

# **Bonfiglioli** **Tecnoingranaggi**

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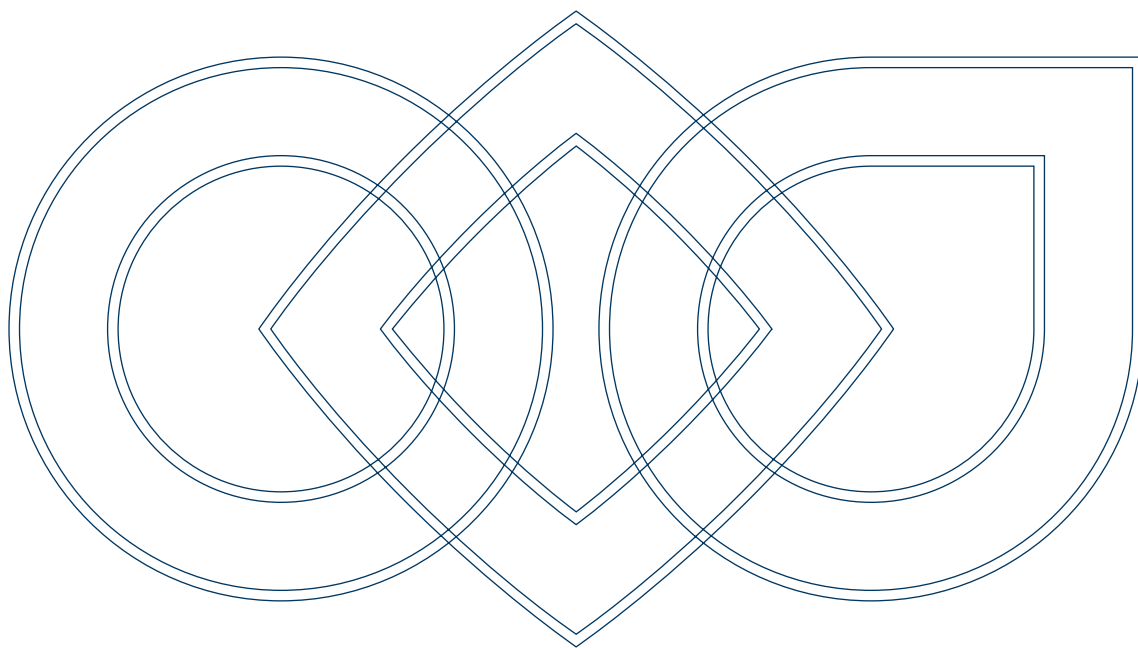
## **TQ-TQK-TQF series**

Highest Performance Precision  
Planetary Gearboxes



PRODUCT

 **Bonfiglioli**  
*Forever Forward*





# WE KEEP THE WORLD IN MOTION

Committed to become your world class partner, Bonfiglioli is a leading name in power transmission since 1956.

Our best-in-class solutions are backed by nearly 60 years of engineering expertise as well as an in-depth understanding of the industries we serve.



High innovative mechatronic tailored solutions from unique supplier to meet any kind of specific needs.



