

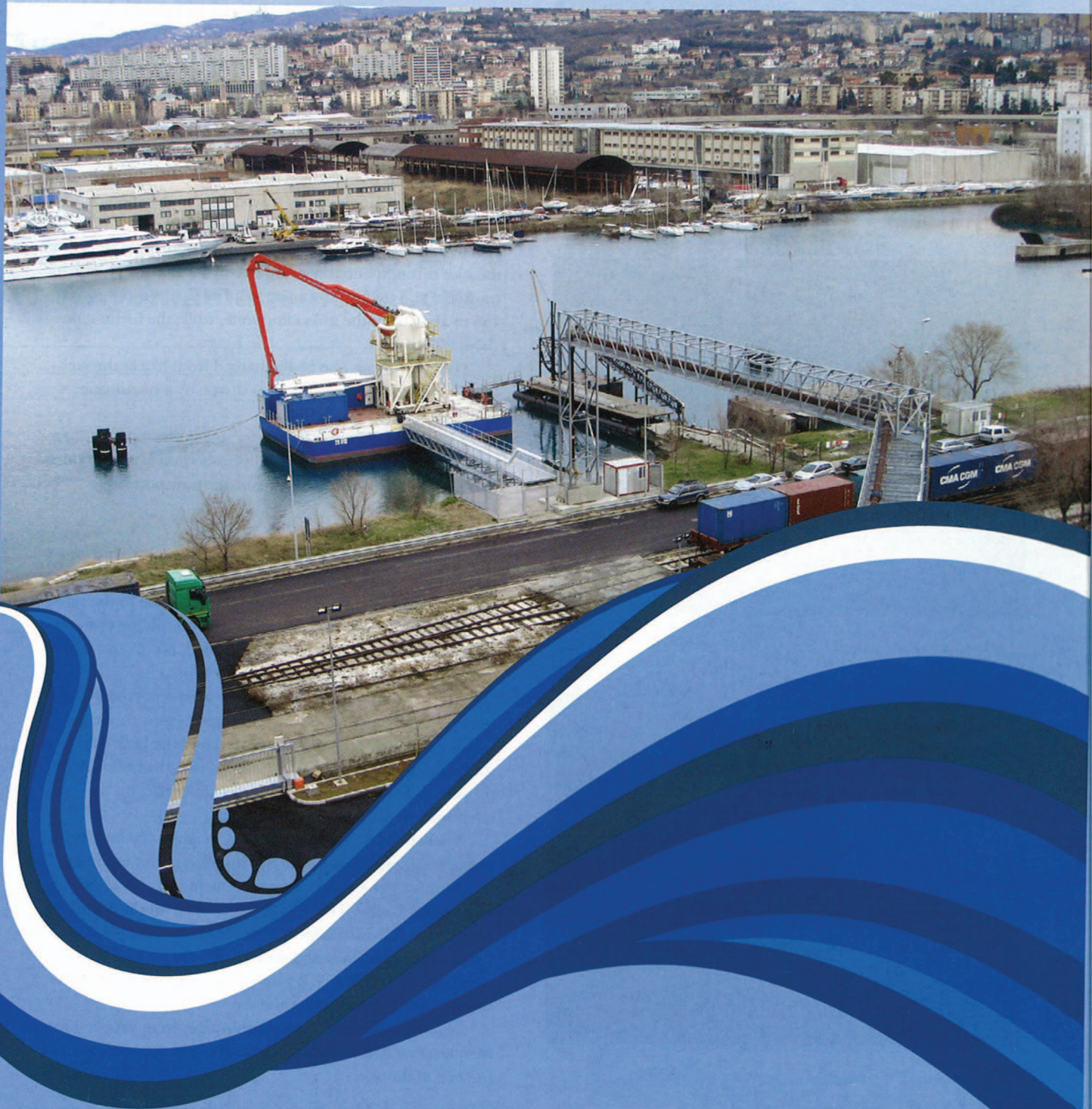
Optimised Port Facilities

The Spanish company Cemengal has recently completed a new cement storage, bulk-load and bagging facility at the port of Trieste, Italy.

Introduction

The creation of new, strategically located cement terminals makes it possible to satisfy market demands, be highly competitive, and offer customers a dynamic and flexible service.

The port of Trieste turnkey project was granted to Cemengal by Med.Con, a cement distribution company created by the Pacorini Group of Trieste and the Spanish holding company W.C.G. Centred in Italian and Eastern European markets, Med.Con focuses exclusively on the distribution of cement.



