

GEBR. PFEIFFER INC

Machines and processes for the Cement grinding industry

Innovative Enhancement for Vertical Roller
Mills:

Swing Mill Solutions

&

MVR with MultiDrive®

Progress is our tradition



GEBR. PFEIFFER
Progress is our tradition



Company History

- 1864** Foundation of company
- 1890** 1st separator for the cement industry
- 1894** 1st mill for the cement industry
- 1956** 1st MPS – mill
- 1979** 1st MPS – mill for cement grinding
- 1994** Introduction of MPS B-Series
- 2000** Establishment of Gebr. Pfeiffer (India) PVT. LTD
- 2005** Establishment of Gebr. Pfeiffer Inc. / USA
- 2006** 1st MVR – mill
- 2007** 1st MultiDrive® mill
- 2011** **MVR 6700 C-6– mill sold**
... with by far highest capacity world wide!



GEBR. PFEIFFER
Progress is our tradition



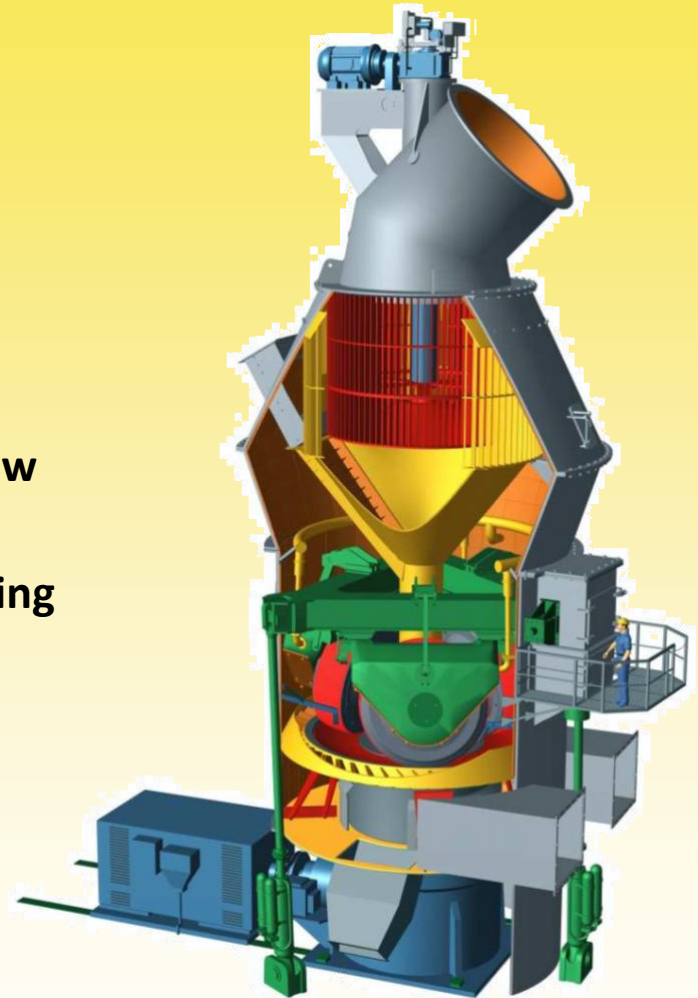


GEBR. PFEIFFER
Progress is our tradition



Swing Mill solutions

- Allows alternative grinding of cement raw material and cement in 1 vertical roller mill with out mechanical adjustments
- Benefits of MPS Swing Mill:
 - ✓ Capability to grind different types of raw materials and clinker
 - ✓ Ability to adapt to the materials changing needs
- Ideal for clients with the need to reduce investment cost or stepped production installation
- Tailor-made solution
- Multi Grinding

