



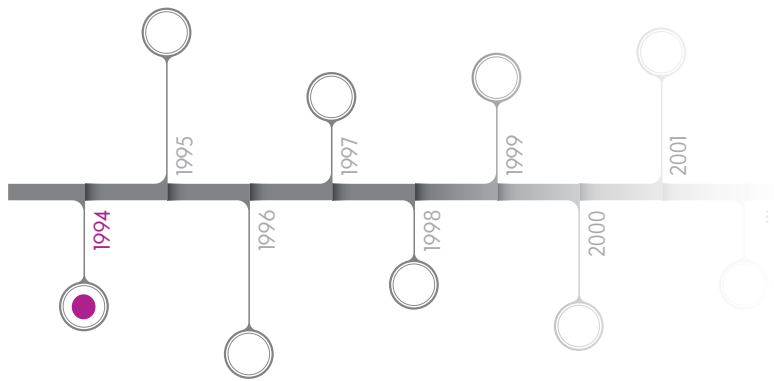
Unimed (now Buzzi Unicem) -
Augusta, Italy

“My first experience with the FCB Horomill® was in 1995, at the time of commissioning for the first industrial mill. It was in France for Société Mosellane d’Anhydrite (Heidelberg). They had first read about our new grinding solution in the French journal *Ciment Béton Plâtre et Chaux*.

“It took a lot of pioneering spirit for our early customers to put so much trust in a new technology. One question we often heard was, ‘Is the cement quality as good as if it was ground in a ball mill?’ We knew it was, if not better! But we had to convince them.

“Once convinced, they ended up helping us by spreading the word through the industry. Fratelli Buzzi shared results from their tests comparing the FCB Horomill® to ball mill grinding. They considered the cement produced in our mill as the standard, and of course, they’ve come to us again and again through the years with repeat orders. I’m grateful to all our customers throughout the years for putting their faith in us and in the FCB Horomill®.”

Éric Edet
Grinding, Drying and Classification
Product Manager, Fives FCB



1994-2001: A SERIES OF FIRSTS

After its initial successes with Fratelli Buzzi in Italy and Mexico—through its affiliate Cementos Moctezuma (see Success Story: Cementos Moctezuma, p. 19)—and Çimentaş in Turkey, Fives expanded its FCB Horomill® sales to Asia. Lafarge Republic (now Republic Cement) commissioned an FCB Horomill® for its Bulacan plant in the Philippines.

In parallel, the FCB Horomill® made further inroads on its European home turf. After ordering its first two FCB Horomill® mills for its plants in Darica (Turkey) and Ciskovice (Czech Republic), Lafarge renewed its confidence in the technology. It purchased the first FCB Horomill® for cement slag grinding, at its site in Karsdorf, Germany (see Success Story: Lafarge Zement, p. 18), highlighting the system's flexibility. maxit provided a further foothold for the FCB Horomill® in Germany by commissioning a mill for its natural anhydrite plant in Krölpa.

OPTIMIZING MECHANICS

Always targeting continuous optimizations, Fives created a special taskforce to identify any areas of improvement and investigate ways to implement them. Any time an issue was raised by a customer, the taskforce went to work, analyzing the origins, and coming up with proposals.

During this period, the taskforce was able to make several design improvements on existing machines and on those in production. For example, the team optimized the shell design, hydraulic system, and mechanical components (big roller bearings, swivels and jacks). These changes formed the design basis for the next generation of machines.

As the technology continued to improve and customers increasingly saw the benefits, Fives was ready to ramp up production and take the FCB Horomill® to the next level.

INTERNATIONAL
Cement Review

**CEMENTOS MOCTEZUMA
RAW & CEMENT
HOROMILL®
TWO YEARS OF OPERATION**



The daily grind

CEMENT TECHNOLOGY

Shawmut Brothers, Buzzi Coates SpA & Abate Concreto, FCB Cement Department

The Horomill®, a joint design venture between FCB and Fratelli Buzzi is reportedly becoming a viable grinding mill in the world of cement. In a paper given recently at Fives' World Innovation Forum, FCB and Buzzi discuss the design process of this new mill.

