



REVIEW # 213

Partnership on the Nile



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Essam Badawi, Dr Mohamed ELSaidy, and Wael Shokry, Wadi El Nile Cement, and Soritis Valsamakis and Martin Paterson, FLSmidth, discuss the success story of a partnership in the production of a new Egyptian cement plant.

Partnership on the Nile

Introduction

Since entering the cement industry as a new starter in 2010, Wadi El Nile Cement (WNCC) has established a strong foothold in the Egyptian cement market. From its one-line plant at Bani Suef, 120 km south of Cairo, WNCC produces its AL MASRY Cement CEMI brand, as well as clinker for use in all portland cement types.

Wadi El Nile Cement

With a current capacity of 2.4 million tpy, WNCC is member of the ENERGYA Group, owned by Hesham El Sewedy, which also has business interests in cable manufacturing and steel fabrication. The Energya Cable Co., currently headed by Aly H. El Sewedy, manufactures and supplies high and low voltage cables, special cables, and accessories for several markets including Egypt, Saudi Arabia, and UAE. The Energya Steel Co., currently headed by Hesham Sallam, provides steel works and equipment manufacturing, erection, and commissioning services in Egypt and Saudi Arabia. All local manufacturing, equipment, and steel structure erection for the WNCC plant were carried out by Energya Steel.

"After more than six years since the establishment and steady operation of WNCC, thanks are due to Energya Steel Co. who professionally manufactured and erected WNCC line 1 and, later, the coal mill," said WNCC's Mechanical Manager, engineer Adel Onsi. "The coal mill involved the erection and commissioning of more than 15 400 t of metal works. For the whole line, more than

20 400 t of equipment was manufactured by Energya or imported from FLSmidth."

Market entry

Developing a commercial profile, WNCC entered the market with its ALMASRY cement brand. Its development is due to an ongoing focus on operational optimisation and the rapid implementation of a strong company brand. WNCC's cement has been sold directly from the plant, delivered further afield in Egypt, and exported to several foreign destinations, including Libya, Solomon Islands, and Somalia. WNCC is currently expanding its distribution channel with the construction of a new warehouse in Minya, 200 km south of Beni Suef.

"We set out to be one of the best cement companies in the Egyptian cement market, which is why our strategy is to provide a distinguished, good service for suppliers, commercial dealers, wholesalers, and the retail buyers of cement," said Essam Badawi, General Manager and Board member of WNCC.

WNCC chose FLSmidth as equipment supplier for the greenfield plant, which was completed in 2010. It is one of only two cement plants in Egypt that has installed a FLSmidth vertical roller mill for clinker grinding (three FLSmidth OK™ 42-4 vertical mills are currently operating in Egypt).

FLSmidth supplied all major machinery and first-time spare parts, including an EV limestone/clay crusher, raw material stores, an ATOX raw mill, a CF silo, a complete



Figure 1. Wadi El Nile cement plant.

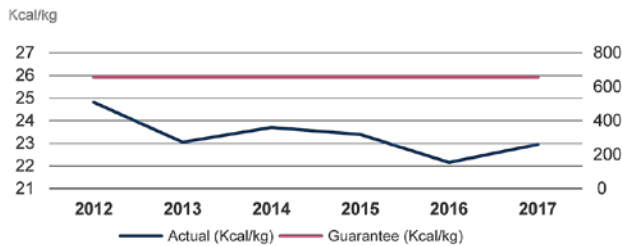


Figure 2. Kiln power consumption at WNCC: actual vs guarantee.

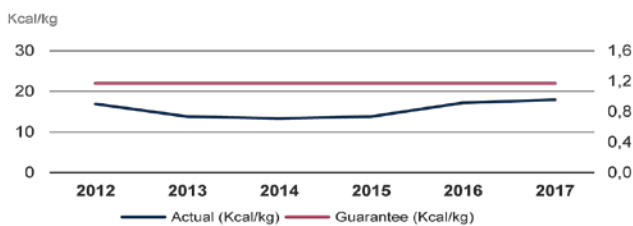


Figure 3. Cement mill power consumption at WNCC: actual vs guarantee.

ILC 3-support kiln (including a five-stage preheater), an SF Cross-Bar cooler, clinker storage, an OK 42-4, and cement silos. FLSmidth also supplied the packaging lines, vertical mill gears, filters, and the quality control system.

Productivity partner

FLSmidth has been responsible for operating and maintaining all equipment on the plant's cement line since the plant's commissioning. The full range of operations and maintenance (O&M) activities provided by FLSmidth includes continuous monitoring of all equipment and operations, plant management, and spare parts and production consumables. In addition, FLSmidth is responsible for employing, managing, and training all plant personnel.

According to the terms of the current O&M contract, FLSmidth guarantees production of clinker and cement to a predefined minimum fixed level. This means a guaranteed minimum of 2.25 million tpy of clinker and a minimum of 2.4 million tpy of CEM I class 42.5N cement.