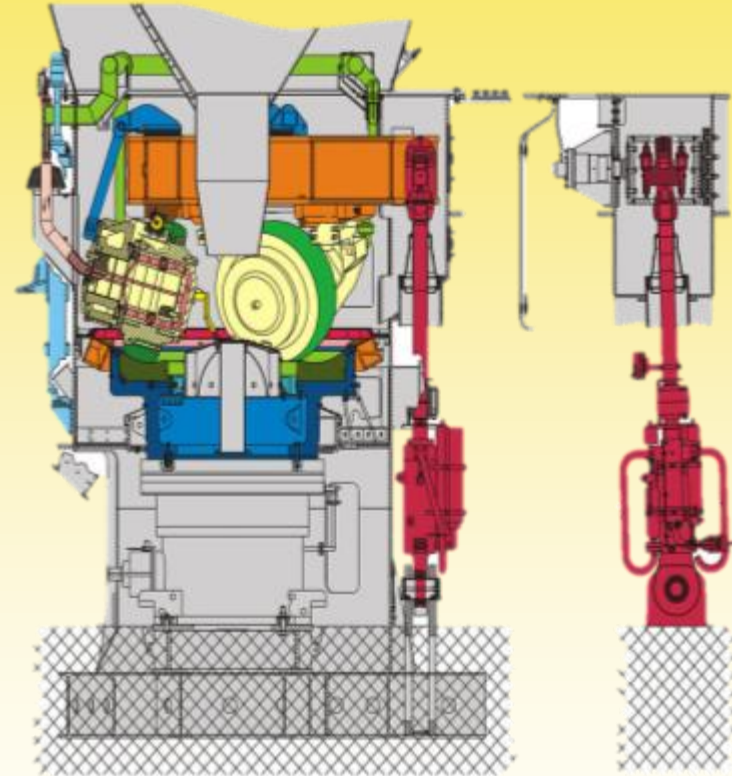


GEBR. PFEIFFER
Progress is our tradition



Hydro-pneumatic tension system and Classifier

- Hydraulic system designed for automatic change over
- Raw material running at 170 Bar
- Clinker running at 215 Bar
- Accumulator automatically adjusts to the changing pressure through a valve and refill system
- Roller force for raw material = 1580kN/m²
- Roller force for Clinker = 1937kN/m²
- Classifier speed for Raw Material = 105rpm
- Classifier speed for Clinker = 189rpm
- Internal settings fixed



GEBR. PFEIFFER
Progress is our tradition



Operating data – MPS 2500 San Marcos

- Results below are mill operation today with 28mm wear on rollers and 19mm wear on table

- Clinker:

- Capacity = 37,6 mtph
- Fineness = 4200Blaine
- Power = 23,9 kwh/t
- Airflow = 92,996 nm³/hr

- Raw Material

- Capacity = 60,4 mtph
- Fineness = 12%R90micron
- Power = 14,8 kwh/t
- Airflow = 87,461 nm³/hr



- Comments; both the raw material and clinker have higher than expected power consumption based on hard raw material from the quarry. However the mill is still achieving all its set our warranties in performance and the built in safety factors have allowed the client to operate the mill at the desired performance even with the harder to grind material.