Research centres in an ever increasing number of countries are developing new grinding technologies. The challenge of providing a grinding process that is more efficient, more compact and more flexible is a constant. The Horomill® is a result of this research. It is a new type of grinding mill, designed to be a viable alternative to the traditional ball mill. It is a joint design venture between FCB and Fratelli Buzzi. The Horomill® is a new type of grinding mill, designed to be a viable alternative to the traditional ball mill. It is a joint design venture between FCB and Fratelli Buzzi.

GRINDING ADVANCES

Flow for a medium sized (200t/d) cement works

Raw material	Cement	Clay
Raw material	100000	100000
Clay	100000	100000
Water	100000	100000
Electricity	100000	100000
Other	100000	100000

Development of a new grinding process

After a lot of work and trials on the roller process, the cement works decided to develop a new grinding process. The new process is based on the principle of a roller mill. The roller mill is a new type of grinding mill, designed to be a viable alternative to the traditional ball mill. It is a joint design venture between FCB and Fratelli Buzzi.

REPORTS & CASE STUDIES

**USINE B.P. 2047
LILLE CEDEX**

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03 20 43 75 13

ALUMINATION SYSTEM

DESCRIPTION

CONCLUSION

TABLE 2: MAJOR EQUIPMENT FEATURES

EQUIPMENT	FEATURES
Grinding mill	• High capacity
Roller mill	• Low energy consumption
Classifier	• High efficiency
Storage silo	• Large capacity
Conveyor	• High speed

REPORTS & CASE STUDIES

CONSTRUCTING LOWER ELECTRICITY CONSUMPTION

The new roller mill is a new type of grinding mill, designed to be a viable alternative to the traditional ball mill. It is a joint design venture between FCB and Fratelli Buzzi.

ROTARY KILN

The rotary kiln is a new type of kiln, designed to be a viable alternative to the traditional rotary kiln. It is a joint design venture between FCB and Fratelli Buzzi.

A New Grinding Process HOROMILL®

A. CORDONNIER
FCB, CEM Centre de Recherches Cimentière et Minéralurgique
Lille, France

Abstract: FCB has just developed a new mill, HOROMILL®, for grinding cement raw meal and also for pregrinding. This new grinding process is designed for finish grinding, roughly 30% to 50% in respect to the ball mill, but with a moderate circulating load and grinding pressure. After a research phase on a 1 t/h pilot plant, a first 25 t/h industrial plant was achieved in co-operation with Fratelli Buzzi at Trino, Italy. The performances and the cement quality, strength and workability, were checked on this industrial site.

1. Historical account on HOROMILL®

The development of the roll process in pregrinding from the power consumption point of view has carried out many years of interest in this process in finish grinding. The interest of this process in one tonne per plant with a throughput of one tonne per hour is the main reason for the development of this process.

- The compression grinding process (ratio of the specific energy to the same fineness) vary between 0.5 and 1.0 for the FCB-Index conditions and the optimal conditions and their substitution ratios would be an average of 0.5.
- The substitution ratio in respect to the Blaine value is stable and the circulating load is high, that the increase of the fineness of the finished product.
- For reasons related to maximum speed.
- The grinding process and limit of the process.

2. Description of the HOROMILL®

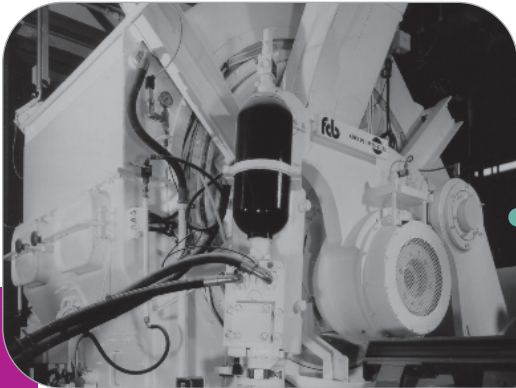
Reflections and investigations were initiated to find another grinding process based on the principle of a roller mill. The roller mill is a new type of grinding mill, designed to be a viable alternative to the traditional ball mill. It is a joint design venture between FCB and Fratelli Buzzi.

REPORTS & CASE STUDIES

CEMENT MILL - HOROMILL®

The new roller mill is a new type of grinding mill, designed to be a viable alternative to the traditional ball mill. It is a joint design venture between FCB and Fratelli Buzzi.