Energy crisis

The partnership between WNCC and FLSmidth was demonstrated at a time when energy restrictions severely influenced cement production, resulting in WNCC

importing clinker to maintain its cement output. The plant was originally designed for natural gas, but as gas supplies became restricted, WNCC and FLSmidth decided to introduce coal as the energy source. An FLSmidth ATOX® 25 coal mill was added to the plant in 2015, which was a straightforward process for FLSmidth, since the plant layout and local conditions were familiar, allowing the plant to operate at full capacity.

This successful adaptation of the production process made WNCC a front-runner in coal instead of being dependent on gas.

The full supply of fuel and power along with high availability and reliability factors of the kiln and cement mills, were key factors in the plant's production output in 2016. A quality product is a result of many factors: FLSmidth is responsible for the quality control of the cement produced, while WNCC is responsible for the supplying the right quantity and quality of raw material, which has a relatively high sulphate content. Achieving the desired results requires teamwork between FLSmidth's plant team, WNCC's team, and the independent quarry management team, RHI.

RHI has been contracted by WNCC for quarry operation and crusher feeding since the beginning of the plant's operation. A key task for RHI is quarrying, blending, and crusher feeding, which involves a detailed and updated mining plan, extraction from distinct phases, and allocation of resources. FLSmidth's team is then tasked with adjusting the raw mix chemistry to avoid any pyroprocess interruptions and to maximise kiln output without compromising clinker grindability.

Other initiatives introduced by FLSmidth include a dedicated reliability department and specialist training focused on encouraging teamwork across all plant operations. Staff are given appropriate technical training that enables them to build on their competencies, developing multi-functional skillsets. These efforts have played a major part in securing the plant's overall competitiveness.

More than just KPIs

The key criteria for FLSmidth was the ability to score highly in certain key performance indicators: reliability, availability, performance, and mean time between failures (MTBF).


"Quite simply, our client relies on us to produce as expected, with no reduction in plant capacity," said Sotiris Valsamakis, FLSmidth's Plant Manager at WNCC. "We do our utmost to deliver on the promise and show we have the capacity to deal with any situation or challenge without affecting productivity. The client needs to know they can run their business without interruption."

Energy consumption is particularly important, not just because of potential supply challenges, but also with respect to the environment and costs. Both WNCC and FLSmidth O&M are highly focused on minimising energy consumption and maintaining high efficiency in clinker production. Energy consumption at the plant

is consistently below the FLSmidth supply contract guaranteed level of 80kWh/t (Figures 2 and 3).

New O&M contract with capacity upgrade

With the first five-year O&M partnership deemed a success, WNCC chose to extend the contract with FLSmidth by another five years from January 2017. The contract included upgrading WNCC's capacity to 7200 tpd of clinker. Currently underway, the kiln upgrade involves commissioning a new separator and fan for the raw mill, extending the cooler by one unit, modifying the kiln inlet, and upgrading the dust transportation system.

From a solid foundation, WNCC aims to step up its commercial activities, including increasing its cement exports. For WNCC, partnership is key, and it is important that both parties are closely aligned. This means good relationships and clear lines of communication at all levels – from top management aligning commercial expectations to technical specialists working together to optimise equipment operations. 

About the authors

Civil engineer, Essam Badawi, is the General Manager of Wadi El Nile Cement Co. and was responsible for the plant's construction. He has directed several large construction projects in Egypt and was instrumental in its on-budget completion and creating a highly profitable operation. He graduated from Cairo University in 1983 as a Civil Engineer and has a Master's in Construction Management from Iowa State University, US.

Dr Mohamed ELSaidy is the Operation and Process General Manager of Wadi El Nile Cement Co. In a career spanning over 20 years in cement operations, he has helped drive more than 15 multi-million-dollar projects, and has built multifaceted experiences at organisations including Blue Circle, ASEC, Holcim, OCI, and Lafarge. In addition to certifications as a Holcim process performance engineer and lean Six Sigma, he has a PhD and MBA.

Wael Mohamed Shokry is Sales and Marketing Director at Wadi El Nile Cement Co. He managed the startup of the company's cement business, building the commercial strategy, policies, and processes. His current role involves developing and managing different commercial functions, including sales, marketing, logistics, and strategy. His regional sales focus includes all of Egypt, as well as exports to Libya, Somalia and the Solomon Islands.

Sotiris Valsamakis has been FLSmidth's Plant Manager at Wadi El Nile Cement since 2012. In more than 25 years in the industry, many have been spent as Plant Manager at cement, steel, and aluminum facilities. Valsamakis completed postgraduate studies in manufacturing at Cranfield University, UK and gained an MBA from Strathclyde University, also in the UK.

Martin Paterson is Director and Head of Sales at FLSmidth Operations and Maintenance. Before joining FLSmidth in 2016, he has held commercial positions for companies including IBAU HAMBURG, where he was responsible for the Middle East and Southeast Asian market. With 12 years of experience in the bulk material handling industry, he holds a diploma in civil and environmental engineering.

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