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**MORGAN VEE NO-TWIST MILL**  
THE MOST RELIABLE ROD MILL YOU  
CAN BUY - AND THE MOST VERSATILE

# HIGHEST OPERATING SPEEDS GREATER PRODUCTIVITY. GREATER VERSATILITY.

## WORLD'S MOST ADVANCED NO-TWIST ROD FINISHING MILL

Speed means greater production, key to a successful mill operation, but a mill's promised capacity should be proven, not merely theoretical.

For Primetals Technologies, that proof exists in mills around the globe. More than 100 strands with the improved design of the Morgan Vee No-Twist® mill have demonstrated operations at speeds of up to 120 m/s and sustained, reliable production rates of more than 150 tons/hr. The first development of the No-Twist Mill by Morgan Construction in the early 1960s has led to the installation of more than 225 strands worldwide, most of which are still in operation today.

Versatility is another major requirement you face every day. Does your mill handle different steel grades? Would greater variability allow you to serve more customers and improve your plant's utilization? Your mill should be equipped to meet these needs. The equipment supplying speed and versatility needs to be

durable to withstand the rolling mill environment and remain reliable with minimal maintenance.

The Morgan Vee No-Twist Mill can roll grades ranging from carbon steels to tough-to-roll alloys and stainless steels. Mills can be supplied with average reductions of anywhere from 16% to 23%. Morgan Vee No-Twist Mills can be built with four, six, eight, or ten roll stands. The mills can be configured with any combination of 250 mm, 230 mm or 160 mm UHD (ultra heavy-duty) housings, depending on your mill's requirements. All housings can have provisions for remote adjustments under load.

Our Vee No-Twist Mill solution can be enhanced with the addition of specialized mechatronics packages, including systems for monitoring bearing temperatures and lube oil water content. These systems provide real-time status of conditions in the block and can also be integrated into our standard automation solution.

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As the pioneers of key technologies in long rolling, Primetals Technologies has the knowledge and experience to provide the best solution for your mill.

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## ADVANTAGES OF MORGAN VEE NO-TWIST® MILL

- Allows you to roll in excess of 150 tons/hr.
- Achieves superior grain structure with tight tolerances through controlled temperature rolling.
- High rod surface quality and longer roll life with tungsten carbide rolls.
- Unmatched performance for setup and operation with Morgan guide quality and reliability.
- Additional product temperature and quality control, with optional cooling guides.
- QuickCool™ headers provide the best roll cooling technology available today.
- Easy to service motors with the unique entry end drive configuration.
- Reduces power consumption and component wear with drive design that enables the disconnection of unused finishing stands.
- Fast, reliable commissioning and start-up, backed by experience on hundreds of rolling mills worldwide.
- Fast roll changing and improved mill utilization.
- Less unscheduled downtime and smaller parts inventories with a custom designed spares program.



Housing stand with new cooling headers



Convenient roll housing exchange



High load capacity housings



Morgan Vee No-Twist Mill set for production

**LOW NOISE - LOW WEAR AND TEAR**

All major drive components of the Morgan Vee No-Twist Mill are below floor level, improving visibility and convenience for mill crews. Most mill piping is also below floor level, reducing wear and tear. Upward mounted, alternating left- and right-hand facing roll stands with integral bevel gear units are secured to a heavy, vibration-absorbing base, providing lower noise levels.

**UNIQUE DESIGN - ADDED FLEXIBILITY**

The Morgan Vee No-Twist Mill offers the added flexibility of front entry drive design, which allows easier access to the motor, no restriction on motor size and the ability to disconnect selected line shafts when not in use. This reduces power consumption and minimizes wear and tear on high speed components, therefore lowering maintenance and operating costs.

**PROVEN QUALITY - LONGER LIFE**

High-quality sealed roll housing drive components provide reduced maintenance and longer life, due in part to the easy lift-out feature. Moreover, the lubrication system is robust and can easily be maintained.

**EASY MAINTENANCE - REDUCED COSTS**

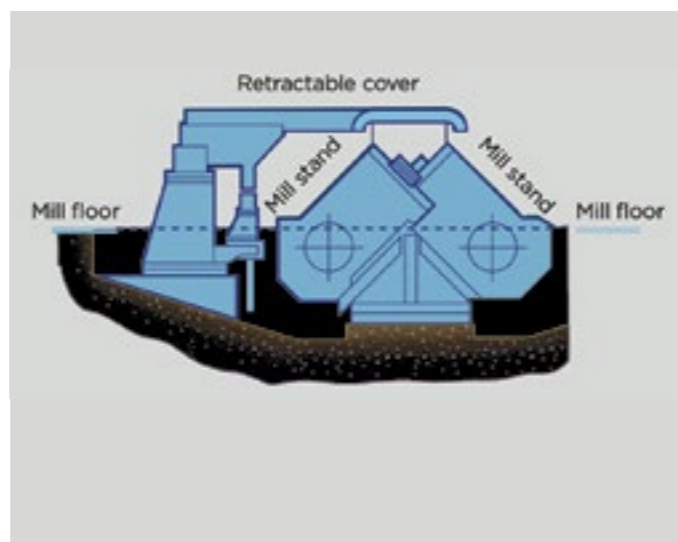
The mill is fully accessible, thanks to the safety cover design and vee orientation of stands. The mill crew can operate and maintain the mill from both sides for convenience and time savings. This offers the operator greater protection when the mill is in place and faster access when lifted. Also, roll housing exchange is relatively simple, with easy-to-remove filler plates and handling fixtures.

