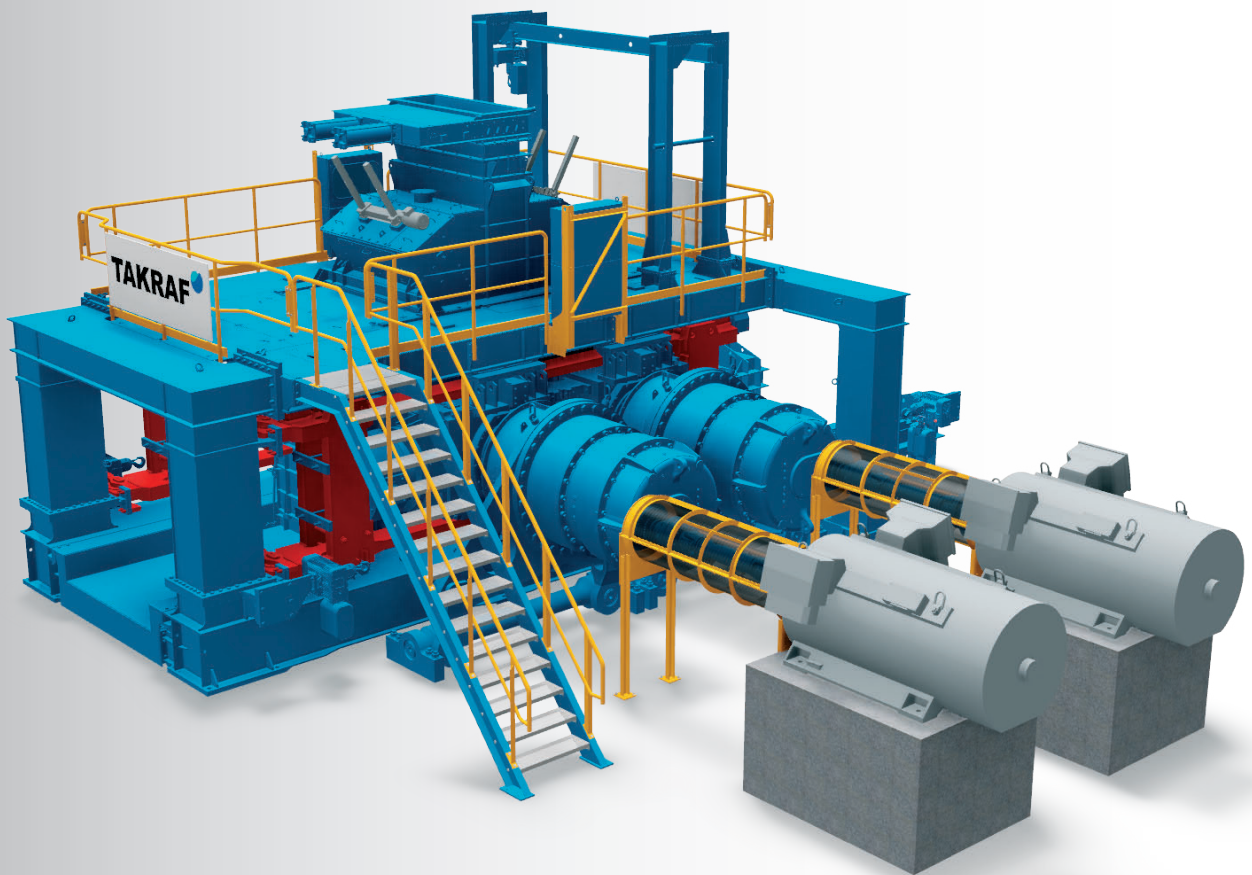


# TAKRAF<sup>®</sup>



## GRINDING TECHNOLOGY

Optimized solutions for comminution within the mining and cement industries

*Innovation out of tradition – It pays to talk to a specialist!*

TAKRAF Group, through its established and well-known brands, TAKRAF and DELKOR, provides innovative technological solutions to the mining and associated industries. We leverage our experience, acquired over more than a century, to provide equipment, systems and services that best satisfy our clients' mining, comminution, material handling, liquid/solid separation and beneficiation requirements. Owners and operators around the world trust our engineered solutions to lower the total cost of ownership and reduce environmental impact by improving efficiency with safe and reliable equipment. For sustainable solutions backed by expert service you can rely on TAKRAF Group. Visit us at [www.takraf.com](http://www.takraf.com).

