.

700TW Series

The solution specifically designed for yaw drive applications. More compact than existing solutions, this innovative system for nacelle orientation control is now equipped with integrated motor and brake and is inverter ready. The new design incorporates a special feature for quick installation and setting and grants simpler maintenance over the product lifetime. The yaw control multistage planetary gearmotor is perfect for wind turbines from 1.5 MW to 3.5 MW, both for onshore and offshore applications.

An innovative design system:
- Smaller dimensions with the same performance - 20% height reduction compared to traditional solution
- Lighter weight - 8% less than traditional solution
- Design complexity reduction - 11% less components than traditional solution
- Easier installation
- Simplified maintenance also with longer service intervals - 10 years
- Efficiency improved thanks to the design focused on the Wind application profile.

Integrated inverters for maximum efficiency:
- Higher reliability and increased life of mechanics guaranteed by electronic control of torques
- Maintenance prediction, through diagnostics via inverter field bus
- Easier installation and less components at nacelle because no cabinet required
- Energy efficiency improved thanks to vector control of active and reactive power.
Technical key characteristics:
- Size: 712 TW
- Rated dynamic torque: 50 kNm
- Peak static torque: 110 kNm
- Reduction ratio: from 600 to 3000
- Pinion module: from 16 to 20
- Motor size: IEC100 integrated
- Parking brake: integrated
- Inverter: optionally integrated

**Standard Yaw Drive**
- 3 sections, separate brake; requires separate inverter

**New generation Yaw Drive**
- 2 sections, integrated brake; integrated inverter

### HEIGHT REDUCTION *
- Integrated AC motor flange and brake decreases height by 20%*

### INTEGRATED INVERTER
- Less bolted connections and only 2-piece housing 11%* less components

### SMALLER
- Total unit weight reduced by 8%*

### COMPLETE “PLUG AND PLAY” SOLUTION

* Measures vary depending on gearbox size
Global Presence

We Are a Global Company

Thanks to an international network of sales branches and closely interconnecting production plants, we can guarantee the same high standards of Bonfiglioli quality anywhere at any given time. Aware that our direct presence in local markets is the key to long-lasting success, our family includes 20 sales branches, 14 production plants and more than 500 distributors around the world.

Our organization is always close by, offering complete and efficient solutions and supporting our customers with dedicated services, such as co-engineering or after-sales assistance.
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We have a relentless commitment to excellence, innovation and sustainability. Our team creates, distributes and services world-class power transmission and drive solutions to keep the world in motion.