**HIGH LOAD CAPACITY**

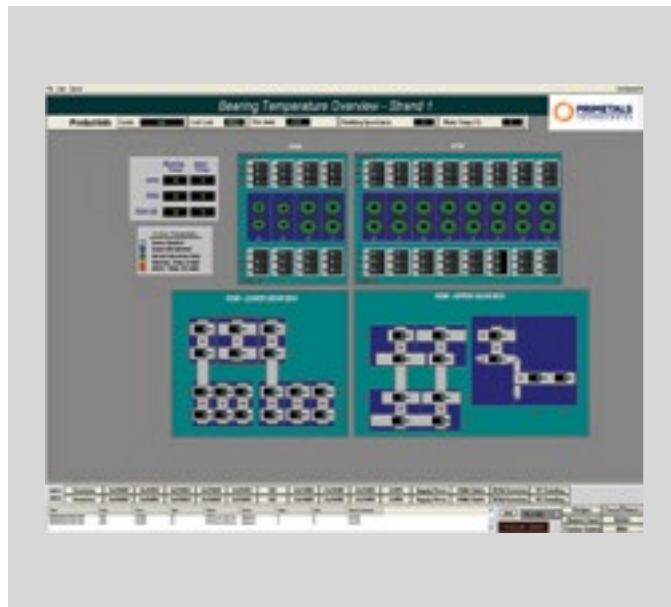
The exceptional ability of the ultra heavy-duty roll housings to handle high separating forces differentiates the Morgan Vee No-Twist Mill units from our competition. With a capacity of more than 470 kN, the roll units can handle production of hard-to-roll alloys and thermomechanical rolling of carbon and low alloy steels. Thus, you have the ability to make products with better mechanical and metallurgical properties. The high stiffness of the housings also enables you to achieve very good tolerances consistently from billet to billet.

**FLEXIBILITY THROUGH INTERCHANGEABILITY**

Your operation gains more flexibility, thanks to the interchangeability of the popular 250 mm, 230 mm and 160 mm roll housings throughout the complete family of high speed pre-finishing, Morgan No-Twist, mini-block and Morgan Reducing/Sizing Mills. You can minimize your spare parts inventory and simplify maintenance.



All major drive components are below floor level



Bearing temperature operator screen

### MECHATRONIC SOLUTIONS

The optional bearing temperature monitoring system provides a means to detect excessive wear or lubrication problems and prevent unnecessary downtime for your mill. Lube oil monitoring continuously checks temperature and water content to aid in maintenance.

### PREDICTIVE MAINTENANCE WITH VIBRATION MONITORING

Vibration monitoring tracks and trends the operating conditions of your critical bearings and gears to allow for planned maintenance activities. The removal of unplanned downtime also provides cost control and allows your equipment to operate for the full lifecycle of the mill bearings to keep your mill producing.



Guaranteed mill spares - utilizing the latest manufacturing technologies and processes

### SPARE PARTS MANAGEMENT

Custom-tailored spare parts programs allow for minimum inventory levels and spares planning to control your operating cash flows. Critical mill spares are readily available in stock in our globally located parts warehouses to ensure key components are available whenever you need them.

### RECONDITIONING AND REBUILDING SERVICES

Get the most from your initial mill investment without having the capital expense of full replacement. Many critical machines can also be simultaneously upgraded to newer technologies focused on increased reliability and design capacities.

# EXCELLENCE FROM EXPERIENCE

## SELECTED SUCCESS STORIES WITH MORGAN VEE NO-TWIST MILLS



### QUALITY PRODUCTS AT HIGH SPEEDS

**Customer**  
Hyundai Steel Company, Dangjin, Republic of Korea

**Plant type**  
Combination straight bar, bar in coil and wire rod mill

**Our solution**  
The wire rod mill incorporates an 8-stand Morgan Vee No-Twist Mill, along with Morgan Vee Mini-Block pre-finishing mills, Morgan Water Boxes, a Morgan Reducing/Sizing Mill and Morgan High Speed Laying Head.

**Technical data**  
110 m/s maximum finishing speeds, 160 tph, plain rod from 5.5 - 26.0 mm, plain carbon, spring steel, boron steels, free cutting, special alloys, bearing and cold heading qualities

**The result**  
The new mills provide a wide variety of high quality products, particularly for the automotive market, which requires tight dimensional tolerance and excellent surface quality, along with the best metallurgical quality and uniformity possible.



### BROADER PRODUCT RANGE, HIGHER PRODUCTION

**Customer**  
Votorantim Metais, Resende, Brazil

**Plant type**  
Single-strand rod mill (future two-strand)

**Our solution**  
Supply of a new single-strand rod mill for the production of high quality rod products in a wide range of sizes. The front-end drive Morgan Vee No-Twist Mill has the ability to disconnect selected line shafts when they are not in use.

**Technical data**  
500,000 tpy per strand, 110 m/s maximum speed, 5.0 - 24.0 mm plain rod, 6.3 - 16.0 mm HYQST quenched and tempered rebar

**The result**  
The new rod mill provides the capability for expanded product size range and quality.



### NEW WORLD TONNAGE RECORD ESTABLISHED

**Customer**  
Zhang Jia Gang Shatai Steel Co., Ltd., Shajin, China

**Plant type**  
Single-strand rod outlet

**Our solution**  
Addition of a rod outlet with an 8-stand Morgan Vee No-Twist Mill onto an existing bar mill enables the plant to increase production of quality rod products.

**Technical data**  
166 t/hr rolling rate for production of > 1,000,000 tpy on 8.0 - 16.0 mm rod

**The result**  
In addition to producing high quality rod product on a consistent basis, this mill is the highest tonnage rate Morgan Vee No-Twist Mill in the world today.

**Primetals Technologies USA LLC**

A joint venture of Mitsubishi Heavy Industries and partners

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