# MECHATRONICS - THE CHALLENGE TO BUILD YOUR SUCCESS

**Faster, better and cheaper - this is the new challenge for machine designers!**

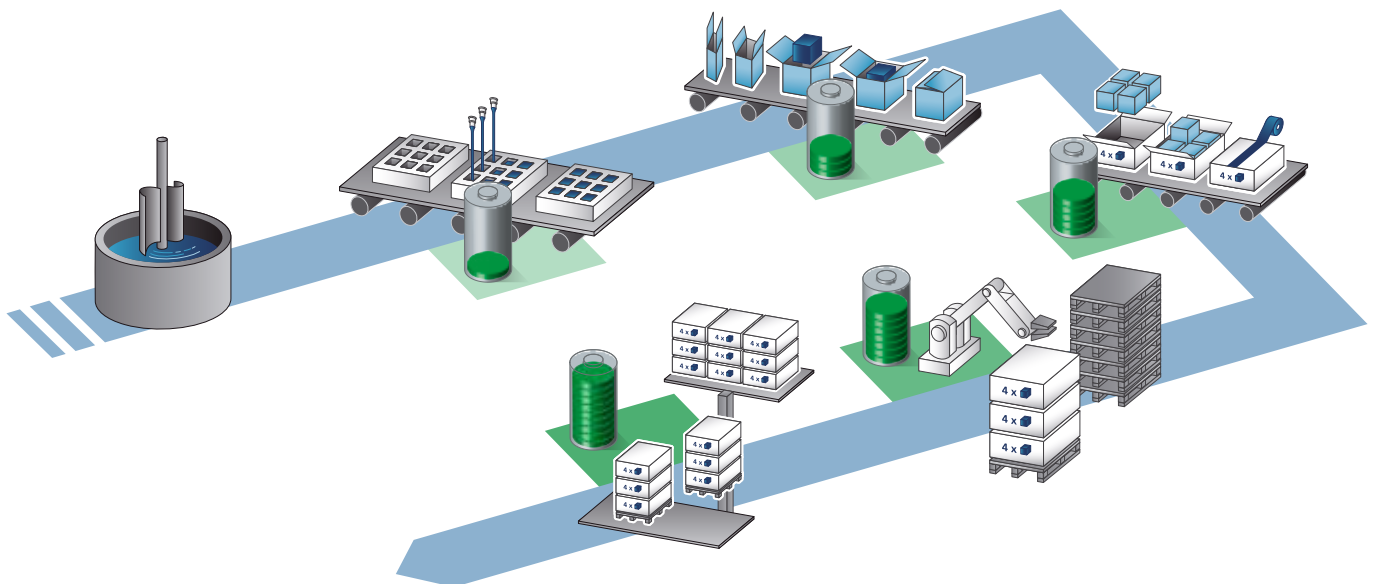
Increasing demands on the productivity of complex system machines, more flexible machines which run at highest efficiency level are requiring now new intelligent technical solutions that enhance growth tomorrow. Bonfiglioli has implemented a precise and detailed strategy to precisely achieve this objective!

Committed to be your world class partner of smart mechatronic solutions and servosystems, the Industrial Business Unit has established two divisions to serve its reference markets with specialist competence and care:

- Power Transmission Solutions division (PTS)
- Mechatronic Drives & Solutions division (MDS)

Our new Mechatronic Drives & Solutions (MDS) division is born with the mission to improve profitability by acting as a riskless partner and a provider of energy-efficient solutions over the total life cycle in the field of industrial automation.

- System integration
- Expertise
- Energy saving



Performance, reliability, low cost, robustness, efficiency and sustainability are absolutely essential.

TRAINING

MECHANICAL &  
MECHATRONIC STUDIES

PRODUCT  
CUSTOMIZATION

REALIZATION OF PROTOTYPES,  
TESTS AND ANALYSIS REPORTS

# OUR EXPERTISE FROM START TO FINISH!

Two Centers of Excellence are driving MDS' innovation:

- Bonfiglioli Vectron in Germany, with strong technical, R&D and manufacturing capabilities as regards electronic components, and most notably inverters and servo drives;
- BMR (Bonfiglioli Mechatronic Research), situated in Rovereto (Trento, Italy) who offers a strong R&D capability able to provide innovative new solution for your specific needs. BMR is also a production facility where mechatronic new solutions become reality.

Key to our MDS' success is strongest technical support from our specialists DSC (Drive Service Center team). They accompany you throughout the entire installation's life cycle, from initial concept idea and design until commissioning.

## Bonfiglioli

is close to your needs internationally through its branches which can directly follow the customers using streamlined international teams.



ON-SITE  
ACTIVITIES

START-UP  
ASSISTANCE

COMMISSIONING

MAINTENANCE

CUSTOMER  
SERVICE

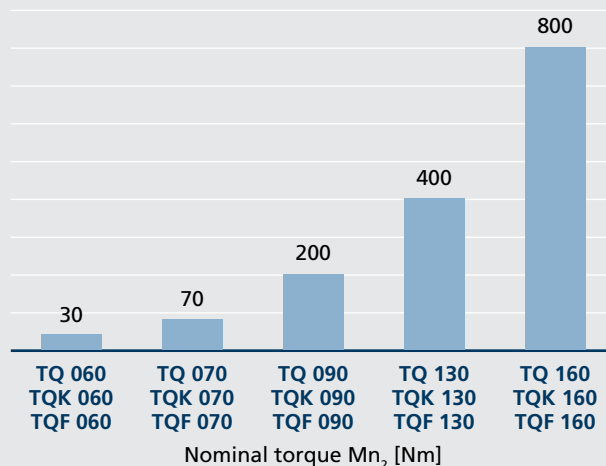
# WHY CHOOSING TQ; TQK & TQF TOP CLASS INNOVATION PRODUCT?