Figure 4: CFA MP cement 03.5%



1995

The first industrial-size FCB Horomill® starts up in Faulquemont, France for Société Mosellane d'Anhydrite (Heidelberg)

Republic Cement Corporation (now Republic Cement) orders the first FCB Horomill® in Asia, for its Bulacan plant in the Philippines

1996

Lafarge's slag cement grinding plant in Karsdorf, Germany begins production with an FCB Horomill® 3800 (see **Success Story: Lafarge Zement**, p. 18)



1998

The FCB Horomill® proves its capabilities for very fine production with successes in Krölpa (Germany) for customer maxit, and in Amsterdam (The Netherlands) for another customer

2000
2001

Cementos Moctezuma commissions two more mills for its Tepetzingo site—one for raw meal and the other for cement (see **Success Story: Cementos Moctezuma**, p. 19)



“We were impressed by the versatility of the FCB Horomill®, which perfectly matched our multi-product portfolio with our sales requirements. The FCB Horomill® has fulfilled this objective since its installation.”

**Stefan Fiedler, Investment Director,
thomas zement GmbH**



SUCCESS STORY LAFARGE ZEMENT

Karsdorf plant • Karsdorf, Germany



Challenge: Lafarge Zement (now thomas zement GmbH) needed a grinding plant that could produce seven different products, including pure limestone, pure slag, Ordinary Portland Cement, and 70% slag cement.

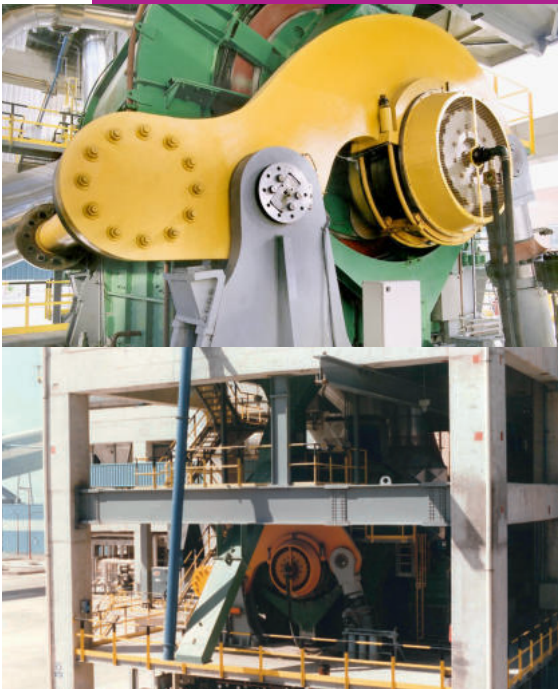
Response: Fives adapted the hydraulic design of both the FCB Horomill® and the classification system to handle the raw materials' different grindabilities and the broad fineness spectrum.

Result: The Karsdorf plant has proven able to produce not only blended cements, but pure limestone meal over 8,000 cm²/g and pure slag meal over 4,500 cm²/g.

Added value: Its stable automated operation capabilities and short residence time can easily handle the seven different product recipes and switch several times daily, ensuring continuous optimized operating conditions no matter the recipe.



SUCCESS STORY
**CEMENTOS
MOCTEZUMA**
Tepetzingo plant • Tepetzingo, Mexico



Challenge: Cementos Moctezuma wanted its first cement plant to be more efficient than other plants running at the time in Mexico.

Response: Convinced by the performance achieved at Fratelli Buzzi's Trino plant, Cementos Moctezuma selected Fives to supply two large 3800 FCB Horomill® mills for both raw and cement grinding.

Result: The Cementos Moctezuma plant achieved its objective: it became the most efficient plant in Mexico, with the lowest electrical energy consumption.

Added value: The identical machines could both use the same replacement parts when needed, meaning that Cementos Moctezuma could keep fewer items in stock. Additionally, operational and maintenance teams only needed to learn how to work on one machine, since the other was its twin.

“We were proud to be the first manufacturer in the Americas to install an FCB Horomill® and the first to rely on such a machine for the entire process within a greenfield plant. Beyond its innovative technical concepts and lowest electrical energy consumption, the FCB Horomill® has the exceptional advantage to propose the same design for raw and cement grinding.”

Giovanni Battista Auxilia
Director, Engineering & Projects (2004-2024)
Buzzi Unicem