GEBR. PFEIFFER
Progress is our tradition



Mill Building San Marcos



GEBR. PFEIFFER
Progress is our tradition



MPS 2500BC at San Marcos



GEBR. PFEIFFER
Progress is our tradition



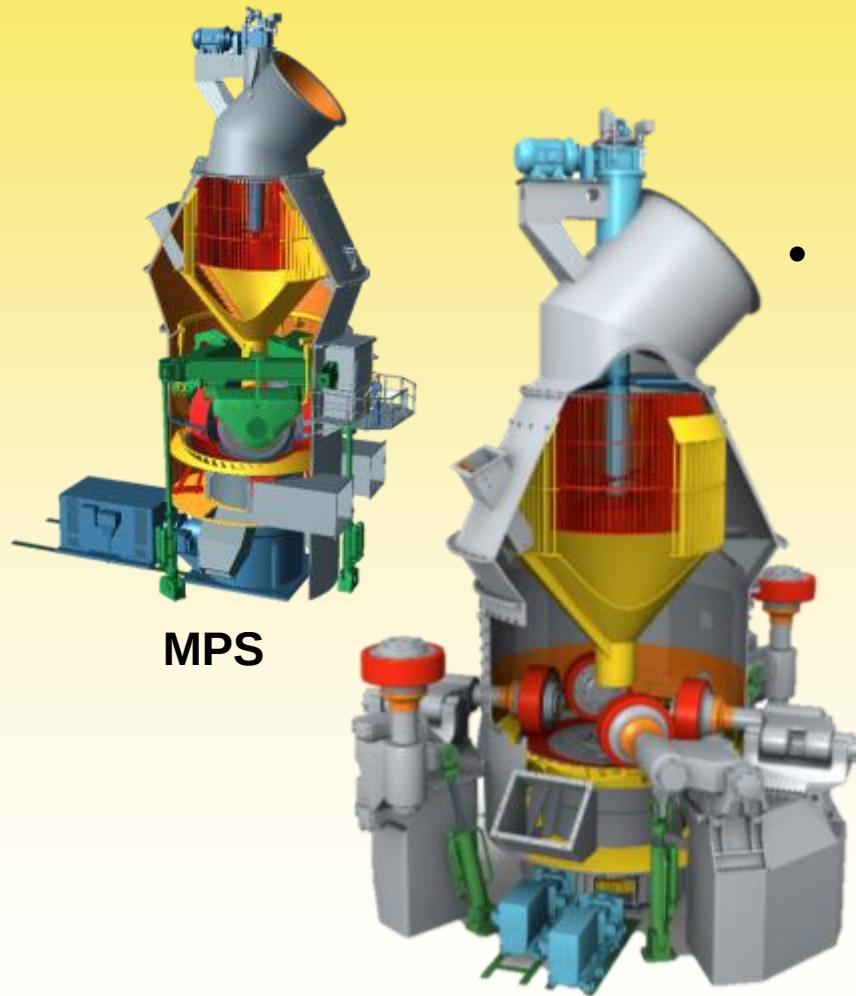
High Capacity Machines for the Cement industry

- **Motivation**

- Trend is toward ever increasing grinding capacities
- Importance of plant availability and optimized maintenance concepts

- **Ambitious Goals**

- Development of the MVR roller mill for cement raw material, cement clinker and additives - Installed power up to 12 000 kW
- Reliable design – new answers based on experience
- Concept of redundancy for rollers and drives
- Maintenance concepts - save, simple and fast
- Short lead times through standardisation



