

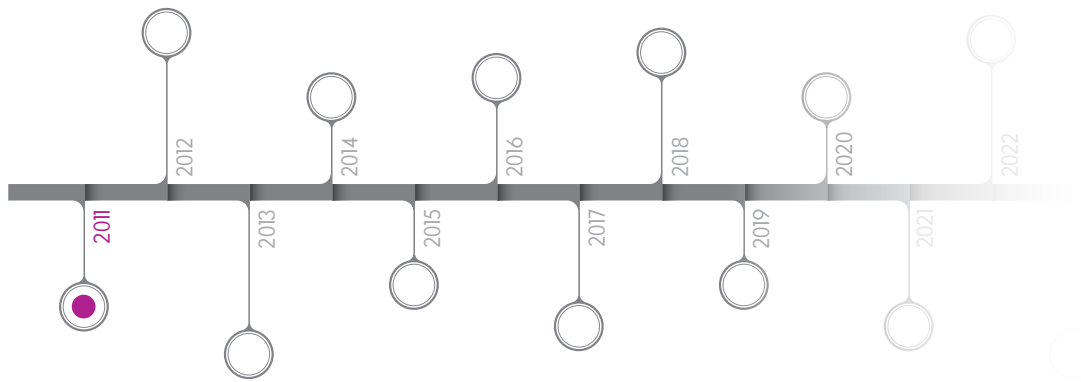


“I joined Fives in 2017 as a project engineer and traveled to Mexico shortly after to support the commissioning team during performance tests on the FCB Horomill® raw mill at Cementos Fortaleza’s Tula plant. It was a challenging start, transitioning quickly from theory to a hands-on role, all under a tight commissioning schedule.

“Fortunately, I wasn’t alone: our knowledgeable team gave me a warm welcome, and I learned a great deal. What impressed me most about the FCB Horomill® was how simple it was to start up and operate the entire, fully automatic workshop. The tests went well, even exceeding expectations. I felt proud to be part of something bigger, contributing to a machine that represents years of innovation.

“At Fives, we never stop pushing boundaries. Whether at the office or in the field, everyone is encouraged to contribute to continuous improvement to meet the world’s evolving challenges. Since that first experience, I’ve witnessed and taken part in many FCB Horomill® enhancements. And today, I can confidently say that it is the best it’s ever been.”

Soukaïna Chekhche Martin
North America Sales Manager, Fives FCB



2011-2022: BUILDING BIGGER, BETTER

The second decade of the 21st century brought with it more challenging cement production markets where efficiency, reliability and sustainability were key drivers for new investment projects. At Fives, the goal was to continue to optimize the technology and the mechanics behind the FCB Horomill® to offer the best grinding plant to customers worldwide.

PRODUCTION ON THE RISE

One of Fives' first missions of the new decade was to increase mill capacity. Critical to this was the new mill shell supporting concept, which was first implemented in Jiujiang, China.

In 2011, Fives designed its biggest grinding mill ever, the FCB Horomill® 4400, for Holcim (now CSN) at its Barroso plant in Brazil (see Success Story: CSN, p. 34). The Barroso mill would later reach a raw meal capacity of above 420 tph.

FCB AERODECANTOR: THE GAME CHANGER

The period also saw the unveiling of the FCB Aerodecantor—a flash dryer installed under the FCB TSV™ Classifier. The FCB Aerodecantor also improves separation efficiency, thanks to a preliminary material sorting. It has since paved the way to using larger amounts of high-moisture content additives than conventional systems. At the Lafarge Republic plant (now Republic Cement) in Teresa, Philippines, the FCB Aerodecantor enabled a cement-to-clinker ratio of 2 within a single FCB Horomill® circuit (see Success Story: Republic Cement, p. 36).



“One of the key strengths of the FCB Horomill® is its ability to perform co-grinding actions. Cement producers need flexibility, specifically when it comes to their equipment. It needs to handle a wide variety of materials, such as slag, pozzolan and clay—helping them reduce clinker ratio and CO₂ emissions and adapt to changing raw material availability. The FCB Horomill® delivers precisely this adaptability, with the added benefit of enabling quick and efficient recipe changes.”

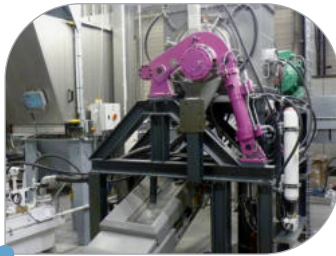
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SUSTAINABILITY COMES INTO FOCUS

The FCB Horomill® had always offered the cement industry a better, more sustainable grinding option. But these factors began to take a more prominent position in the industry's collective mindset in the 2010s. In 2013, Buzzi Unicem modernized and expanded its Maryneal, Texas facility to reduce the plant's environmental footprint while more than doubling capacity. The FCB Horomill® supported Buzzi on both counts.

SUPPORT THROUGH COVID

The decade came to an end, and the world faced a crisis unlike anything it had seen in a hundred years. When COVID-19 shut down businesses around the globe, Fives' technical experts remained virtually by their customers' side, and local teams ensured work continued apace. Meanwhile, the Group's advanced technologies lent support to customers far and wide. Through the TeamViewer visual tool, Fives' dedicated points of contact could open a secure connection with customers at FCB Horomill® locations to remotely access control rooms. These remote services combined with the FCB Horomill®'s automated operational capabilities proved important factors in helping customers manage the difficult times of the pandemic.