**We at TAKRAF Group are committed to environmental and social sustainability in all our business interactions and have adopted a Zero Harm approach under our global safety promise.**

Owners and operators around the world are confident that TAKRAF Group provides the most suitable solution to their unique project requirements. We assist our clients in overcoming the most complicated challenges in transforming the resource industry towards a sustainable future. We focus on specific areas that are critical for reliable and sustainable operations, as it is here where we best support our clients with innovative solutions that save energy, lower environmental impact and meet or exceed operational requirements.

We are recognized as the world's leading technology provider when it comes to run-of-mine and bulk material handling. Our TAKRAF brand portfolio ranges from overburden removal, to raw material extraction, comminution, conveying, loading/unloading, processing, homogenizing, blending, storage and final loading for onward shipment.

We leverage our global organization and aggregate our extensive expertise by offering a unique combination of both application experience and product based knowledge. Clients therefore benefit from direct technical discussions with our local specialists, who are able to draw upon this expertise and provide the most suitable local solution and service that enhances safety, improves sustainability, decreases costs and increases efficiency.

Our commitment is summarized by:

S a f e t y | R e l i a b i l i t y | I n n o v a t i o n | S u s t a i n a b i l i t y

## OUR GRINDING & CRUSHING COMPETENCE

The extensive know-how of our highly qualified engineers creates a solid foundation for the engineering and construction of such equipment.

You benefit from fast delivery and assured high quality. Due to our in-house production we are also able to offer manufacturing solutions "Made in Germany". The highest quality standards are maintained at the Lauchhammer site. We are certified according to ISO 9001, ISO 14001 and BS OHSAS 18001.



## TAKRAF HPGR

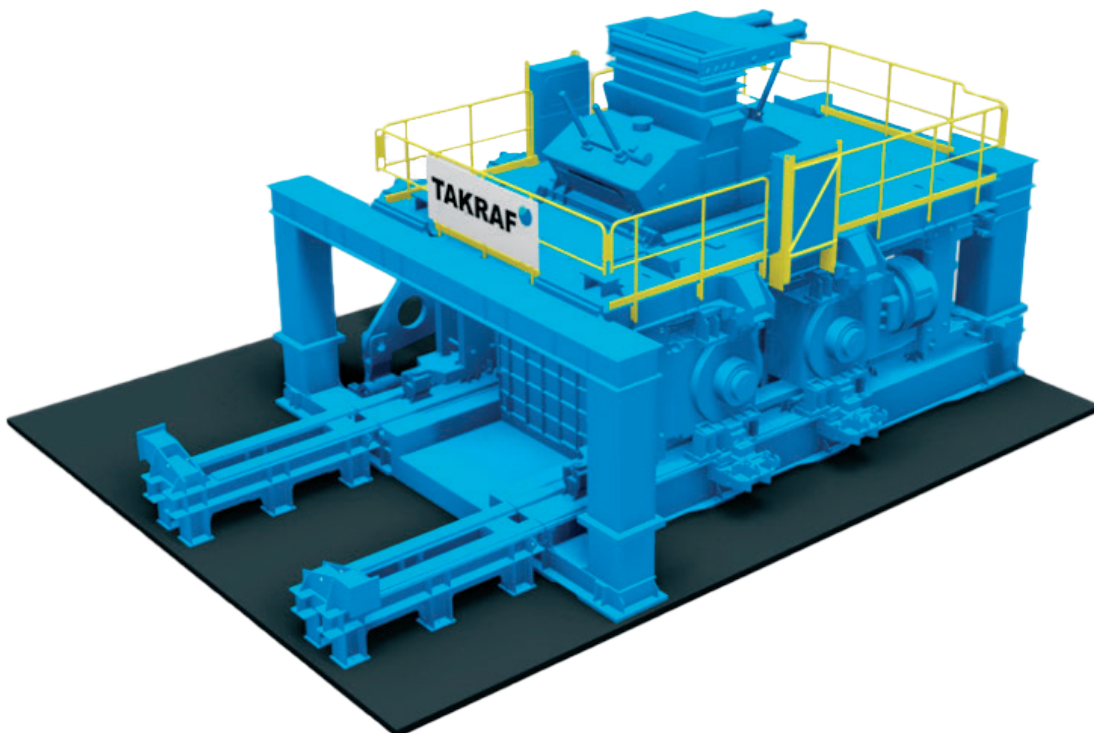
- Outstanding size reduction as result of interparticle comminution between the rolls
- High throughput rates at comparably low operating cost
- Low specific energy demand
- Proven alternative for SAG mill in SAG/ball mill circuits
- Improves energy efficiency or throughput in existing ball mill plants
- Proven alternative for tertiary & quaternary crushers and rod mills
- Can perform final grinding duty in fine grinding circuits (iron ore pellet feed)
- Enhances leaching performance and flotation efficiency
- Type of roller surface customized for different applications

