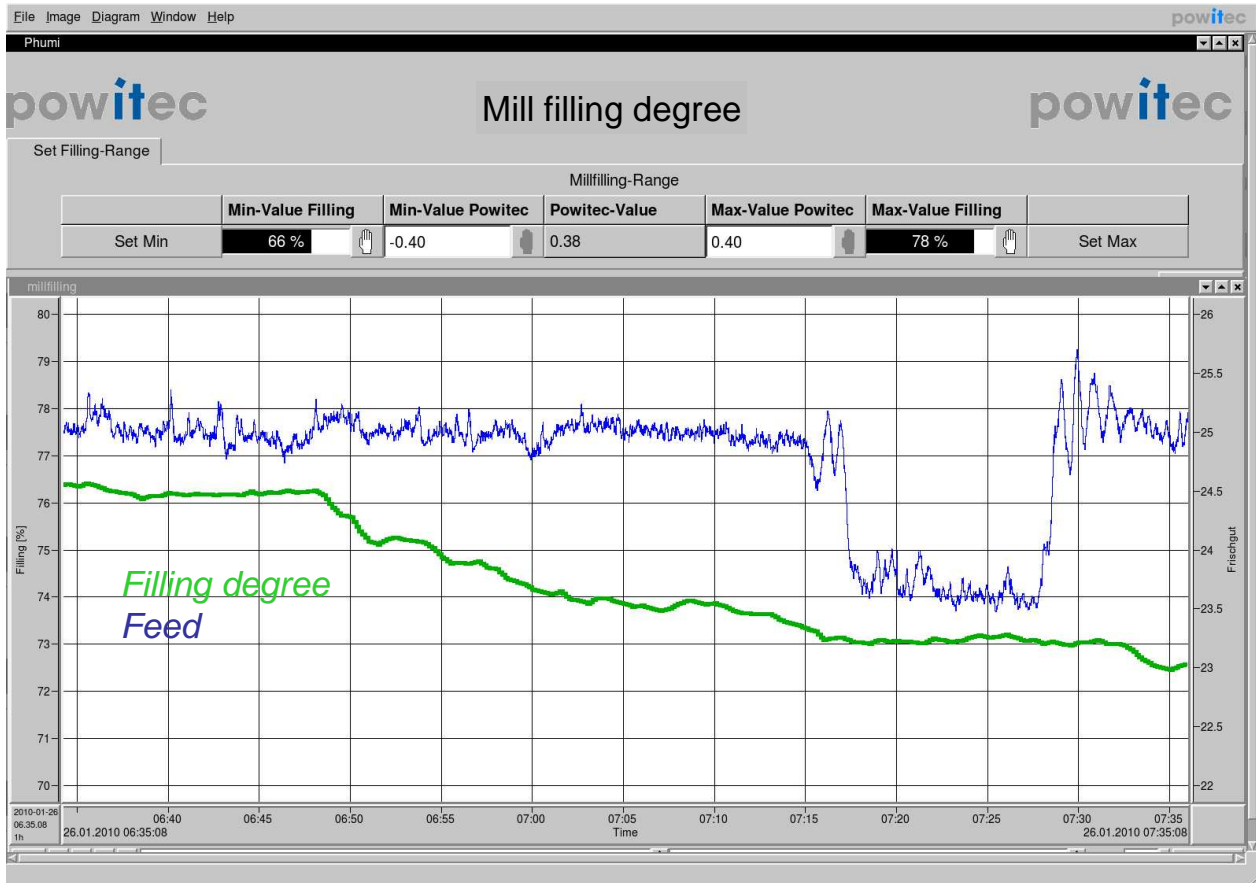


Plug And Play Filling Degree Indication

PiT Indicator for vertical cement mills

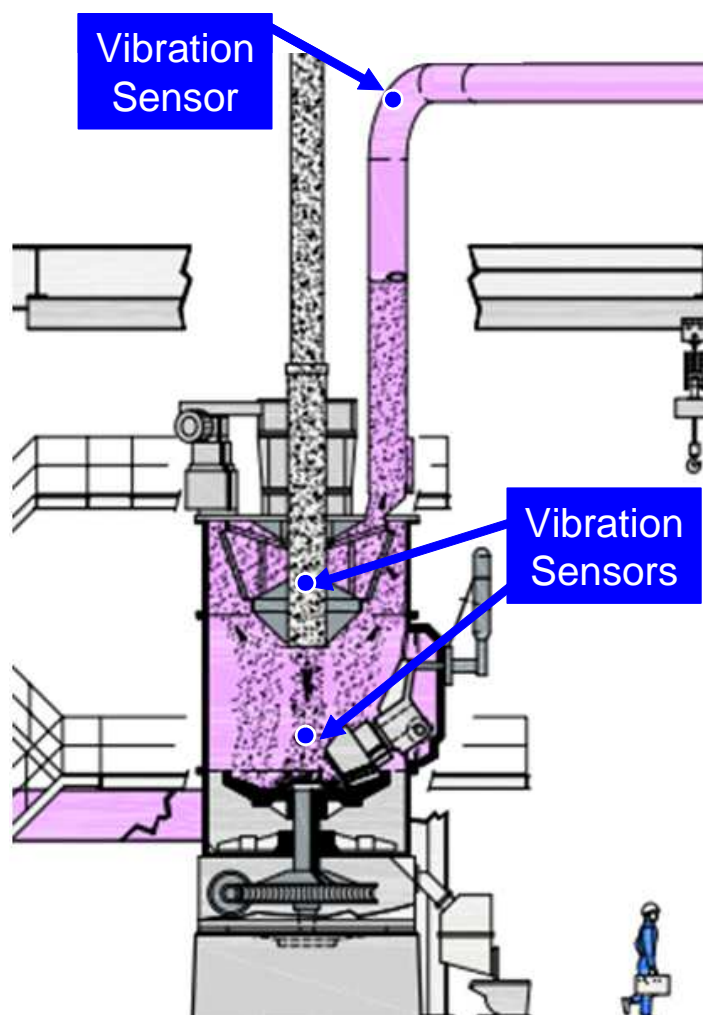


Your Benefits

- Filling degree information
 - No mill stop, fast commissioning
 - Calibration in the control room
 - Rugged construction
 - Open Connectivity
 - Upgradeable to closed loop mill control
 - Easy and inexpensive to scale to multiple mills
- ◆ Mill sound acquisition by using vibration sensors
 - ◆ Proportional analysis of filling degree by using advanced signal processing on acoustic spectra
 - ◆ Graphical User Interface in the control room to calibrate measured filling degree against „expected filling degree“, trending, alarming
 - ◆ Option: Process interface, e.g. OPC client, ModbusRTU/TCP, ProfibusDP, Analogue ...
 - ◆ Option: Upgrade to adaptive closed loop Mill Control

Advantages:

- ◆ No mill stop necessary at installation and for maintenance
- ◆ 2 vibration sensors per mill enable proportional measurement
1 vibration sensor per pipe
- ◆ Piezo-ceramic sensor for industrial use following military specification
- ◆ Positioning decided following trials, fixed by magnets at locations <160°C
- ◆ Sampling with 10kHz, 16bit
- ◆ Data pre-processing by analysis of correlations
- ◆ Open connectivity (OPC, Modbus, Profibus etc.)
- ◆ Wired connection delivers high signal density
- ◆ Visualisation highly flexible (integration of PCS data)
- ◆ **Upgradeable** to Mill-Optimiser; easy and inexpensive to scale to multiple mills



Vibration Sensor with cable



On site example



Using optimisation potentials ...

...while quality is kept under control...

...results in reduced grinding costs.

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