TQF (in-line), TQ (in-line) & TQK (Right-angle) features a higher positioning. Whether torque, robustness or precision, this attractive product range scores in every category.

## Highlights:

- Outstanding Torque Density with a compact design
- Outstanding Acceleration and Nominal Torques
- Outstanding Radial & Axial Load Capacities
- Markedly Higher Torsional Stiffness
- Very low Geometrical Backlash
- Designed for Cyclic and Continuous Duty
- Quiet running
- Universal Design allows any Mounting Orientation
- IP 65



# TQ PRECISION PLANETARY IN-LINE GEARBOX



## MONOBLOCK PLANET CARRIER

- Higher radial force
- Markedly higher torsional stiffness

## HIGH RATING OUTPUT BEARINGS

- Higher Radial & Axial Force

## UNIVERSAL DESIGN

- Markedly higher torsional stiffness
- Compactness



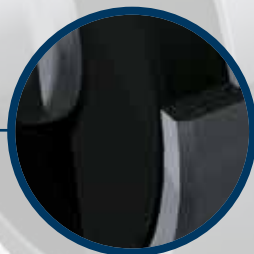
## FULL COMPLEMENT NEEDLE BEARINGS

- Increased rating
- Markedly higher torsional stiffness

## HIGHER INPUT SPEED

- Match with highest speed servomotors

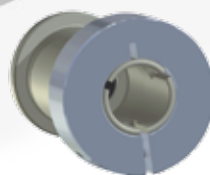
IP65 degree protection



## NITRIDING AND HONING

- Higher performance
- Outstanding torque density
- Extremely reduced backlash
- Quiet running

- Universal design for any mounting orientation
- Lifetime lubricated
- Designed for:
  - Continuous operation
  - Cyclic operation



## TRIPLE COLLET COLLAR CLAMPING SYSTEM

- Backlash free power transmission
- No slippage
- Low inertia



# TQK PRECISION PLANETARY RIGHT-ANGLE GEARBOX



## MONOBLOCK PLANET CARRIER WITH EXTENDED BEARING DESIGN

- Higher radial force
- Markedly higher torsional stiffness



## UNIVERSAL DESIGN

- Markedly higher torsional stiffness
- Compactness

## FULL COMPLEMENT NEEDLE BEARINGS

- Increased rating
- Markedly higher torsional stiffness

## HIGHER INPUT SPEED

- Match with highest servomotors

## NITRIDING AND HONING

- Higher performance
- Outstanding torque density
- Extremely reduced backlash
- Quiet running

IP 65 Protection

Right angled through  
helical bevel gear

## HIGH RATING OUTPUT BEARINGS

- Higher Axial and Radial Force

## TRIPLE COLLET COLLAR CLAMPING SYSTEM

- Backlash free power transmission
- No slippage
- Low inertia

- Universal design for any mounting orientation
- Lifetime lubricated
- Designed for:
  - Continuous operation
  - Cyclic operation

# TQF PRECISION PLANETARY FLANGED GEARBOX



## FULL COMPLEMENT NEEDLE BEARINGS

- Increased rating
- Markedly higher torsional stiffness

## HIGHER INPUT SPEED

- Match with highest speed servomotors

## HIGH RATING OUTPUT BEARINGS

- Higher radial & axial load
- Highest Tilting Moment

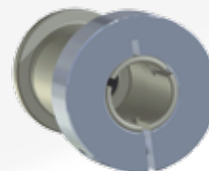
## UNIVERSAL DESIGN

- Markedly higher torsional stiffness
- Highest compactness

Output flange similar to  
EN ISO 9409

## IP 65 degree protection

- Universal design for any mounting orientation
- Lifetime lubricated
- Designed for:
  - Continuous operation
  - Cyclic operation