Machine size	TRP 2-08.03	TRP 5-02.06	TRP 7-04.08	TRP 8-04.12	TRP 9-1.11	TRP 13-1.14
Force (kN)	850	6,000	6,500	8,500	9,300	12,500
Roll diameter (mm)	800	1,200	1,400	1,400	1,800	1,800
Roll width (mm)	250	600	800	1,200	1,100	1,400
Throughput (t/h)	50	150	300	500	750	1,200

Machine size	TRP 16-1.18	TRP 21-2.20	TRP 24-3.20	TRP 27-3.22	TRP 27-4.22	TRP 30-4.24
Force (kN)	16,000	20,500	24,000	27,000	27,000	30,000
Roll diameter (mm)	1,800	2,200	2,600	2,600	2,700	2,700
Roll width (mm)	1,800	2,000	2,000	2,200	2,200	2,400
Throughput (t/h)	1,625	2,100	2,800	3,500	4,200	5,100

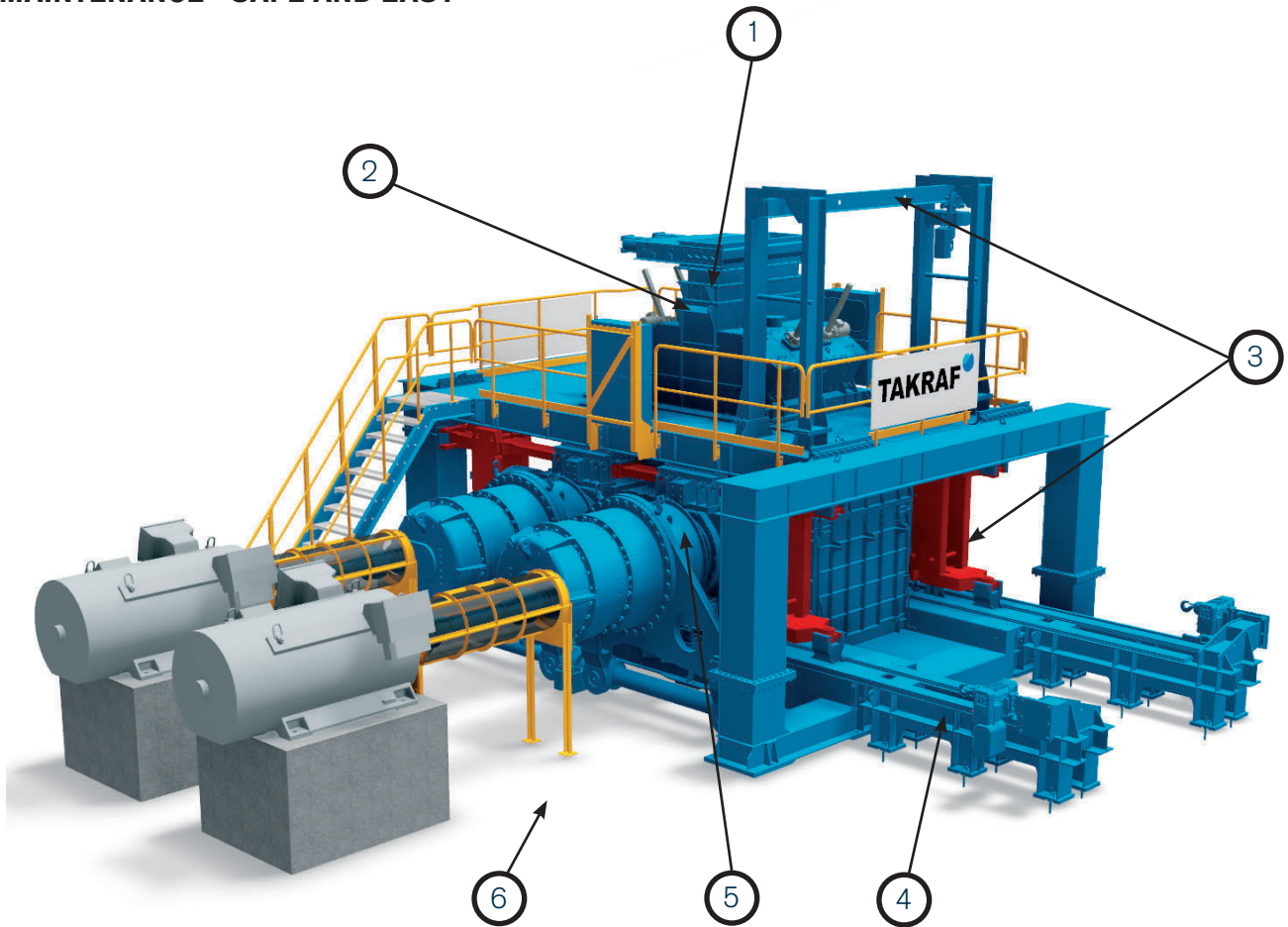
## TYPICAL OPERATING CHARACTERISTICS

- Throughput rates up to 5,100 t/h
- Installed power up to 2 x 5,200 kW
- Specific pressures up to 6.0 N/mm<sup>2</sup>
- Potential feed size (for roll  $\phi$ ) up to 80 mm
- Typical specific energy consumption 0.8 - 2.8 kWh/t (ore specific)
- Weight of HPGR 25 to 450 t





## MAINTENANCE - SAFE AND EASY



Our HPGRs are designed from the ground up with maintenance in mind; as such they boast a number of unique features that reduce downtime and ensure your machine is brought back into production as soon as possible.

- ① Moveable feeding device enabling better access to the HPGR
- ② Main wear parts are able to be efficiently serviced with integrated lifting equipment
- ③ Quick coupler and integrated lifting device enabling a safe and fast opening of the frame
- ④ Roller moving device, or optional transport cart, eliminates the need for an overhead crane
- ⑤ Gearbox and roll connected via a hydraulic shrink disc enabling the safe and effective handling of parts for disassembly and assembly
- ⑥ Thorough design analysis of all essential components to ensure load-optimized so as to boost efficiency and reliability

