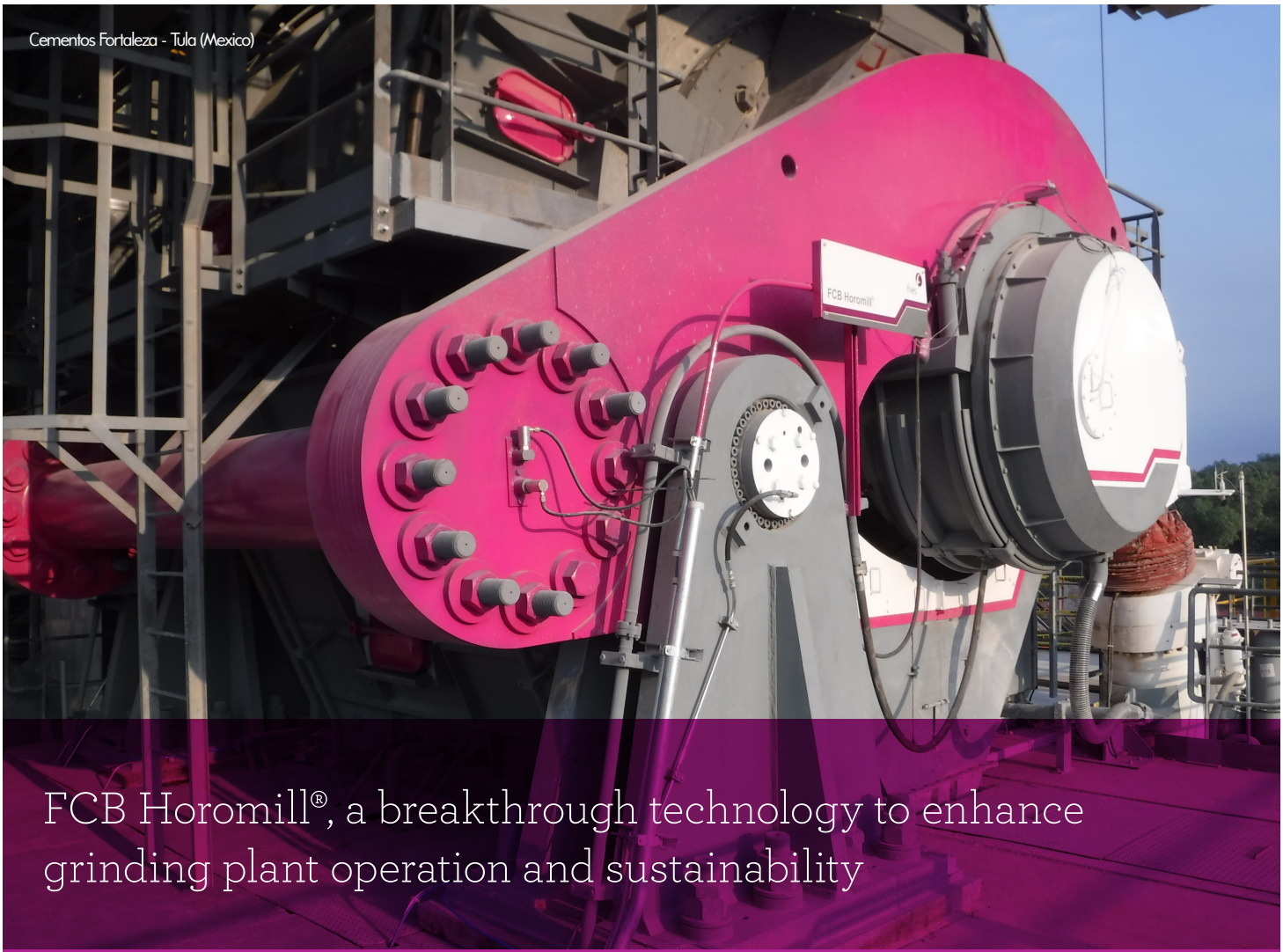
fives

PROCESS TECHNOLOGIES

CEMENT & MINERALS

FCB Horomill®

Sustainable grinding plant



FCB Horomill®, a breakthrough technology to enhance grinding plant operation and sustainability

- The lowest energy consumption
- Zero water consumption
- Better product quality even with higher cement-to-clinker ratio
- The highest flexibility for operation with various products/additives
- Production capacity that is not sensitive to the wear of lining

FCB Horomill®, the most advanced in bed comminution technology to face current and future challenges of the Industry

Holcim Apasco - Hermosillo (Mexico)

As a grinding technology by bed compression, FCB Horomill® covers the same application fields than conventional ball mills, vertical roller mills or roller presses.