MPS

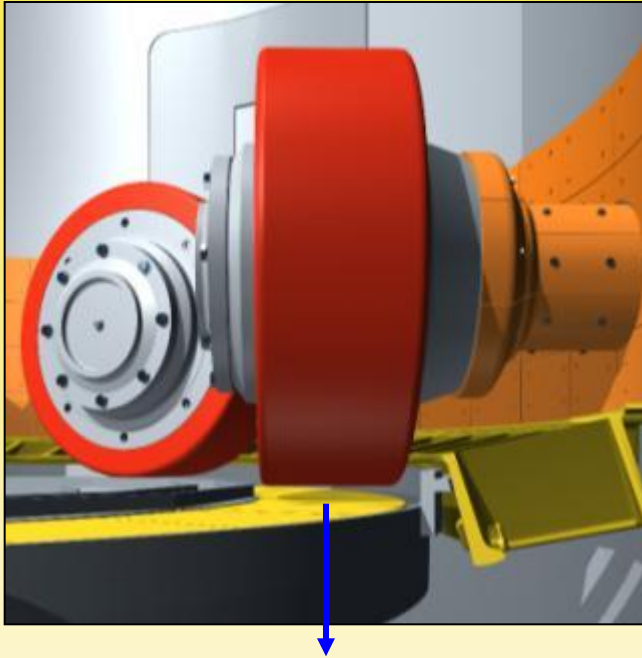
MVR



GEBR. PFEIFFER
Progress is our tradition



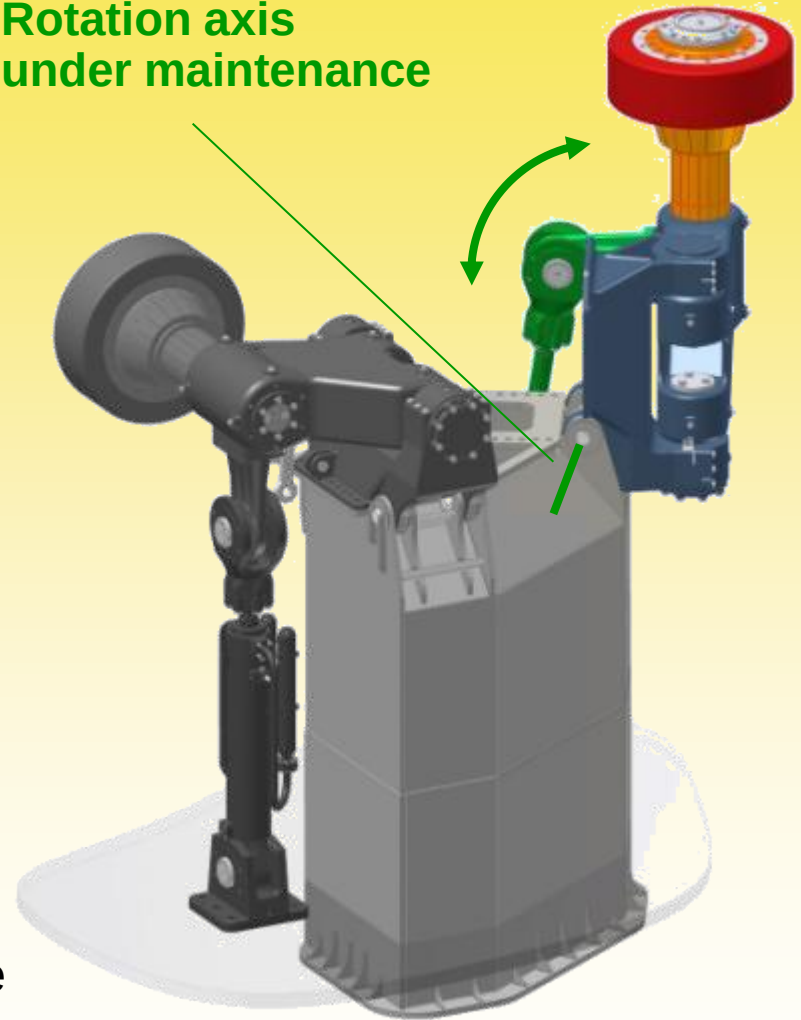
Roller suspension



Parallel Grinding gap

- Guided motion – smooth run
- Grinding gap always in parallel
- Positive effects on energy transmission
- Tensioning cylinder swing out roller for service
- Two rollers side by side on a common twin support