**When minutes count, make the most of every second!**

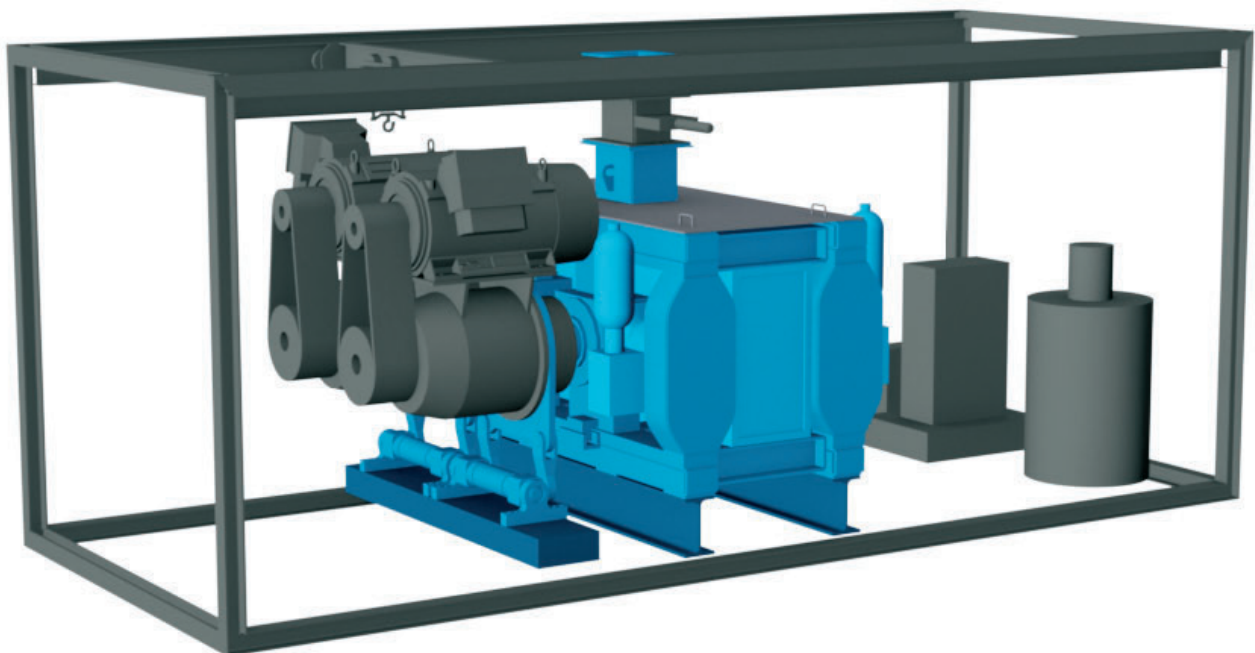
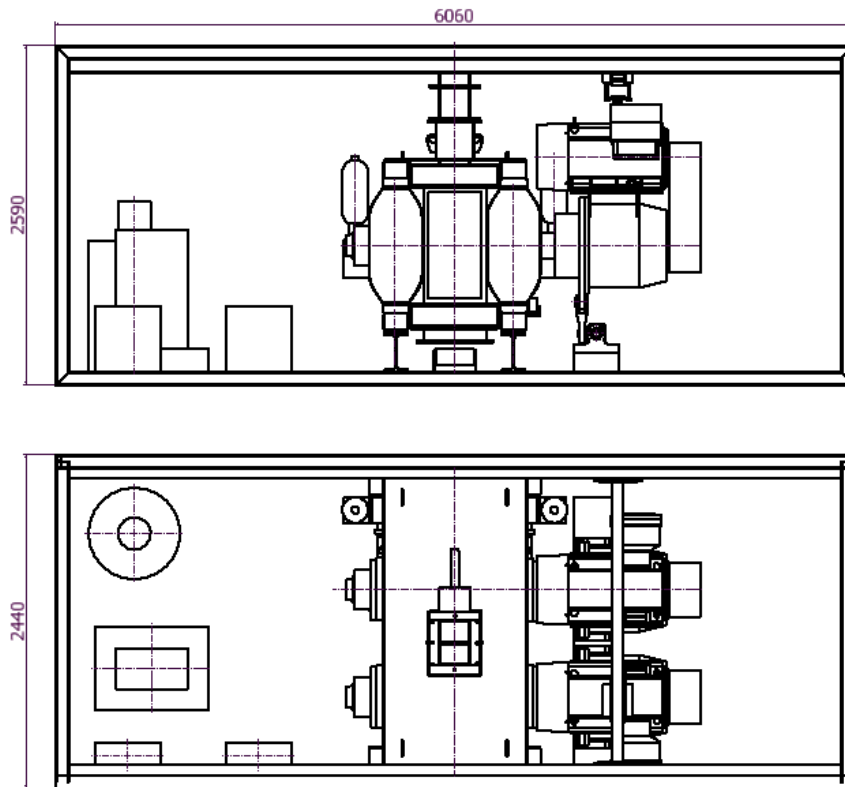
## AFTERMARKET / SUPPORT

TAKRAF provides comprehensive client support services around the world. Moreover, we are able to propose customized maintenance solutions to match your specific requirements, such as spare part supply and stock management and/or maintenance contracts.

## PILOT HPGR

Pilot HPGR for on-site material testing, easy to transport in a 20" container:

■ HPGR type:	TRP 2-08.03	■ Feed moisture:	max. 5 %
■ Roller diameter:	800 mm	■ HPGR product:	95 % < 10 mm, 80 % < 8 mm
■ Roller width:	250 mm	■ Variable speed:	18 – 22 RPM
■ Throughput rate:	45 – 60 t/h	■ Reference force:	2,5 – 6,5 N/mm <sup>2</sup>
■ Feed material:	various ores	■ Motor rating:	2 x 200 kW
■ Feed particle size:	100 % < 35 mm, 80 % < 30mm	■ Roller surface:	stud lining /welded surface



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