



# SUCCESS AND HIGH STANDARDS

**Jean-François Bonhomme,**  
**Project Manager, Fives FCB,** gives  
highlights of the 4000 tpd cement  
production line 2 at Titan Cement's  
Beni Suef plant in Egypt.

## Introduction

While the economic and industrial crisis is affecting construction activities all over the world, there are some areas where demand for cement remains steady or has increased. This is the case in Egypt, where the Titan Group (Greece) decided to invest in a new production line in 2007.

Fives FCB was awarded the execution of the new line, which was delivered on a full turnkey basis.

The Beni Suef cement plant is located in the vicinity of the city of Beni Suef, about 150 km south of Cairo, near the Nile River. It has been producing cement since 1993; prior to the expansion it had a capacity of 4000 tpd. The expanding Egyptian market led to the decision to increase capacity at the beginning of the decade but the project came to fruition in 2006.

Beyond the ability to satisfy the demand of the local market, the purpose of such a project is to reduce production costs and, generally speaking, to improve energy consumption, maintenance and safety, while preserving the high quality level of the final products.

Titan set out to choose a partner for this project based on a number of factors: execution time, global cost and the quality of the equipment. However, it must be emphasised that Titan also paid extreme attention to the safety aspects.



Burning line.

Titan's project team was deeply involved during the whole period of implementation, especially for the design, the follow up of the fabrication and the site works. The teams worked together from the very first step until the end of the commissioning, and the excellent spirit of

co-operation that prevailed between the Titan and the Fives FCB project teams was an important factor in this project's success.

## Technical aspects

In addition to some revamping of portions of the existing line (preblending and material handling), the scope included the basic and detailed design, the manufacture, delivery, erection and the commissioning of the electrical, control and mechanical equipment and machinery for:

- A 310 tph raw grinding workshop.
- A complete 4000 tpd clinker burning line equipped with:
  - ♦ A Fives FCB 5-stage single-string suspension preheater, equipped with low pressure-drop cyclones.
  - ♦ A Fives FCB Zero-NOx precalciner with combustion chamber.
  - ♦ A Fives FCB 3-pier kiln, 4.5 m dia. x 70 m.
  - ♦ A pendulum grate clinker cooler.

The line is fired with natural gas, but the kiln burner can also be fed with heavy fuel oil if required. The burning equipment (precalciner burner, auxiliary burner, kiln burner, gas and HFO systems) is designed and supplied by Fives Pillard (France).

- A bypass system allowing for the diversion of 50% of the kiln gases, fitted with granulation equipment of the bypass dust.
  - A 170 tph (OPC 3200 Blaine) cement grinding plant with one Fives FCB ball mill equipped with a 5.8 MW gearbox and a high efficiency Fives FCB TSV™ classifier.
  - Two 100 tph cement packing and truck loading lines.
- Environmental protection was an important aspect of the

project; Titan imposed severe criteria regarding the quality and the dust content of the fumes, beyond the legal obligations. So, the maximum allowed emission of dust is limited to 20 mg/Nm<sup>3</sup>.

- The raw mill gases as well as the bypass gases are both treated in a hot bag filter.
- The clinker cooler exhaust air is treated in an ESP.
- All the other dust emission points are treated by bag filters.

Emissions of NOx are limited to 600 mg NO<sub>2</sub>/Nm<sup>3</sup> (dry @ 10% O<sub>2</sub>).

The electrical, instrumentation and process control system were designed and installed by Fives FCB.

## The execution of the project

The major milestones for this project were:

- Effective date of the Titan-Fives FCB contract: August 2007.
- Beginning of the site works: December 2007.
- Industrial performance test on the cement grinding plant: October 2009.
- Industrial performance test on the burning line: December 2009.

Considering the specific local constraints, respecting such a short schedule was not an easy task: Titan and Fives FCB had to face several hurdles that slowed down the execution (authorisation of works, natural gas supply, electric power supply – cut offs and voltage drops, etc.) and made the implementation of the project within that 28 month period a real challenge.

**Safety:** the strong willingness of both Titan and Fives FCB to take the necessary steps to realise the project without any accident paid off: 6.5 million hours on the construction site without any lost time injury! This is probably a new record in Egypt.

This was made possible thanks to the involvement of all the participants, the top management of the companies (Titan, Fives FCB and their contractors), as well as the on-site workers.

**Performance tests:** the performance tests on the burning line successfully met all given guarantees.

## Conclusion

The Beni Suef line 2 was commissioned within 28 months after the effective date of the project. All of the initially agreed project targets were met, including performance, safety and schedule, all to the entire satisfaction of Titan.

The Beni Suef project is a true success story thanks to Fives FCB's expertise in managing large turnkey projects combined with the involved expertise of the Titan teams. 🌍