

## ENGINEERED SOLUTIONS FOR THE METALS INDUSTRY

### GAIN GREATER EFFICIENCY, IMPROVED RELIABILITY AND MORE UPTIME

When you need products tough enough to perform reliably in harsh metals environments, Timken delivers.

We are an industry leader in the metals market, strengthening those who engineer metals equipment, as well as those who operate and service steel mills. As a customer, you gain unmatched technical support, service, product quality and consistency, and one of the broadest product portfolios in the world.

### UNRIVALED APPLICATION AND TECHNICAL SUPPORT

As you push for even greater operational efficiency and reliability, whether in new installations or existing mills, we can help you reach your performance expectations through custom bearing solutions and industry know-how.

We have provided premier metals-related technical and engineering capabilities for more than a century. We understand the market, applications and the extreme conditions casting operations and rolling mills face – from heat to contamination to shock loads.

### TIMKEN ADVANTAGES

#### Superior products and services.

Gain products that meet or exceed OEM quality requirements as well as our own rigorous quality standards and manufacturing processes. We design our products using proprietary design tools such as our bearing performance and prediction software helping to ensure the right product is specified for your applications.

#### More value.

Fast responses to your requests. Bearing repair services that can reduce costs and strengthen the performance of your equipment. Technical team to provide solutions to application challenges. A total-system approach for specifying the right product for each application. It's all part of the value we deliver to you.

### APPLICATIONS

Smart solutions for:

- Continuous casters
- Rolling mills
  - Flat products
  - Long products
- Auxiliary equipment

### GAIN SOLUTIONS THAT:

- » **Improve uptime.** We collaborate with you and apply the extensive technical know-how of our experts, combining lab and field knowledge, to help ensure the right bearing is designed for your application – supporting improved equipment uptime.
- » **Give you more choice.** With one of the broadest metals product portfolios in the world, we have what you need to operate your rolling, casting and auxiliary equipment – including an expansive range of tapered roller bearings, cylindrical roller bearings, spherical roller bearings and mounted bearings.
- » **Solve problems.** You have challenges. We have solutions. Problem-solving is second nature for our team of application, sales and service engineers. We mobilize quickly to address your challenges, providing on-site troubleshooting, technical assistance and training.
- » **Make things easier.** Gain a technical expert – rather than just a supplier – that you can depend on. You also have access to local Timken engineer and service support wherever you're located.

# A BROAD OFFERING FOR METALS APPLICATIONS

Application	Bearing Product	Bearing Type(s)	Opportunities
<b>Rolling Mill Stands</b>			
Work rolls, intermediate rolls and backup rolls	Tapered Roller Bearings	TQOW and TQOWE 2TDIW Sealed Rollneck Bearing TQITS and TQITSE	Slots on the cone faces provide lubrication access to cone and fillet ring faces for reduced wear Two central cups offer better load distribution and improved control of width through the inner rings • No adjustment of take-up rings needed Unitized, preset assembly, with or without grease • 2TDIW construction standard, improved sealing and grease consumption Mounts tight to the roll for accurate control of the interference fit • Operational clearance is more precise Extended inner ring flanges to accommodate chock seals
Back-up roll radial position for flat product mills   roll neck for long product mills	Cylindrical Roller Bearings	RX RY and RYL	Separated rib rings allow for complete disassembly for inspection • Available with unfinished inner rings for post mounting roll grinding Designed for long-product mills • Maximize bearing life and optimize bearing handling • RYL steel cages reduce roller drop and bearing damage during chocking
Backup and work roll thrust positions for flat product mills	Tapered Roller Thrust Bearings	TDIK	Steep angles accommodate thrust in both directions • Cone is keyed to the shaft to prevent cone rotation and bore fretting • Available sealed and with integral spring system
Heavy-duty flat product mills with axial shift and long product mills	Tapered Roller Thrust Bearings	TTDWK and TTDFLK	Available with tapered central ring or flat central ring • Tapered central ring enables a smaller overall width of the bearing
Thrust positions for piercing mills, sendzimir mills and auxiliary equipment	Tapered Roller Thrust Bearings	TTHD	Offer up to 40 percent more capacity than spherical or cylindrical roller bearings with the same envelope in unidirectional loads
Screwdown thrust bearing	Tapered Roller Thrust Bearings	TTHDFLSX and TTHDFLSV	Full-complement design for maximum capacity • Case-carburized construction for shock loads and debris resistance for high reduction gap setting
Thrust positions for gear boxes and auxiliary equipment	Spherical Roller Thrust Bearings	TSR and 2TSR	Maintains a high-thrust capacity and accommodate misalignment • 2TSR comes preloaded with springs
<b>Continuous Casting</b>			
Bender section support rolls	Needle Roller Bearings	NA	Low radial cross-section   high radial dynamic and static load rating • Special clearance and higher stabilizing heat treatment
Bender section support rolls	Cylindrical Roller Bearings	NNCF	Integral flanges on inner and outer rings manage light axial loads in one direction and permit small axial displacement
Caster rolls – fixed and float positions	Spherical Roller Bearings	EJ ADAPT™	Hardened stamped steel window-type cage with face slots improve lubrication • Accepts misalignment during operation • High radial load capacity ADAPT bearings reflect the best of spherical and cylindrical bearings to manage full misalignment and high axial displacement capabilities
<b>Table Rolls</b>			
Transfer table Runout table	SAF/SNT Solid Block	Spherical Roller Bearing	Spherical roller bearing compensates for misalignment Replaceable inserts and seals Serviceable housing, no need to replace • Multiple mounting, locking, housing and sealing options available

In addition to rolling mill stands and continuous casters, Timken offers a full line of bearings for steelmaking and auxiliary equipment. Our spherical roller bearings and ladder cylindrical roller bearings manage shaft deflection in basic oxygen furnaces and argon oxygen decarburization furnace pivots.

Timken tapered, spherical, cylindrical and ball bearings deliver performance in auxiliary equipment, including:

- Saws
- Slitters
- Crop shares
- Mill drives
- Guiding rolls
- Gearboxes
- Pinion stands
- Electric motors
- Scrap choppers
- Edgers
- Coilers
- Fly wheels

To learn more about our range of options for the steel industry, contact your local Timken representative or visit [www.timken.com](http://www.timken.com).

# TIMKEN

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets bearings, gear drives, automated lubrication systems, belts, brakes, clutches, chain, couplings, linear motion products and related industrial motion rebuild and repair services.

**Stronger. By Design.**

[www.timken.com](http://www.timken.com)