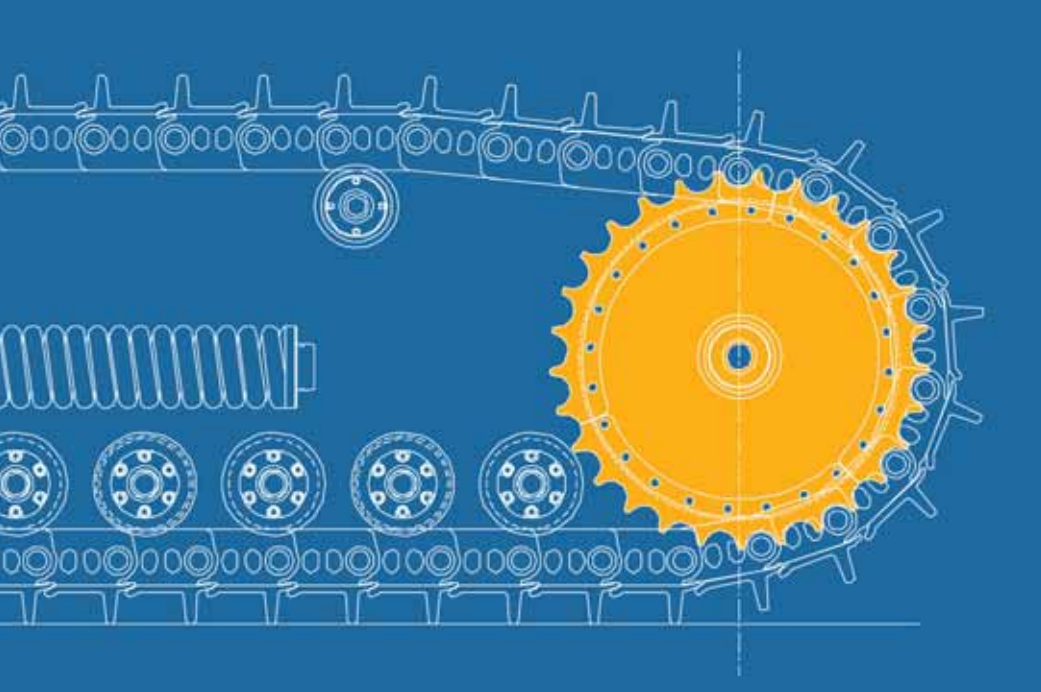


# Segments & Sprockets

The Widest Choice



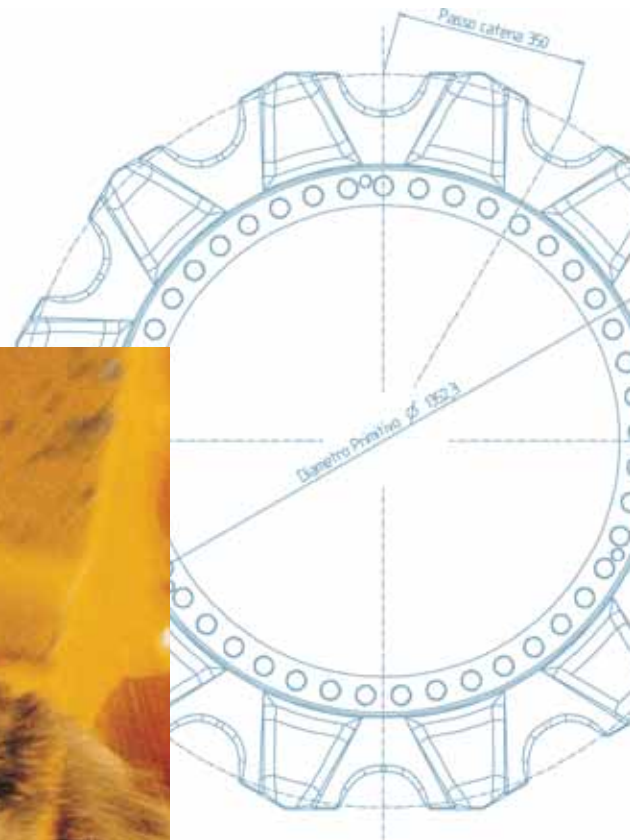
A Company of  
ThyssenKrupp  
Technologies

**BERCO** S.p.A.



# Berco

## Moving Your Business Ahead



### Leadership in Undercarriage

For about 90 years Berco's leadership and research has resulted in the greatest undercarriage value. Quality is the critical link that assures the maximum productivity of your machine. No one has invested more than Berco to assure dependable

**High Quality Undercarriage.** Berco starts with the highest quality steel, then controls hardened depth along with other performance features. As a result Berco's undercarriage is second to none for extended wear life and value.