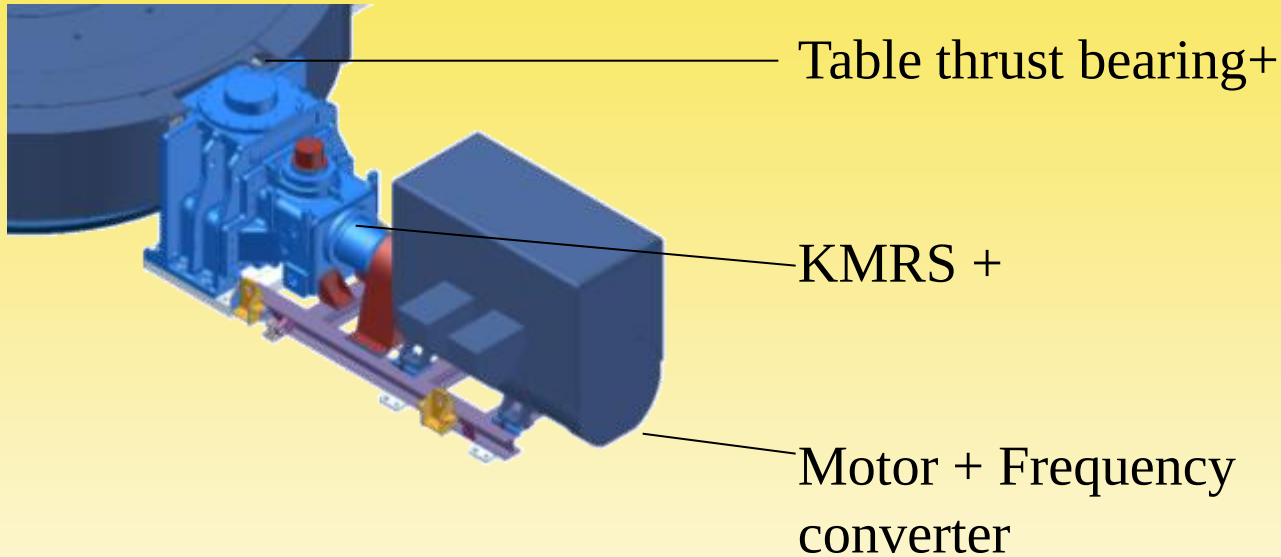
**Rotation axis
under maintenance**



GEBR. PFEIFFER
Progress is our tradition



MultiDrive®



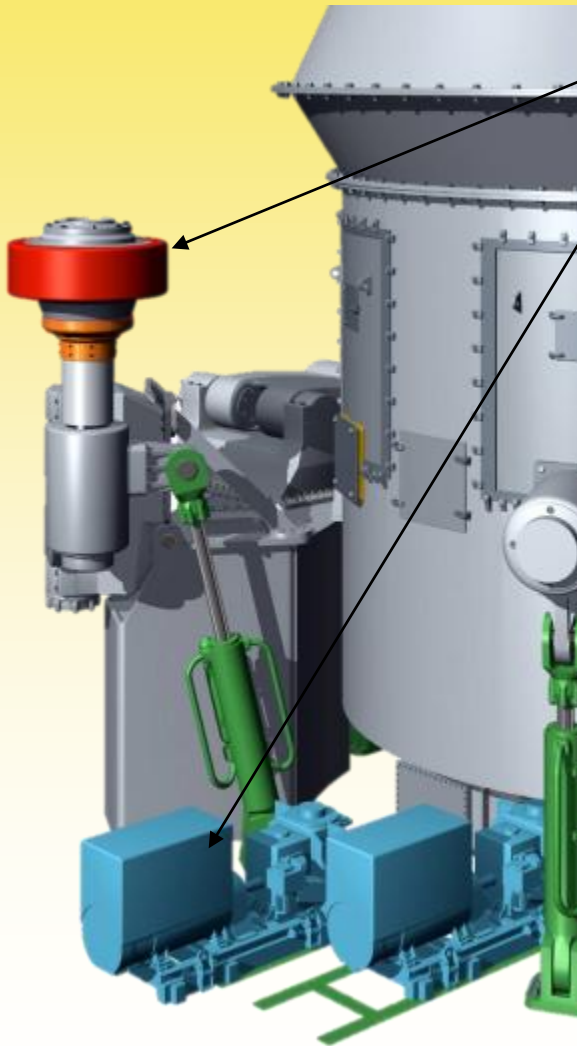
- Increase in mill size requires high power ratings and high transmission ratios
- Conventional bevel-planetary gears limited to $\leq 7,000$ kW
- Up to 12,000 kW with only 3 different types of drive modules
 - Common and proven parts
- Modular design: 2 to 6 identical drive modules.
- Active redundancy



