Vertical Roller Mill repair

Enduring Performance...

Stronger, with Castolin Eutectic

- Costs reduction
- Increase productivity
- Reliable partner
- Flexibility
- Experts of VRM maintenance

Castolin Eutectic
Eutectic Castolin
Vertical Roller Mill repair

Our long experience with Vertical Roller Mill repairs

In the 70s, vertical roller mills became increasingly dominant for grinding raw materials mainly for the cement industry due to their high energy efficiency and excellent drying capacity. For many years Castolin Eutectic expert know how together with our state-of-the-art technologies have been used to repair VRMs throughout the world, increasing dramatically their lifetimes.

Maintenance and repair of VRMs is a highly technical and specialized business, which should be performed by experts. With the experience gained from repairs worldwide, Castolin Eutectic has developed its own specialized Vertical Roller Mill program, using specialist equipment, highly skilled technicians respecting our specific VRM welding procedure, and a unique TeroMatec EO8338 (open arc) wire developed in-house by our Castolin Eutectic laboratories.

Excellent references

Together with our partners, during the last decades we have proved that preventive maintenance on VRMs can extend the lifetime by as much as 100%. Such VRM maintenance operations have been performed on over 60 VRMs, with 80% of on-site repairs but also repairs in our workshops. Our specialist are highly adaptable experts having worked on more than 30 different models of vertical roller mills for more than 20 cement and power companies throughout the world. From small VRM (roller: Ø 1.65m and table: Ø 2.75m) to huge ones (roller: Ø 3.2m and table: Ø 5.5m), we have been successful on many types of VRM, from producers such as Polysius, Loesche or FLS, and have worked with most of the known international cement companies.
We are flexible! Jobs on-site or in our facilities

We have general purpose facilities in most countries, all fully equipped with “state-of-the-art” technology, diverse process technical and highly skilled technical specialists. Depending on your request, the job can be undertaken in our own facilities as well as at your plant. When your Vertical Roller Mill component is too large to be moved, for example, our CastoLab® Services maintenance experts will visit your premises to solve the problem on-site.

Supporting our Experts

As an international program, our VRM specialists are supported by the group’s full range of manufacturing, R&D, training and other resources that have made Castolin Eutectic a long-established leader worldwide in fighting wear and providing specialist joining solutions. They also benefit from the experience of thousands of specialists thanks to the key industry programs, improving communication about technical best practice between experts.

TeroLink®

The unique TeroLink® database of Castolin Eutectic contains more than 7,600 fully documented approved Case Studies from around the globe. Thanks to this unique database you will enjoy the know-how of thousands of specialists coming from all parts of the world. The Case Studies include pictures, application description and cost saving analyses. These complete welding procedures can be exchanged and are updated on a regular basis.
Vertical Roller Mill repair

Specific equipment installation

Thanks to our long experience with VRM repairs we have developed a special equipment installation, from the traction systems through the earthing points to the power sources and controls. All equipment has been especially designed for VRM repairs.
Some of Castolin Eutectic Applications on VRM

- Coal mill cone repairs with CDP®
- Chutes done with CDP®
- VRM wall with CDP®
- Separator blades done with CDP®
- Separator discs done with CDP®
- Repairing rollers with TM EO8338
- Vertical mill slag protected with CDP®
- Walls done with CDP®
- Air guide cone cladded with NanoAlloy®
- Cone protector
- Repairing tables with EO8338
Vertical Roller Mill repair

CastoLab® Services Workshops

Our mission is to develop applications and solve customer problems. The CastoLab® Services can develop advanced procedures to allow transfer of complete solutions to end users. We offer a complete and comprehensive service for the maintenance of machine parts and major components subject to extensive service wear or needing repair. Work can either be undertaken in our workshops or alternatively on site. Often the parts being repaired or protected need to be produced on a regular basis, and here “specialist prepared parts” can be produced in unique manufacturing environment, from 10’s of parts to 100,000 of parts per year. Based upon hundreds of successful applications approved by our clients across the globe, the CastoLab® Services can provide optimized solutions to combat specific wear in your VRM.

Repairing Worldwide

With more than 2,000 people worldwide in over 100 countries and more than 700 international Application Specialists in the field, we can provide unbeatable services all over the world. Our Applications experts can literally be at your plant in very short times, allowing us to give you unsurpassed services and support.
Your Industry Partner

A century at the forefront of protective materials technology has positioned Castolin Eutectic as the world’s premier industrial partner. Our comprehensive know-how is unrivalled, and our industry partnerships continue to thrive. We provide solutions to all of the major companies operating in industry with global industrial programs for steel, cement, mining, power, oil, waste & recycling, etc.

Cement plant
From the quarry all the way to ready mix blenders, we have innovative solutions for many applications: roller press, kiln tyre, hammer crushers, fan blades, fan housing, buckets, drag chain beds, clinker breaker disks, raw mill fans...

Mining
From the extreme cold of Canada to the heat of Chile and Australia, we have a deep knowledge of application solutions for the wear problems in this industry: boring tools, crushers, press rolls, sieves, impact liners, excavation teeth, shovel liners, scraps, conveyors.