### Getting the Most from your Undercarriage

Since 1920 Berco has continued to innovate and improve undercarriage performance. High-quality materials and careful manufacturing processes ensure that Berco undercarriage components are reliable, durable and wear at a predictable rate. Longer life and controllable wear mean that you get **maximum undercarriage performance** at the **lowest** operating **cost**. At Berco we call it "**Best Undercarriage Value**"



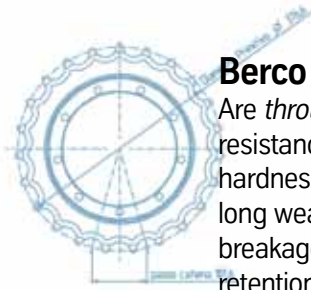
### Berco Process Control

Berco builds value & durability into every undercarriage component. Berco controls processes critical to durability and value, such as: design, raw material, heat treating, manufacturing and because **Berco has control over these processes,** our undercarriages wear at a predictable rate and can be managed as a system.



# Segments & Sprockets

## The Widest Choice



### Berco Segments

Are *through hardened* for improved wear resistance. High surface, depth and core hardness mean Berco segments provide long wear life, resistant to bending, breakage and maximum hardware retention. The bolt-on design reduces your machine downtime.

### Your Best Undercarriage Value

- Hot forged for optimum internal grain flow
- *Through hardened* for high surface hardness (HRC > 50) and tough core (HRC 45)
- Specific low alloyed boron steel for high hardenability
- Precise design and accurate machining of the mounting surfaces ensure best performance



### The Widest Choice

- 3, 4, 5 and 6 teeth
- More than 80 different segment groups, to match any chain or application
- For track-type machines ranging from 8 to 110 ton
- The choice of the leading OEMs

### Customer Satisfaction

Considering that more than 50% of your maintenance costs will go into maintaining the undercarriage, it is not surprising that Berco represents the best choice when the time comes for the replacement. And the best choice is confirmed by the large number of **Satisfied Customers** that **Keep Choosing Berco**

### Berco Sprockets

Deep induction hardened and excellent hardened depth pattern on entire tooth profile provide long wear life. Either from cast steel or from hot forging, Berco sprockets guarantee maximum resistance and durability even in the most severe applications. Accurate machining of hubs and flanges provide perfect interchangeability.

### Your Best Undercarriage Value

- Cast steel or hot forged steel for optimum internal grain flow
- Single Shot Induction hardening for high surface hardness (HRC > 50)
- Effective hardened depth 4÷10 mm for HRC45
- Specific low alloyed boron steel (low alloyed steel for cast version) for high hardenability
- Tempered to resist cracking and chipping
- Optimized design to reduce stress concentration areas
- Hunting tooth design extends wear life
- Accurate machining of the mounting surfaces ensure best performance

### The Widest Choice

- Sprockets, sprocket rims and bolt-on type
- More than 600 different configurations to match any chain or application
- For track-type machines ranging from 1 to 300 ton
- The choice of the leading OEMs



# Adding Value to Our Products

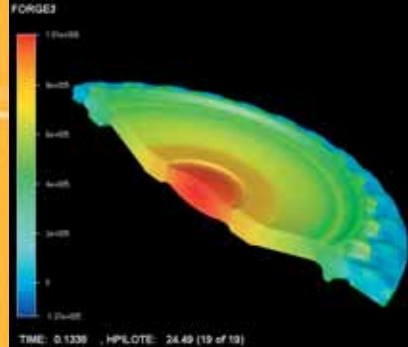
## Adding value to Your Business



3D modeling of a sprocket



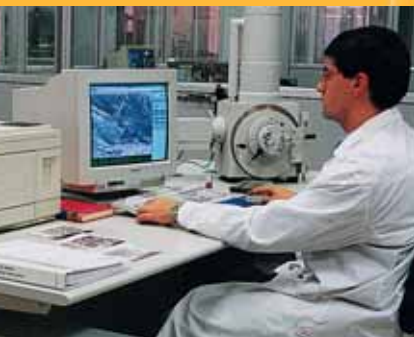
3D modeling of a segment die



FEM analysis of a forged sprocket



Rapid prototyping



Electron microscope with microanalysis



Stress analysis at extreme temperatures

## Making a Superior Product

It all begins in the design stage, Berco **Research & Development** engineers employ state of the art computer design. The use of 3D modeling and finite element analysis (FEM) allow us to design and evaluate a component before it is built.

Our **Rapid Prototyping** enables Berco's engineers to optimize a design before spending money in tooling.

Berco **Metallurgy Laboratory** employs advanced machines such as an electron microscope with microanalysis, a spectrophotometer, tribometers for wear tests, MTS presses for static and fatigue tests on materials and components.

**Photo-elasticity** and **strain gauge** techniques are commonly used for stress and fatigue analysis on individual and assembled components.

Stress analysis at **extreme temperatures** (-70°C ÷ 250°C) are also carried out.

**Reliability Test** on components (ex. rollers) are carried out to determine life and performance in a variety of field applications.

**Artificial Intelligence** and **Vision** techniques are currently being developed to automatically inspect 100% of components. This reduces defects (ex. after forging or heat treatment) attributable to manufacturing to almost zero.

Huge efforts are also devoted to the development of **New Materials** and improvement of the **Heat Treating Processes**, to guarantee longer product life and **Superior Products**.