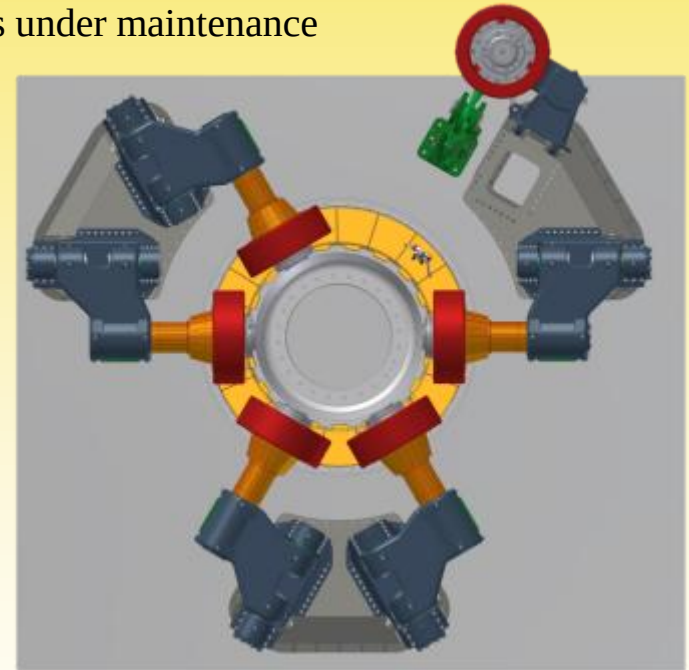
GEBR. PFEIFFER
Progress is our tradition



Active redundancy



- Up to 6 grinding rollers and 6 drive modules:
mill operation continues even if one roller
or one drive module is under maintenance



- Table support designed to take
unbalanced axial and radial forces



GEBR. PFEIFFER
Progress is our tradition





GEBR. PFEIFFER
Progress is our tradition





Pfeiffer MVR mills

Orders received from the cement industry

client	size	mtph	kW	material	year
via Cemengal S.A. / Spain for Holcim (Brasil) S.A., Barroso / Brasil	6700 C-6	448	11500	cement	2011
Shree Cement Ltd., Beawar/India Raipur Grinding Unit/India	6000 R-6	500	6700	raw material	2013
undisclosed client	6000 R-6	440	5600	raw material	2012
Shree Cement Ltd., Beawar/India Raipur Grinding Plant/India	6000 C-6	270	6700	OPC	2013
Shree Cement Ltd., Beawar/India RAS Grinding Unit II/India	6000 C-6	270	6700	OPC	2013
Shree Cement Ltd., Beawar/India Bihar Grinding Unit/India	6000 C-6	270	6700	OPC	2013
Shree Cement Ltd., Beawar/India RAS Grinding Unit I/India	6000 C-6	270	6700	OPC	2012
via Cemengal S.A. / Spain for Cement Australia, Port Kembla / Australia	6000 C-6	208	5520	cement	2011
undisclosed client	5000 R-4	340	3300	raw material	2012
Jaypee Cement / India Balaji / India	5600 C-4	320	6600	cement	2010
DD Fabrika Cementa Lukavac / Bosnia Lukavac / Bosnia	3750	160	1600	raw material	2007
Hauri KG / Germany Hauri KG / Germany	1800 C	20	315	cement	2006



Mounted supports and girth gear



GEBR. PFEIFFER
Progress is our tradition



Lifting and lowering of grinding table



GEBR. PFEIFFER
Progress is our tradition



Roller of MVR 5600 C-4



GEBR. PFEIFFER
Progress is our tradition



Feeding arrangement for dry fly ash



GEBR. PFEIFFER
Progress is our tradition



Balaji plant with focus on MVR section



GEBR. PFEIFFER
Progress is our tradition



Balaji MVR 5600 C-4



GEBR. PFEIFFER
Progress is our tradition



Operational data for PPC

MVR 5600 C-4	PPC with a mix of dry and wet fly ash	PPC with dry fly ash
Clinker	66 %	66 %
Gypsum	4 %	4 %
Fly ash, dry	21 %	30 %
Fly ash, wet	9 %	-
Throughput rate	360 t/h	320 – 350 t/h
Fineness	3,700 Blaine	3,700 – 4,200 Blaine
Specific energy consumption (Mill main drive, Classifier)	11.9 kWh/t	9.5 – 11.6 kWh/t



