

Evolving the well-established

vdz

**Service
Offer**

Maintenance

High-quality services from a single source

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**Synergies from research
and expertise**

VDZ is a renowned and internationally recognised scientific institute which provides industry-oriented research and a comprehensive service portfolio in the field of cement and concrete. For more than 140 years VDZ has been contributing to achieving the highest possible standards in the production and quality of building materials.

Our interdisciplinary team provides answers to almost any question about cement-based building materials according to the current state of science and technology. At the same time we offer our customers a service package that includes all major tests as well as consultancy services and complex expert reports. The combination of current research and competent service leads to synergies which are reflected in the high quality and practical relevance of our work.

Preventive maintenance is indispensable to ensure continuous production operation. It requires regular, accurate and reliable inspections and surveys of rotary kilns and ball mills - the core of any plant. VDZ has these maintenance services at its disposal and utilises its proven independent expertise to provide them to technical-scientific state-of-the-art standards.

Maintenance – why and when?

Maintenance – why and when?

During the lifetime and operation of rotary kilns and ball mills many problems can arise, endangering stable, continuous production and therefore requiring preventive maintenance:

- Mechanical failure of refractory lining
- Failure of tyre fixtures, axial, radial run-out
- Uneven or varying contact pattern between tyre and roller
- Cracks or material ruptures on tyres, rollers, girth gear, pinion, kiln or mill shell, mill head
- Mechanical problems on main drive
- High power consumption on main drive
- “Knocking“ on main drive, girth gear/pinion
- Unusual vibration around the main drive or pier
- Uneven wear on tyres and rollers
- Non “floating“ of the rotary kiln
- Problems with the hydraulic thrust system
- Hot bearings
- Tyre is lifting from roller during operation
- Kiln shell deformation (“banana“-effect)
- High shell eccentricity on kiln in- and outlet section
- Hydrostatic problems on slide shoe mills

Further occasions:

- Routine equipment check (every two years)
- Before and after major repair shutdown.

We work for all kinds of industries using rotary equipment.

These include for example the following sectors:

- Cement / Lime / Gypsum
- Chemical
- Fertilizer
- Wood
- Paper
- Food
- Sugar
- Refinery

**Measurement and survey
of rotary kiln, vessel, incinerator,
dryer and cooler**

Measurement and survey of rotary equipment

For each installation we offer a specific service portfolio from which we can select individual modules according to clients' needs. Alternatively, we also provide a fully customised service. VDZ's surveys include the following services.

- Vertical and horizontal rotation axis of multi pier kilns
- Geometry of tyre / roller station
- Ovality (shell-test)
- Shell deformation profile
- Thermal profile of kiln shell / infrared-profile (photo/video-documentation)
- Axial and radial run-out of tyres
- "Relative movement" of loosened tyres
- Radial run-out of rollers
- Axial deflection on support roller shaft, to identify kiln crank ("banana"-effect)
- Axial and radial run-out of girth gears
- Thermal profile of girth gear and pinion
- Root to tip and backlash measurement girth gear / pinion
- Slope of base on support roller station frame
- Slope of base frame, pier to pier
- Cold gap measurement of loosened tyres
- Vibrations and thermal measurement (motor, gearbox, bearings)
- Measurement of shell thickness (up to 350 °C)
- Wall thickness measurement of other components up to 200 mm
- Hardness measurement of components according to HB, HRB, HRC, HSD, HV
- Roughness measurement according to R_a , R_z , R_q , and R_t

Further services for mechanical rotary equipment

Further services for mechanical rotary equipment

With the data obtained from measurement and inspection, immediate action may be necessary to prevent damage. Here VDZ's individual, dependable service is well-proven:

- Visual inspection of entire machinery
- Survey and assessment of machinery mechanics
- Detailed analysis, measurement report and inspection data, incl. assessment and recommendation for stable and smooth production
- Adjustment of the axis of rotation
- Control and adjustment of roller "skewing"
- Control and adjustment of kiln balance / floating
- Control and adjustment of girth gear and pinion contact pattern
- Mechanical refurbishment of girth gear and pinion tooth flanks
- Inspection of girth gear and pinion lubrication, function, lubrication amount, spray pattern
- Non-destructive crack test
- Penetration test red / white (PT)
- Magnetic powder test (MT)
- Accompanying assembly supervision
- Accompanying commissioning of new installation or after repair
- Fabrication approval of components such as rollers, tyres, kiln shell, girth gear and pinion according to OEM or customers' specification
- Technical preparation of customised service checklists
- Education and training courses

In-situ resurfacing of:

- Tyres and rollers
- Lateral grinding of tyres and thrust rollers, for equalisation of the angles of longitudinal guide systems

Measurement of ball mills

Measurement of ball mills

VDZ provides for its customers complete, plant-specific inspections and symptom-based individual measurements. Depending on our customers' requirements we provide various testing services:

- Geometry of support station
- Thermal profile of mill shell / infrared-profile
- (photo / video-documentation)
- Radial and axial run-out of tyres
- Radial run-out of rollers
- Radial axial run-out of trunnion
- Radial axial run-out of journal bearing
- Radial and axial run-out of mill flange
- Axial and radial run-out of girth gears
- Thermal profile of girth gear and pinion
- Root to tip and backlash measurement girth gear / pinion
- Slope of base frame
- Slope of base frame, pier to pier
- Cold gap measurement of loosened tyres
- Vibrations- and Thermal measurement (Motor, Gearbox, Bearings)
- Measurement mill body / mill head thickness
- Wall thickness measurement of other components up to 200 mm
- Hardness measurement of components according to HB, HRB, HRC, HSD, HV
- Roughness measurement according to R_a , R_z , R_q , and R_t

**Services covering
ball mill mechanics**

Services covering ball mill mechanics

After the analysis of ball mill survey results it can be crucial to act immediately. VDZ supports its customers with its well-proven know-how and individual services:

- Visual inspection of entire machinery
- Survey and assessment of machinery mechanics
- Detailed analysis, measurement report and inspection data
- Assessment and recommendation for stable and smooth production
- Control and adjustment of girth gear and pinion contact pattern
- Mechanical refurbishment of girth gear and pinion tooth flanks
- Inspection of girth gear and pinion lubrication, function, lubrication amount, spray pattern
- Smoothing of trunnions
- Non-destructive crack test
- Penetration test red / white (PT)
- Magnetic powder test (MT)
- Accompanying assembly supervision
- Accompanying commissioning of new installation or after repair
- Fabrication approval of components such as rollers, tyres, kiln shell, girth gear and pinion according to OEM or customers' specification
- Technical preparation of customised service check lists
- Education and training courses

Other VDZ Services

Other VDZ Services

Whether in the field of testing, evaluating, consulting or training: As an international technical and scientific service provider in cement, concrete, operational technology and environmental protection, VDZ has been recognised for its research-oriented and field-proven expertise for decades.

VDZ's service portfolio includes:

- Technical audits
- Process optimisation
- Energy efficiency
- Chemical and mineralogical investigations
- Production and testing of concrete, constituents and mortar
- Certification
- Environmental assessments
- Environmental measuring
- Strategic advice on CO₂ reduction
- Site-specific evaluation of CO₂ reduction technologies
- Training

Detailed information and contacts for VDZ's services can be found on our website at www.vdz-online.de/en.

VDZ is accredited and certified according to ISO 9001, DIN EN ISO/IEC 17025, DIN EN ISO/IEC 17065 and DIN EN ISO/IEC 17021



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