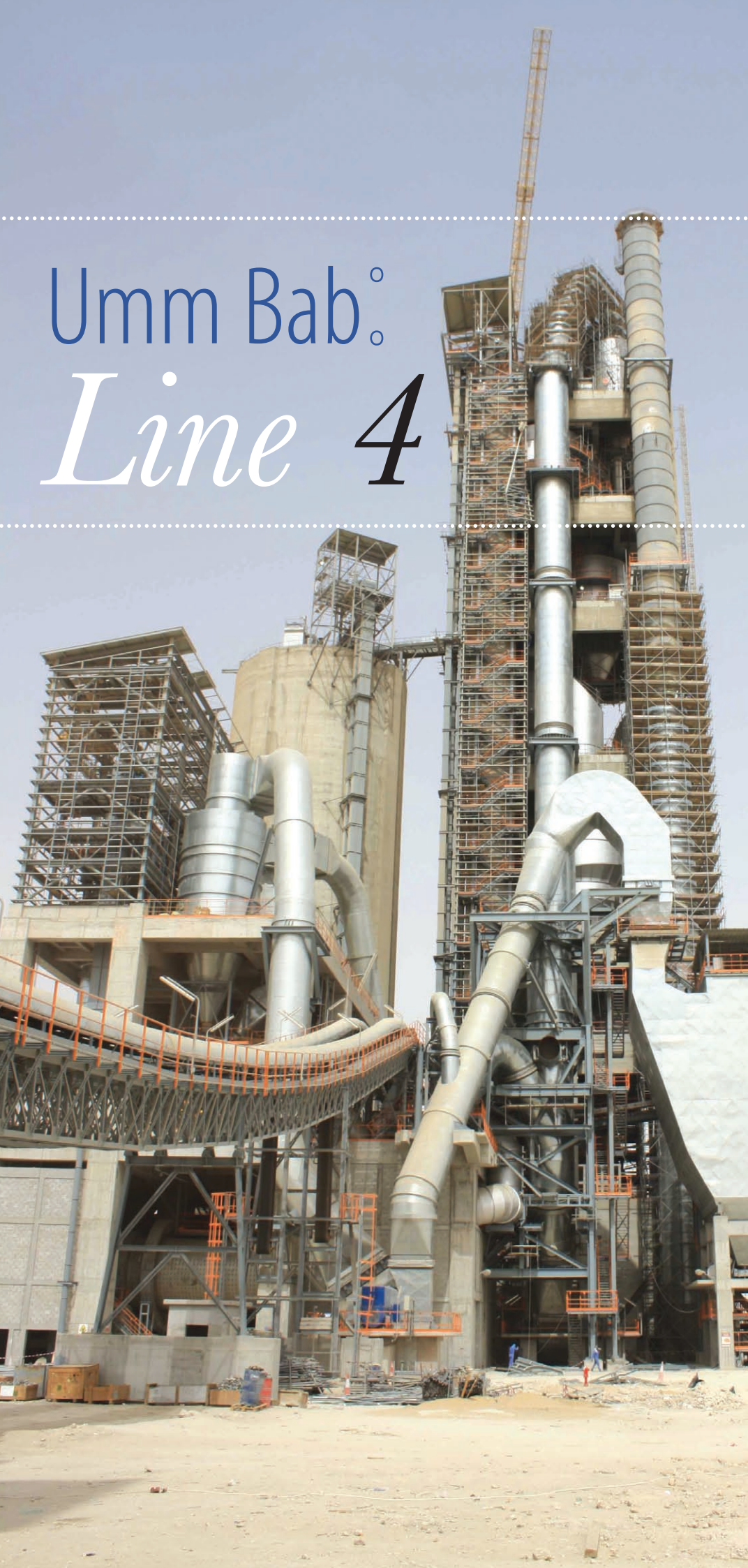


Umm Bab° *Line 4*



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outlines the

Introduction

The global economic crisis is having minimal impact on the Qatari economy: huge projects are under progress in the real estate, gas, aluminium and petrochemical industries.

Qatar National Cement Company (QNCC) is supplying the washed sand and cement for these projects. The company currently produces OPC and SRC, flyash-blended cement and a newly invented blend called Qatar blended cement (QBC), which has the specifications of SRC and high strength.

In 2008, QNCC's total sales reached 4.7 million t of cement, which corresponds to an annual consumption growth of 25%. Now, the company is increasing its production capacity with the construction of a new 5000 tpd line.



With the world's second largest gas reserves, Qatar is famous for its rich natural resources.

The country is challenging itself to accomplish more and more, shaping its future and creating its history. Exceptional projects in the fields of industry, education, sports and tourism have transformed Qatar, and Doha has become the privileged venue for diplomatic meetings, international conferences, exhibitions and sporting competitions.



Fives FCB Low-NOx precalciner.



Fives FCB ball mill.

5000 tpd turnkey contract

On 15 November 2006, QNCC awarded Fives FCB a turnkey contract to supply a new 5000 tpd clinker production line no. 4, bringing an additional production capacity of 1.7 million tpa of Portland cement.

This line is the third awarded to Fives FCB, thus crowning more than 12 years of co-operation.