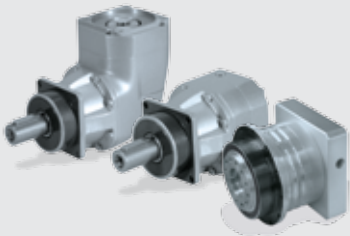
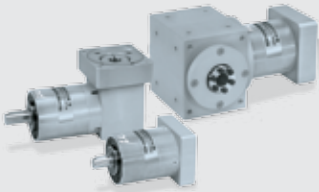
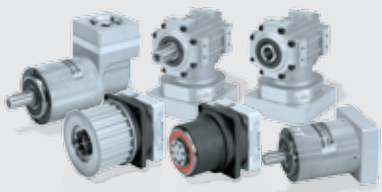
## TRIPLE COLLET COLLAR CLAMPING SYSTEM

- Backlash free power transmission
- No slippage
- Low inertia

# COMPLETE OFFER AND HIGHER FLEXIBILITY Bonfiglioli FROM BONFIGLIOLI

Bonfiglioli Riduttori, worldwide leader in Power Transmission and Mechatronics Solutions, offers a complete range for precision planetary gearboxes.

The current product portfolio adapts precisely to your specific needs in three performance classes:

HIGH PERFORMANCE	PRECISION	FLEXIBILITY
<p><b>TQ</b> (in-line)  <b>TQK</b> (right angle)  <b>TQF</b> (in-line)</p>	<p><b>TR &amp; MP</b> (in-line / right-angle configurations)</p>	<p><b>LC</b> (in-line)  <b>LCK</b> (right angle)  <b>SL</b> (in-line) for dynamic belt applications  <b>KR</b> (right angle)</p>
		

**Product Line-Up:**

- Strong & compact
- Highest precision & performance
- High speed applications
- Highest axial & radial load capacities
- Modular design for your needs
- Quiet operation

**Product Line-Up:**

- Many configurations available
- High performance
- High Precision
- Modular design for your needs

**Product Line-Up:**

- Flexible
- Economic precision, dynamics & compactness

# A RELIABLE PARTNER FOR YOUR BUSINESS

Bonfiglioli Riduttori brings decades of experience supporting customers across a broad spectrum of industry sectors.

**TQ** (in-line)  
**TQF** (in-line)  
**TQK** (right angle)  
High precision planetary gearbox. Your best choice for a variety of applications.



## Machine tools and manufacturing systems

Maximum precision due to extremely low backlash and higher torsional stiffness combined with exceptional rating of this product.



## Working center for metal, wood, marble, stone

Markedly torsional stiffness and exceptional rating of TQ, TQK & TQF guarantees significant performance of your application.



## Printing and paper machines

Very low backlash and exceptional rating make this product the right partner for high-quality printing processes and other continuous applications.



## Glass working center

Smoother gearing (lower vibration) make this exceptional product suitable for your application.



## Robotics, automation and material handling systems

Higher dynamic due to markedly torsional stiffness and extremely reduced backlash.

# BONFIGLIOLI SERVO PACKAGE FOR YOUR MECHATRONIC APPLICATIONS

As a competent technology partner, our engineering specialists are building, together with you, tailored and forward looking integrated solutions to meet the individual needs and to deliver energy-efficient mechatronic for your application.

Our products are intended to generate value for our customers. We are committed to designing, manufacturing and supplying effective products and services that set a benchmark in the industry.



Complete automation servo package (Gearbox - Motor - Inverter - HMI) from unique supplier.

# BETTER PERFORMING, EFFICIENT & COST EFFECTIVE DESIGNS

Bonfiglioli is your partner assisting you in sizing, fine tuned optimization and selection of a drive train.

Our attention is focused in designing and manufacturing products for your motion requirements but we also have implemented servo tools that make your design process easier.

We are able to optimize the servopackage avoiding over sizing that increases the initial system cost as well as the ongoing operating cost of a servo system.

The screenshot displays the SERVOsoft software interface. The main window shows a 3D model of a drive system for 'Axis 1: Sistema B asse Z - Belt and Pulley'. The model includes a motor, a gearbox, and a belt-and-pulley mechanism. A graph in the foreground shows a motion profile with velocity (red), acceleration (blue), and deceleration (green) curves over time. Below the graph is a table with columns for 'No.', 'Description', 'Time', 'Speed', 'Steps', 'Torque', 'Speed', 'Accel', 'Decel', 'Total', and 'Req. Tor.'.