Having supplied leading OEMs for decades, **Berco's Engineers** and product specialists can help you design and manufacture the right undercarriage, using high tech software, tools and expertise. Berco can also help you reduce development and engineering time, tooling expenses and facility costs. **Berco Adds Value** not only to our products but also **to Your Business**.

# State of the Art Production

## State of the Art Components

With a capacity of over **13,000 ton** of finished product the Berco Sprocket & Segment Department manufactures more than **160,000 components** per year.

**Segments.** From the central warehouse the raw materials are transferred to one of the automatic cutting & forging stations. Segments are then drilled and machined, while through hardening complete the process.

**Sprockets.** Both cast and hot forged (in a 32,000 ton press) sprockets are induction hardened on the entire tooth profile. Afterwards they are machined in vertical lathes and drilled in dedicated machining centers. Final inspections of the products guarantees the Total Quality of all components.

### Automated Processes

#### Automatic Quality

The entire production process is fully automated and computer controlled via Computer Manufacturing Technology systems. This guarantees highly reliable processes and constant quality of the products.

#### The Right Product at The Right Time

A vast variety of raw material and flexible manufacturing give the competitive advantage of short lead times while matching your specific need.

That's what we also call **Customer Satisfaction.**

### Heat Treated

#### to Treat You Even Better

Quality materials and state-of-art manufacturing are not enough to guarantee the quality of the finished products. That's why the heat treating is carried out making sure that all process parameters (temperature gradients, time, quenching temperature, etc.) are constantly monitored online. Hardening upgrade mechanical properties for superior wear resistance and longer product life.



Through hardening



Single Shot Induction hardening



Heat treating automated station



Sprockets machining

# We Care



## Customer Service

We have a large dealer network covering 70 countries in the world. They have been in business for decades, they know the business and they know it from their customers' point of view. They understand **customers' needs** and they know that their success is tied to their customers' successes.



We **support** our dealers with our professional sales force. We train them, we provide them with the right marketing tools and advanced technological systems. We have developed a computer based integrated system **BOPIS** (Berco Online Product Information System) enabling a dealer technician to use a laptop computer from the field to consult our database and easily find the right answer.



**We back you, wherever you are.** We work with our dealers to establish a parts and service presence near you, in order to always have the right product at the right time in the right place. It is customer satisfaction that has built our **Berco Track Record**.



## Leadership in Environmental Development

Not only do **we care** about our **customers** supplying quality products manufactured under **ISO 9001** certified processes, but also **we care** about the **Environment**.

Since Jan 2000 Berco is **ISO 14001** certified and has adopted **Environmental Procedures** throughout the entire manufacturing process. We have an **Environmental Strategy** and we continuously check on the progress made toward the set Objectives.

### Getting More out of Less.

Reduction of energy consumption, improved use of materials and minimization of waste, allows for a lower impact on the environment. We have given preference to environmentally friendly transportation like trains and boats and we have begun redesigning our packaging in order to use recyclable materials. We have changed our painting processes and now use environmentally friendly water-based paint, with a reduction in the amount of pollutant emissions. We have adopted a closed loop cooling system that reuses the water from our heat treatment processes instead of emitting it into the environment.



# Leader in Quality

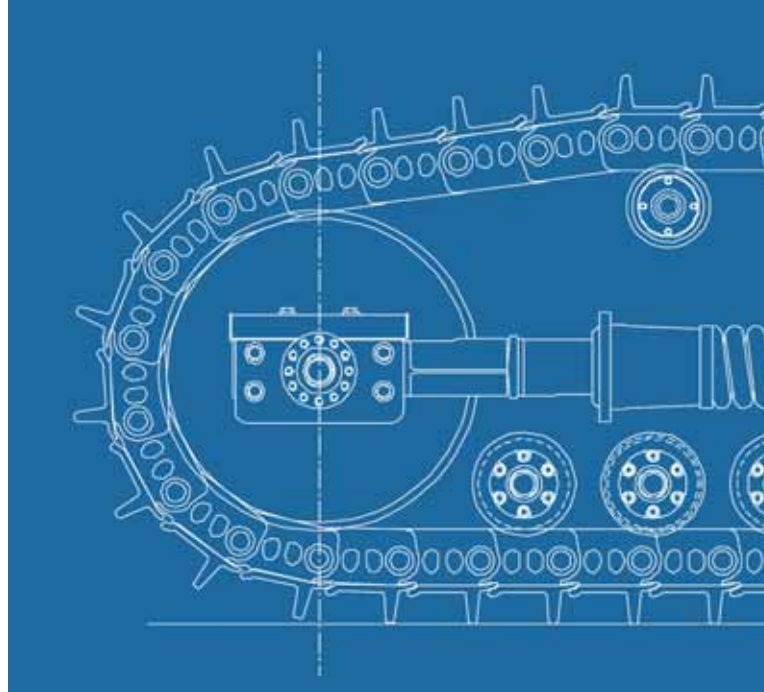


# Leader in the Environment



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The specifications and processes described in this brochure are subject to change without notice

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