2013

Fives breaks ground on new Testing Center, equipped with FCB Horomill® pilot plant in Noyelles-lès-Seclin, France (see [Fives FCB Research and Testing Center](#), pp.38-39)



The FCB Aerodecantor makes its debut at the Teresa (Philippines) plant of Lafarge Republic (now Republic Cement) (see [Success Story: Republic Cement](#), p. 36)

2016

Holcim Brasil (now CSN) starts up the largest mill to date, the FCB Horomill® 4400, at its Barroso (Brazil) raw meal plant (see [Success Story: CSN](#), p. 34)



2018

Fives brings the FCB FLAG™ station to market—a modular grinding plant designed for fast delivery, start-up, flexibility and maximum production



See a 3D video of the FCB FLAG™ Station

2012

Jiujiang (China) is the site of the first FCB Horomill® single shoe for Jingye's steel slag production

Revamped, larger sleeve on FCB Horomill® is installed at Cementos Moctezuma's Cerritos plant in Mexico



2014

To modernize and improve the environmental performance of its subsidiary Lone Star Industries' Maryneal (Texas) plant, Buzzi Unicem orders an FCB Horomill® for raw meal after the successful commissioning of the one purchased for cement grinding

2017

FCB Horomill® helps Cementos Fortaleza's Tula (Mexico) plant achieve high performance for blended cement grinding while energy consumption for the entire workshop is lower than 22 kWh/t (see [Success Story: Cementos Fortaleza](#), p. 35)

First implementation of the automatic welding system at the Barroso plant in Brazil, allowing for in-situ refurbishment of the grinding roller, resulting in easier and faster maintenance



2020

Fives enhances remote tech support to better help customers at a distance during the COVID-19 pandemic



SUCCESS STORY CSN

(PREVIOUSLY HOLCIM BRASIL)

Barroso plant • Minas Gerais, Brazil



Challenge: Holcim needed to significantly increase its Brazilian production capacity while optimizing costs and keeping its environmental footprint to a minimum. To achieve its goals, it decided to invest in a new 4,500 tpd clinker production line. The project required a reliable, high-efficiency grinding raw mill that would be able to handle raw materials that were known to be hard and abrasive.

Response: To respond to these specific needs, Fives supplied its largest grinding mill ever, the FCB Horomill® 4400 and developed an automatic welding solution to simplify and reduce maintenance operations.

Result: The new FCB Horomill® 4400 successfully tested to a 438 tph production rate with an electric-specific consumption of 5.4 kWh/t for the mill only, and 10.8 kWh/t for the mill department.

Added value: The installation achieved low electrical consumption while providing optimal availability in challenging conditions.

**420
tph**

production capacity
of raw material production
facility, thanks to the
FCB Horomill® 4400



SUCCESS STORY: CEMENTOS FORTALEZA

Tula plant • Hidalgo, Mexico



Challenge: As part of its expansion plans in Mexico, Cementos Fortaleza wanted to add three new grinding mills to a completely new production line at its existing Tula cement plant. The mills needed to demonstrate high reliability and performance for both the production of raw meal and high-quality blended cement (CPC-40-R*).

Response: Fives provided three identical FCB Horomill® grinding mills: one for raw meal, two for cement.

Result: The new mills successfully met the expected performance levels, with the complete Tula Line 2 achieving the lowest electrical consumption in Mexico at less than 65 kWh/t for high-quality cement.

Added value: The three mills (raw meal and cement) were identical, simplifying maintenance by requiring only a single set of spare parts for the distinct sections.

**High early resistance cement*



SUCCESS STORY REPUBLIC CEMENT (A CRH-ABOITIZ COMPANY)

Teresa plant • Teresa, Philippines



Challenge: Republic Cement (a CRH-ABOITIZ Company) needed a new cement grinding plant in 2015—a period of strong market growth in the Philippines. Because of the region's high humidity, Republic Cement required a grinding solution that would produce new cement types with higher additive content, such as wet pozzolan, fly ash and limestone, to replace some clinker. In effect, the new plant would need to produce cement with the highest cement-to-clinker ratio possible to balance existing grinding systems' lack of drying capabilities.

Response: Factoring in the high moisture content of the pozzolan found in the plant's vicinity, Fives designed and supplied an FCB Horomill® 3800 grinding plant that would meet Republic Cement's specific requirements. With effective drying an essential factor, the team incorporated an FCB Aerodecantor and a 17 MW Fives Pillard vertical hot gas generator in the aeraulic circuit to target a clinker factor as low as 0.5.

Result: The new FCB plant handled the low-clinker cement production with ease, increasing capacity by 0.85Mta. The plant achieved the desired clinker factor using substitute additives that were readily available near the facility. The customer would demonstrate its satisfaction by making a repeat order for its Norzagaray plant.

Added value: Thanks to the use of carbon-neutral additives, CO₂ emissions at the site were reduced by 94,000 tpy. This helped Republic Cement advance on its commitment to sustainable and environmentally friendly operations.





“Our rainy season means that pozzolan (SCM) can reach moisture levels of up to 25%, so we needed a system that would be able to dry materials in extreme conditions. Fives worked with us from the earliest project stages to make sure we had the right equipment in place to handle our unique environment.”

**Lloyd Vicente,
VP - Manufacturing, Republic Cement**