

> When and why?

- Predictive maintenance
- Assessment of the critical equipment
- Vibration of the mill pinion bearing
- Cracks in civil works
- Vibration of the structures

> The results

- Maintenance recommendations
- Acceptance test after servicing
- Electromechanical diagnosis
- Monitoring and remote diagnosis
- Diagnosis and studying solutions



> Intalling new equipment

- Dynamic calculation of the host structure
- Qualification of the structure by way of inertance measurement
- Torsional calculation of the shaft lines
- Vibratory acceptance: vibrations and torsion

> Vibratory and electrical diagnosis

- Assessment of electromechanical state
- Diagnosis of mechanical and electrical faults
- Natural frequencies and structure resonance
- Analysis of the start/stop phases
- Balancing on site: separators, ventilators

> Diagnosis of torsional problems

- Measuring torsion vibrations: rotational vibrometer or optical coder
- Measuring and analysing torque fluctuations by extensometry and FM telemetry
- Analysing the modulations of the stator current

> Specific structure studies

- Analysis of the structure vibrations: preheating tower, vertical roller mills, smokestacks...
- Diagnosis of pulsating type vibrations: acoustic or flow induced phenomena
- Checking the anchorings and crackings of cement bases
- Correcting resonance phenomena by finite element calculations

> Turnkey protection and monitoring solutions

- Machinery protection and monitoring system
- Sensor instrumentation:
- Specific instrumentation engineering
- Consultancy, assistance and remote diagnosis

> Periodic assessment of the critical machinery

- Kiln drive and roller mill monitoring unit
- Diagnosis of the vertical roller mill roller bearings
- Separators
- Screw compressors

> Software/Application software

- DynamX® data acquisition and processing software
- CTMO® temporal data collector

DYNAE

- > Vibratory analysis
- > Electrical analysis
- > Infrared thermography
- > Instrumentation and sensors
- > Software
- > Training

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Some references

> VIBRATORY DIAGNOSIS

LAFARGE WAPCO (Nigeria)	Vibratory monitoring of the Ewekoro cement works	2014
BAMBURI CEMENT (Kenya)	Diagnosis of the roller mill's ventilator	2014
LAFARGE	Vibratory assessment of the critical machines since	2000
VICAT	Vibratory monitoring of the St Egrève fleet since	2007
FCB (SNIM Mauritania)	Vibration and torsion assessment of 2 ball mills	2009
CALCIA	Expert survey on ventilator in Cruas	2008
HERACLES (Greece)	Vibratory diagnosis of 2 roller mills	2005
CMD (Tunisia)	Diagnosis of two roller mills	2005
CMD (Tunisia)	Diagnosis of raw mill	2004
LAFARGE (Morocco)	Vibratory analysis of a dynamic separator	2003

> DIAGNOSIS DYNAMIC MACHINE LAYOUT SURVEY

LAFARGE TCEA	Diag. and layout calculation for 9 ventilators	2007
CIOK (Tunisia)	Measurements and FEM survey mill base	2006
NATIONAL CEMENT (USA)	Diagnosis base and anchoring of vertical mill	2005
SOCOCIM (Senegal)	Analysis of the slab for the generator units	2003
SOCOCIM (Senegal)	Layout survey for a vertical mill	2002
TECHNIP (Emirates)	Survey and FEM calculation of the mill base	2000

> SPECIFIC STRUCTURE DIAGNOSIS

LAFARGE OGGAZ (Algeria)	Oscillations of the preheating tower	2015
LAFARGE Dunbar (Scotland)	Survey of the chimney oscillations	2007
VICAT - KONYA CEMENTO (Turkey)	Vibratory impact study on a Horomill	2006
TITAN (Egypt)	Vibratory diagnosis of the preheating tower	2008
LAFARGE (Italy)	Outlet pipe of the vertical mill	2003

> SURVEY OF TORSIONAL PROBLEMS

CMD	Dynamic study of the Bogiflex	2014
ALCAN RIOTINRO	Measuring torsion vibration on mill extension rods	2009
KERNEOS	Measuring the extension rod's torsion vibration	2006
LAFARGE Canada	Dynamic study on a mill harness in the USA	2002
ALSTOM-LAIBIN B (China)	Diagnosis and torsional calculation of the mill ext. rods	2002

> ELECTRICAL EXPERT SURVEYS

VICAT	Analysis of the currents of the St Egrève turbo-separator	2007
VICAT	Vibratory and electrical diagnosis of the Xeuilley separator	2005
VICAT	Electrical diagnosis of a mill in Oristano (Sardinia)	2004

> CONSULTANCY, TRAINING

LAFARGE TCEA	Consultancy for the monitoring of the vertical mills	2014
POLYSIUS	Vibration and acoustics : principle and examples	2005-2009
LAFARGE DPC (Austria)	Layout of the equipment – dynamic aspect	2003
LAFARGE St Cloud	Vibrations : principle and examples in cement works	2002
LAFARGE St Cloud	Consultancy for the monitoring policy	2002-2008
CIMENTS OBOURG (Belgium)	« Vibration monitoring » training	2000
BAMBURI CEMENT (Kenya)	« Vibration monitoring » training	2001 – 2002



Base foundation survey



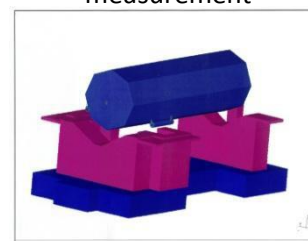
Movement of a mill



Diagnosis on a reducer



Torque measurement



Mill base: Dynamic survey



Flexion/torsion calculation