Power generation
We have a detailed understanding of the major wear problems within the power generation industry and can provide you with industry-tested application on: screws, boiler nozzles, coated preheater tubes, breaker arms, conveyor bed, coal mill, water panel, ignition umbrella for the oil burner, boiler tubes, fans...

Steel industry
From raw material processing through the blast furnace and to steel forming, we have innovative solutions for: cooling roller trains, pumps, run-out table rollers, rolling mills, rolling cones, manipulator jaws, hot shear blades, mandrel shafts, guide rollers, sinter crushers...
Vertical Roller Mill repair

Wear analysis

The latest state-of-the-art testing machines and facilities are essential to accurately measure and understand the complex relationship between chemistry, process and application. We work with world experts in Technical Universities for testing and modeling in addition to having fully equipped labs with electron microscopes and wear test facilities.

New materials development

Providing complete solutions for VRM maintenance and performance improvement is our goal. Thanks to our R&D department and the long experience in maintaining mills, we have developed special products providing unbeatable wear resistance: our wear plate range (CDP®), our NanoAlloys® as well as the TeroMatec EO 8338 (described on page 9).

NanoAlloys®: Castolin Eutectic has a powerful weapon in the EnDOtec cored wire alloy for its war on “High Load High Wear” by attacking abrasion and erosion with a new approach. The world’s first EnDOtec NanoAlloy™ formulation, the EnDOtec DO*390N was developed to provide outstanding abrasion and erosion resistance. This was achieved by using a lower cost ferrous alloy with bulk hardness values reaching 71HRC! The DO*390 N is ideal for protecting: air guide cones, air guide plates, cracks in rolls...

CDP® aligned microstructure increases the wear life
Wires manufacturing

The TeroMatec® EO8338 is the unique open arc wire formulation, developed and manufactured in Castolin Eutectic’s own modern plants using specially designed production equipment and procedures in accordance with ISO 9001 and EN 29001 quality assurance standards.

The EO8338 open arc wire has been developed especially to protect the roller and table of the vertical roller mills, and has been tested in real conditions. It brings extra smooth surfaces and extreme wear resistance.

Each batch (after wire drawing and baking), is weld tested for consistent chemistry, properties & usability before precision spiral spooling and protective packaging for stock.

CDP® manufacturing

One becomes leader in Wear and Fusion Technologies by listening to customers and providing new solutions. Responding to the need to produce large wearfaced surfaces quicker than by manual welding, we manufactured our first “WearPlate” with a robotized unit 15 years ago. Today we run more than 26 such units around the world and provide the widest range of wearplates on the market under the brand name Casto-Dur Diamond Plates® (CDP).

Innovations have included the patented powder fused plate, the first XuperWave weld bead concept, PTA overlay plates with 60% Tungsten Carbide, the first impact resistant plates and first oriented crystal structure.

Today, our new innovations also include novel ways to design and construct complex components and "ready for service" prepared parts with these new materials.

CDP® production cell in China
## Vertical Roller Mill repair

### Some Successful Examples

<table>
<thead>
<tr>
<th>Type of VRM</th>
<th>VRM producer</th>
<th>Rebuilding location</th>
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<tbody>
<tr>
<td>CBC 753 RB</td>
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<td>BM753RB</td>
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<td>Atox 45</td>
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<td>4 Raw Mill Rollers</td>
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<tr>
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<td>Insitu</td>
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<td>MPS 3750 B</td>
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Castolin Eutectic officially recommended by
History of Castolin Eutectic

1906  Foundation of Castolin in Lausanne, Switzerland by Jean-Pierre Wasserman. His stroke of genius: to discover a way of welding cast iron at low temperature

1940  Foundation of Eutectic Welding Alloys Corporation in New York

1952  Foundation of Castolin France

1959  Foundation of Eutectic Japan Ltd

1962  Foundation of Eutectic India Ltd

1960’s  International consolidation under Castolin Eutectic

1970’s  Development of Cored wire and production

1991  CDP Wearplate development and production

1996  Creation of Global CEMTEC initiative and Global Industry Program

2005  Part of the Messer World.

2006  100 years Anniversary

Together with our sister companies, the Messer Group, can offer customers a very powerful range of products and services. Being Part of the Messer World means:

- Investment of over € 420 million
- More than 6,000 motivated employees
- Over 100 factories to meet customer needs
- Technical sales support in over 120 countries
- 2,000 technical sales people in the field with our customers every day

Castolin Eutectic received the Frost & Sullivan award in recognition of demonstrated excellence in customer service leadership within the European Repair & Maintenance Welding industry. This award reflects the close collaboration with our customers, and their satisfaction, this for more than a century.

Frost & Sullivan award for Customer Service

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www.castolin.com  www.eutectic.com

Broadest range of wear and specialist wear and joining products
Stronger with... Castolin Eutectic

WEAR & FUSION TECHNOLOGY

Ask for a demonstration from our Application Specialists.

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