No.	Description	Time	Speed	Steps	Torque	Speed	Accel	Decel	Total	Req. Tor.
1	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
2	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
3	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
4	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
5	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
6	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
7	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
8	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
9	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
10	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
11	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
12	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
13	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
14	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
15	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
16	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
17	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
18	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
19	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000
20	Start - Home	4.00	0	0	0	0	0	0	4.00	0.000

Req'd

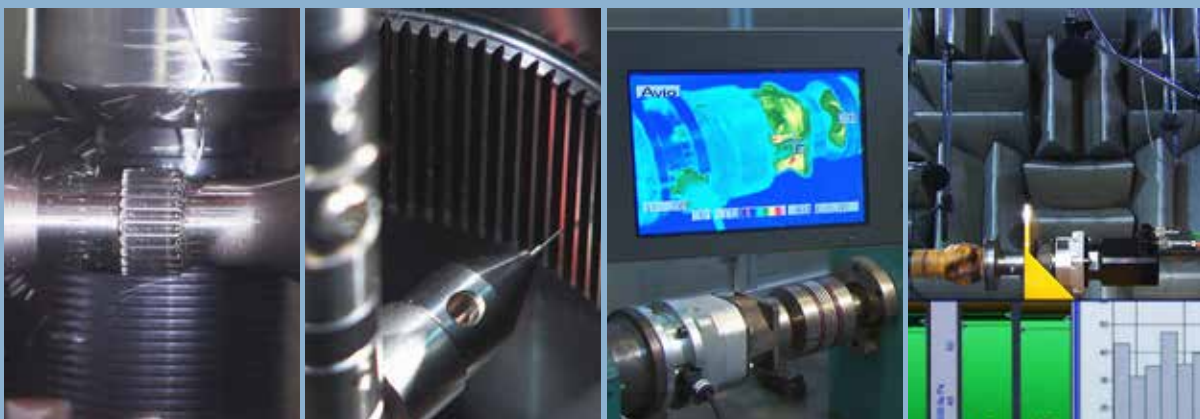
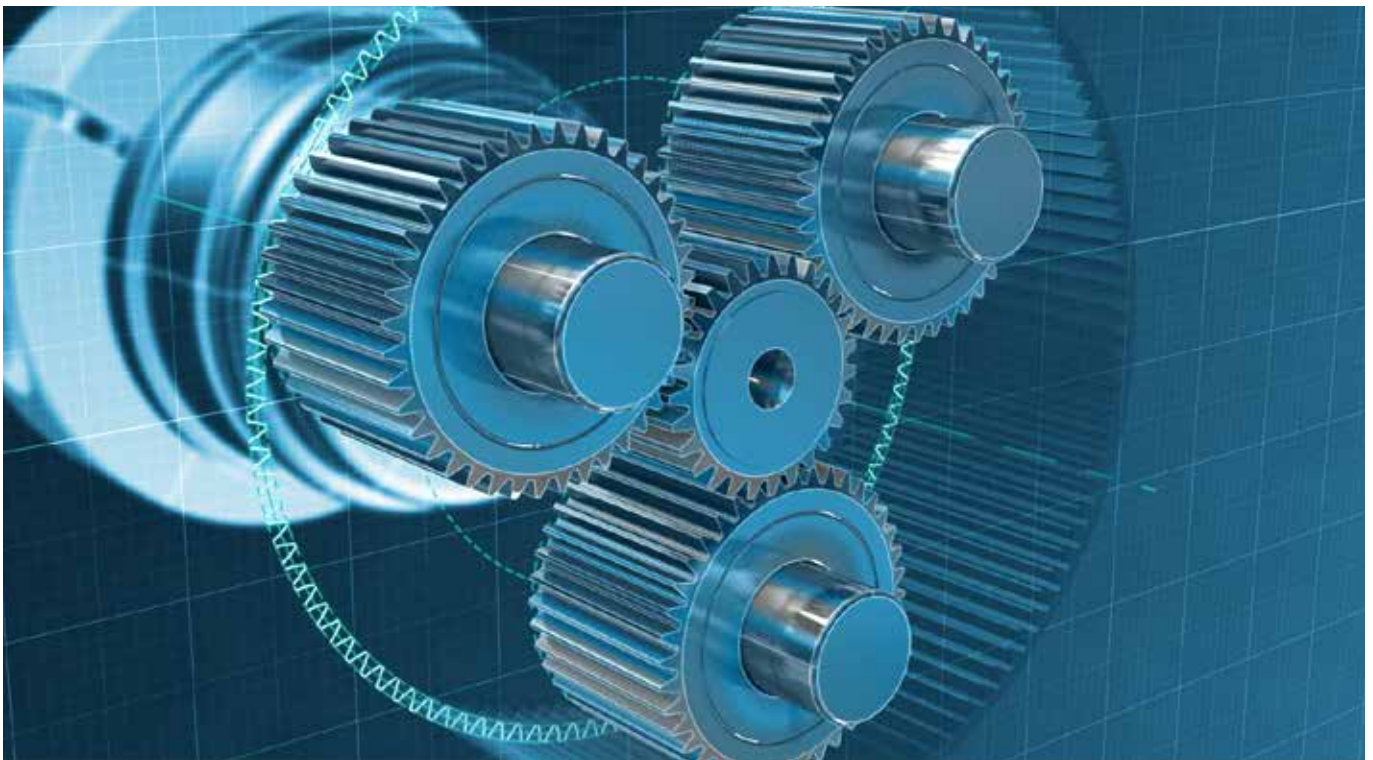
- Sequence: 6,961 s
- Velocity: 1,636 %/s
- Acceleration: 4,002 %/s²
- Deceleration: 4,002 %/s²
- Load + Payload: 0,0392 kg
- Thrust: -12 Nm
- Drive pulley output torque: 14,74 Nm
- Belt tensile force: 421 N
- Input torque: 15,51 Nm
- Rigidity at input: 3,362e+13 Nm/rad