- The first contract was signed in 1995 for the construction of a 2000 tpd greenfield turnkey plant, which was commissioned in 1998 and has been operating at full capacity ever since.
- In 2004, QNCC renewed its confidence in Fives FCB by entrusting it with a second turnkey contract to supply a 4000 tpd plant.

The three Umm Bab production lines supplied by Fives FCB enable the plant to produce up to 11 000 tpd of clinker (4 million tpa of cement), making it one of the largest and most modern cement plants in the Gulf region.

The main data of the new 5000 tpd turnkey plant are listed below.

Raw materials preparation

Limestone and clay/shale mix, coming from existing quarries, are crushed by a compound crusher and then analysed through an online PGNA.

The crushed materials are stored in linear preblending piles: 2 x 30 000 t for limestone and 2 x 15 000 t for clay/shale mix.

Iron ore and sand are fed from an unloading hopper through the existing line no. 3.

Two frontal bridge reclaimers are used to transfer the main raw materials from the covered hall to the raw mill feed silos with the following capacities:

- Limestone: 2 x 600 t silos.
- Clay/shale: 1 x 600 t silo with two outlets.
- Iron ore: 1 x 400 t silo with two outlets.
- Sand: 1 x 400 t silo with two outlets (the sand is used for SRC production).

Raw meal grinding

The raw meal grinding plant consists of two Fives FCB ball mills with a capacity of 220 tph each, together with two dedicated 5 m dia. Fives FCB TSV™ classifiers.

Due to the moisture content of the raw materials (around 7%), each mill is completed with an integrated drying chamber and a mill inlet

Table 1. Equipment features	
Compound crusher	900 tph – installed power: 900 + 1100 kW
Gamma ray analyser	Online analysis of 12 elements including moisture
Raw material preblending	Limestone reclaimers 400 tph
	Clay/shale mix reclaimers 150 tph
Raw meal grinding	2 x Fives FCB 220 tph ball mills 4.6 m dia. x 11.25 m
	2 x Fives FCB TSV™ classifiers 5000 BF
Blending silo	Capacity: 15 000 t
5-stage preheater	Fives FCB cyclones - 9/9/8.6/8.6/2 m dia. x 7 m
	Fives FCB low NOx precalciner 5.2 m dia. – total volume 920 m ³
	Precalciner Fives Pillard burner: 120/140 MW
	Kiln ID fan: 2750 kW/VSD
Rotary kiln	Effective area of kiln and raw mill ESP: 11 340 m ²
	Fives FCB kiln: 4.8 m dia. x 76 m long
	Installed power: 660 kW/VSD
Kiln bypass	Kiln Fives Pillard burner: 69/85 MW
	Design capacity: 25% of kiln gases
Clinker grate cooler	Effective area of kiln bypass ESP: 11 160 m ²
	Two moveable grates – pendulum suspension – hydraulic drive
	Active area: 120 m ²
Clinker silo	Effective area of clinker cooler ESP: 8900 m ²
	Capacity: 40 000 t
Cement grinding	2 x Fives FCB 115 tph ball mills 4.6 m dia. x 13 m
	2 x Fives FCB TSV™ classifiers 4000 HF
Cement silos	Capacity: 15 000 t
	Equipped with three 200 tph bulk loaders
Packing and dispatch	Two rotary packers: 2200 bags/h each
	Three automatic truck loaders

flash duct. Each mill is driven by a 3200 kW motor through a single side lateral drive; raw meal is homogenised in a 15 000 t blending silo; and gases from the raw mill plant and kiln are dedusted by a common ESP.

Clinker production

The burning line consists of:

- A 5-stage single string preheater equipped with a Fives FCB low NOx precalciner fitted with a new generation natural gas Fives Pillard burner.



Burning line.

- A downcomer water spray system.
- One common ESP for exhaust gases from kiln and raw meal grinding plant.
- A Fives FCB 3-support rotary kiln fired with a multi-channel Fives Pillard burner.
- A kiln bypass system operated at about 15%.
- A clinker grate cooler with pendulum suspension.
- A 40 000 t clinker silo.

Cement grinding

The cement grinding plant consists of two Fives FCB ball mills with a capacity of 115 tph of OPC cement each, together with two dedicated 4 m dia. Fives FCB TSV™ classifiers. Each mill is driven by a 4200 kW motor through a split torque central drive.

Cement storage and dispatch

The cement is stored in either of two 15 000 t silos with three spouts to allow for bulk dispatching. Two rotary packers with automatic bag applicator feed the three automatic truck loaders.

Commissioning

To satisfy the demand for cement, the cement grinding section has been commissioned ahead of the burning line using imported clinker. Only 17 months after the contract came into force, Fives FCB obtained the provisional




The three Fives FCB lines.

acceptance certificate for the first cement grinding unit.

The second cement grinding unit started up three months ahead of the contractual schedule i.e. at 19 months. The grinding plant has demonstrated its reliability in long continuous running and its

performance by producing 105% of the nominal capacity.

With completion of commissioning and start of industrial clinker production of the new Fives FCB plant, according to contractual schedule, the total clinker production in Qatar increased by more than 70%. 

Precalcination by Fives FCB

From a simple and sustainable idea,
we have invented

the Zero-NO_x Precalciner



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Driving Progress

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