GEBR. PFEIFFER
Progress is our tradition

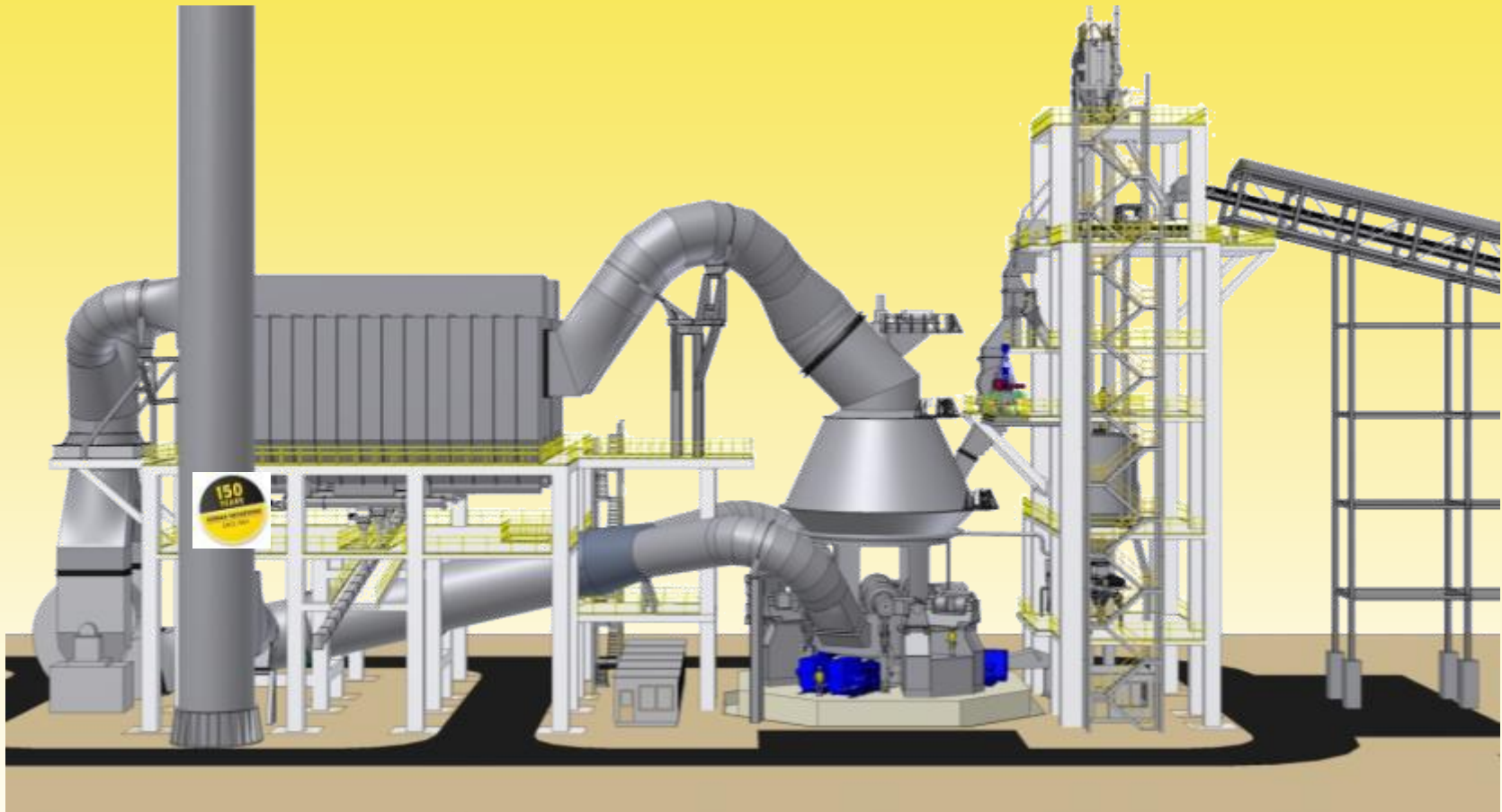


Grinding roller in MVR 5600 C-4



GEBR. PFEIFFER
Progress is our tradition





Thank you!



GEBR. PFEIFFER
Progress is our tradition