Optimized tailored solution and unique supplier.

## QUALITY & TECHNOLOGY

Product reliability is achieved through a production process geared towards excellence

Advanced machinery has always been central to Bonfiglioli's production system.



Bonfiglioli has always assigned top priority to the quality and efficiency of its machine park and has invested accordingly.

# ONE-STOP SHOP OUR SERVICES

All Bonfiglioli solutions enjoy a prompt and reliable technical assistance worldwide.

Specialist personnel with an in-depth knowledge of the market in which they work provide pre-sales, installation, after-sales and user documentation service.

In details, we offer a full range of services tailored to suit our customers wishes and needs.

- Optimal delivery times for your products & very fast deliveries for unplanned requests with urgent procedure.
- Immediate professional technical support able to define customized solutions.
- Fast response time & delivery for your units to replace in case of time-critical situations.

BEFORE  
INSTALLATION

AFTER  
INSTALLATION



Mechanical & Mechatronic studies



Product customization



Realization of prototypes, tests & analysis reports



Start-up assistance



Maintenance



Customer service

TRAINING



# BONFIGLIOLI NETWORK: GLOBALLY FOR YOU

The Bonfiglioli Group's global and widespread presence means that we are close to where our customers go; no matter where you need us, we successfully serve both new and traditional markets, and ensuring efficiency and efficacy in the delivery of solutions and the development of applications.

Bonfiglioli is a market protagonist thanks to an extensive and widespread presence that spans 80 countries on 5 continents which ensure accurate commercial and logistic coverage of a vast geographic area and allow us to work closely with customers throughout the pre-sales and after-sales stages.

- Headquarters
- Subsidiary
- Production facility



# BONFIGLIOLI WORLDWIDE LOCATIONS

## Australia

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Locked Bag 1000 Plumpton NSW 2761  
Tel. + 61 2 8811 8000

## Brazil

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## China

www.bonfiglioli.cn  
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### O&K Antriebstechnik

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## India

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## Italy

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### Headquarters

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Ben Cat - Binh Duong Province  
Tel. +84 650 3577411





Abbiamo un inflessibile dedizione per l'eccellenza, l'innovazione e la sostenibilità. Il nostro Team crea, distribuisce e supporta soluzioni di Trasmissioni e Controllo di Potenza per mantenere il mondo in movimento.



#### **HEADQUARTERS**

**Bonfiglioli Riduttori S.p.A.**  
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