

Making Hungarian headway

by ATEC, Austria

In 2003, Strabag SE, one of Europe's leading construction groups, decided to invest in a new cement plant in Hungary. To this end, the company founded a 100 per cent Hungarian subsidiary under the name of Nostra Cement Kft. The plant project is making good progress, and clinker production is scheduled for start-up in summer 2010. ATEC was chosen as the overall consultant and in the article below details the project description and various scopes of supply.

Nostra's new Hungarian cement plant is located near the village of Kiralegyehza, approximately 20km west of the district capital Pecs. The quarry is situated 25km in the northwest of the site. An existing railway system will be used for transporting raw materials to the plant location which, from an economical and environmental standpoint, also proved to be the best option.

The greenfield project includes the complete cement plant: from quarry to cement dispatch, and includes the required new infrastructure with access to existing road and railway lines.

The plant's production capacity will be 750,000tpa of clinker and approximately 1Mta of cement. Planned cost of this investment is €230m. Building constructions are being carried out by Strabag.

ATEC was chosen as the overall consultant and supervisor from the initiation of the project, throughout the complete project realisation period and right up until optimisation of the plant and training of plant personnel, including process design for the overall plant performance.

From the start of this project it was

Clinker production is scheduled to start in summer 2010



Architect's impression of the future cement plant

Nostra's aim to construct a modern production facility, taking into account all the latest environmental regulations in cooperation with the local authorities and community.

In spring 2007, after receiving all the necessary local authority permits, Nostra started with the realisation of the project. Today, it is in accordance with the master schedule, with civil construction and equipment manufacturing making good progress.

In terms of project realisation, the best synergy between modern technology and the most economic solution was chosen. The main process sections were sub-contracted to well known European equipment suppliers and the general contractor was chosen due to its speed and economic price structure.

Project supply

A contract was signed with Chinese company CBMI, (a member of the Sinoma group) in April 2008 for delivery of mechanical equipment.

Key process equipment being delivered by European companies include:

- **Milling systems:** vertical mills from Loesche were chosen for all mills (raw mill, coal mill and two cement mills)
- **Preheater and calciner:** the five-stage preheater including calciner, and future possible installation of combustion chamber and bypass system, was engineered by ATEC
- **Clinker cooler:** engineered and supplied by IKN.
- **Electrical and control system:** delivery and installation of the electrical and control system was awarded to Siemens Austria in November 2008.
- **Quarry equipment:** delivered by SBM.

Start-up of clinker production is scheduled for summer 2010.

ATEC: scope of work

- Overall project management
- Plant arrangement and planning work
- Process design of all plant sections
- Compilation of all enquiry documents
- Complete tender evaluation
- Negotiation of sub-contracts
- Quality assurance and progress control
- Interface and technical clarification
- Supervision for manufacturing
- Supervision of erection works
- Supervision of commissioning
- Supervision of performance tests
- Training coordination

Plant description

The raw material at the quarry consists of very pure limestone and clay. These are crushed to <100mm, mixed and run through an online analyser.

For environmental reasons, the additive materials for the raw meal, additives for cement production and the solid fuels are mainly transported to the plant by train to reduce noise and gaseous emissions which would otherwise be caused from heavy lorry traffic.

The materials are stored in longitudinal storage facilities in different sections of the plant. Transport of those materials is carried out via tripper belts and reclaimers. From there the materials are transported via belt conveyors to the raw meal and cement mill pre-storage bins.

A vertical raw mill will be installed with a nominal capacity of 200tph. The raw meal composition is permanently controlled by automatic analysis.

The kiln line is designed for a capacity of 2500tpd of clinker. It consists of a modern, five-stage, single-string

preheater with calciner and mixing chamber. The mixing chamber is equipped with two burners for coal and/or petcoke. The Low-NO_x calciner design ensures that local environmental regulations are adhered to, and also allows for the optimisation for future, more stringent NO_x limits to be met. The design of this flexible and adaptable ATEC NO_x calciner technology is the result of many years of experience in the cement industry with similar applications.

The waste gas from the preheater is used as drying air for materials in the raw and coal mills.

The clinker cooler, based on well-proven IKN technology, is equipped with a roller crusher. The clinker cooler waste gas is utilised as drying air for slag drying at the cement mills.

The compartment clinker storage is made of concrete and has a capacity of approximately 65,000 + 10,000t.

For cement grinding, two identical milling systems each with capacity of 130tph (OPC 3200cm²/g) are installed to reduce the spare parts stock and to achieve a greater deal of flexibility in terms of grinding different cement types in response to varying market conditions.

Cement storage consists of six concrete silos each with a capacity of 6000t.

Two silos are designed as compartment silos, which allow for the storage of eight different cement types.

A fully automatic packing and palletising plant will be installed for bagged cement supply.

The material flow of raw materials and product is arranged in a counter clockwise direction. Pre-erection areas and space for lifting equipment for initial plant installation (as well future maintenance) has been accommodated for in the plant design. The plant's internal road system allows sufficient access for even heavy construction and transport equipment to reach all main areas of the works. Future extensions of various plant sections are considered.

Project management

The project aim was to design the cement plant in accordance with the latest technical standards in respect to using the lowest possible energy consumption and maximum environmental compatibility.

Special attention was paid to utilisation of waste gases in the respective departments for drying of materials (raw meal, coal, slag, etc).

ATEC has been a crucial partner to Strabag right from the start, as even prior to project realisation Strabag's diverse raw material deposits of in Hungary were investigated for their suitability for cement production.

When the project site was determined, ATEC worked out the technical concepts for the plant and the technical documentation for the authorities was completed together with Nostra.

ATEC compiled the "Call for Tender" documentation, issued the inquiries and provided the technical coordination and expertise throughout the tender period until placing of suppliers orders.

Since then, ATEC together with the Nostra team, has been successfully coordinating the day-to-day project activities between all parties involved.

The realisation of the master schedule is a challenge for the project management team of Nostra and ATEC in all respects. However, the ambition and enthusiasm of all involved in this project has contributed to its success thus far.

The entire region of Kiralyegyhaza benefits from this greenfield works – 110 new jobs have been created from direct cement production operation and a further 100 jobs are made available in administration and associated services.