ULTIMATE GRINDING CONCEPT

- In-bed compression comminution for energy savings
- Material centrifugation for operation stability
- Multicompression during one pass through the mill

Maximized production

- High drying capacity
- Production capacity not affected by the wear of lining
- High production flexibility
- Already suitable for the new types of cement with lower carbon footprint

Optimized quality

- Higher cement quality with less Blaine
- No water injection avoiding cement prehydration
- No need for grinding aid for blended cements or slag

Minimized operating costs

- Lowest electrical consumption
- Best overall thermal efficiency
- Low wear rate and maintenance cost
- Application for raw meal, cement and slag grinding

Seamless & reliable operation

- Fully automated operation
- Automatic change of recipe within 5 to 10 minutes without surge hopper

Get Green

- Green Cement production : Less CO_2 per ton of cement, thanks to a higher cement-to-clinker ratio
- Energy savings ranging between 35% and 60% allowing the full plant to operate below 90 kWh/t of cement electric power consumption
- High drying capacity
- Zero water consumption, not required for process stability
- Low noise emission
- CO_2 emissions reduction thanks to concrete recycling

3D representation of a FCB Horomill® typical standalone grinding plant

FCB Horomill® is combined with drying, classifying and filtration functions within a very compact workshop

① FCB Aerodecantor

The FCB Aerodecantor is adapted for high moisture content (up to 30%) feed product, clinker with high content of fines or from various sources. It increases the drying capacity and reduces the material load of the classifier, improving the selection performances and consecutive grinding efficiency.

OPTIMIZED PLANT DESIGN

— Installation within limited space
— Low quantity of material in the circuit
— Standardized plant layout and options

② FCB TSV™ Classifier

The FCB Horomill® performance is enhanced with the 3rd generation FCB TSV™ Classifier that separates the fine product (for improved product quality) and the coarse material (for improved grinding efficiency and minimum mill power consumption).

③ TGT® Filter

The grinding plant can be fitted with a high efficiency gas treatment system to clean the gas emissions throughout the installation. Fives process filters use the latest technology in terms of filtration and scrubbing, to achieve a very high level of pollutant removal.

FCB Horomill® provides solutions for multipurpose or specific needs

High C/K ratio

Plants' location	Asia			North America				Europe		
National Standard Base	ASTM			ASTM				EN		
Mill	HRM			HRM			Ball mill	HRM		
Type of cement	OPC	IP	IP	OPC		CPC 30		CEM I	CEM I	CEM III B
Composition *Clinker %*	91.9%	55.6%	50.8%	94.0%	91.4%	68.6%	68.6%	96.3%	91%	23.0%
C/K ratio	1.09	1.80	1.97	1.06	1.09	1.46	1.46	1.04	1.10	4.35
Quality *cm²/g*	3560	4380	5220	3920	4480	4420	4730	3970	3780	4400
1D	14.3	5.0	7.5	12.9	18.0	16.3	15.8		23.1	
2D								36.9	33.9	
3D	25.6	15.5	15.1	23.3		26.4	25.8			
7D	31.2	20.3	20.8	29.2		31.4	28.5			31.7
28D	38.2	30.4	29.8	39.5	42.4	36.2	36.6	60.2	56.4	48.2

Industrial results

Better resistance at lower Blaine

Grade 52.5 cements

Go Smart

Advanced process control: Advanced programmation of the complete workshop for full automated operation including start-up and stoppage sequences and recipe changes

Digital Twin / Simulator: Comprehensive simulation system based on state-of-the-art data analyses (raw materials input, limestone quality, fuels properties, expected cost & quality) for customized surveys, training & support

Remote monitoring: Real-time data collection and prospective analyses for on-line support (troubleshooting, debottlenecking), predictive maintenance, low-trends detection, clear and visual dashboards with key performance indicators

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Industry can do it