Cemengal specialises in the design, fabrication and installation of equipment for the cement industry, for new facilities, as well as for revamping existing ones, offering turnkey or semi-turnkey solutions. The company has been based in Madrid for almost two decades and has mainly operated in Spain and Latin America. Now it is fast expanding its market to the rest of Europe, North Africa and the Middle East.



Silos fed by pneumatic transport.



Bagging and palletising building.



Pneumatic evacuation system on Pontoon Bridge.

The project

The new cement storage facilities consist of bulk loading, bagging and palletising facilities. The Cemengal project, entirely carried out by its own staff, ranged from mechanical, civil and electrical engineering, equipment supply, erection, supervision and responsibility over all the equipment and services supplied.

The terminal began its industrial operation in January 2009.

Pneumatic transport and cement storage

At this station, cement is transported by ship and truck to the site where it is discharged into four concrete storage silos.

The new 29 m high silos were designed and mechanically equipped by Cemengal; the silo civil works were managed by Med.Con, and the reinforced concrete erection was carried out by a sliding shipform method. With a capacity of 6000 t, the silos allow 99.5% discharge, obtained through in-flow or fluidisation via open air slides, arranged in sectors that form the bottom of the silo. The fluidisation cycle of each different sector is controlled by the discharge capacity required at each moment. The silo allows full access and maintenance with the lowest dust emissions.

The silo's outlet can direct the cement through air slides to the truck bulk load or to the bagging station of the plant.

The cement is discharged from the ship through a pneumatic evacuation system placed on a mobile pontoon bridge, supplied by Van Aalst and property of Med.Con. This system has a capacity of 200 tph, and transports the cement to the silos through one conveying line by means of a pneumatic transport and three two-way valves. The closest silo is placed 156 m away from the unloading zone, while the furthest one is about 207 m away.

The cement can also be discharged from trucks through four independent conveying lines driven by a pneumatic transport system to each silo.

A Redecam QS series filter is located at the top slab of each silo to allow the dedusting, and dust collection is re-introduced into the process by means of pneumatic transport.

Bulk loading of trucks

A Cemengal fluidisation system, with automatic filling and weighing, gives each silo a fast and efficient discharge. The cement passes along a 200 tph capacity air slide to the mobile charger, which ensures a mean flow of 150 tph for cement with maximum conditions of 4000 Blaine, 80 °C and 0.5% moisture.

All the loading station's emissions are recovered by Redecam QT series filters and through a screw conveyor that is capable of directing the material to the bulk load or to the bagging station. It is reintroduced into the bulk loading process to guarantee the lowest possible impact on the environment and the lowest spillages.

A Schenck Process elevated road weighbridge for trucks, with dimensions 16 m x 3 m, was installed under each silo. This weighbridge has a range of measurement of 1 - 60 t, with an error below 0.02%. The weighbridges were supplied with an automation weighing system, composed of a DISOBOX system for measuring digitally and individually the six load cells of each road, and by DISOMAT B plus® equipment for the dialogue with the truck driver under the silo.

Two more elevated road weighbridges were supplied for the identification and control truck weighing at the entrance and the exit of the site.



Cement transport to bagging

The bagging system is located in a separate building for easy truck accessibility and manoeuvring.

The emissions are recovered by Redecam QT series bag filters, directed by a screw conveyor and collected with the cement extracted from the silos in a set of two air slides. These air slides have a capacity of 100 tph each (one for silos 1 and 2 and another for silos 3 and 4), and transported by a 21 m Cemengal belt bucket elevator, with a capacity of 100 tph for feeding the bagging plant.

Bagging, palletising and wrapping

The cement from the elevator is discharged into a reject screen, which separates and eliminates the foreign bodies, material lumps and other oversize particles.

A hopper installed above the bagging device guarantees continuous feeding through three level indicators and a rotary valve.

A fully-automated bagging device has been installed to match the plant's performances. The chosen Haver & Boecker ROTO-PACKER with eight filling spouts has a capacity of over 2400 bags/h in units of 25 kg, and over 2000 bags/h in units of 35 kg. To increase the machine's capacity, a bag placer was included. Automated packing with a filling spout control system by means of a vertical impeller, and bags with auto closing valve type and simultaneous weighing system, ensure economic and environmentally-friendly optimisation.

All eventual cement spillages occurring throughout the bagging facility are collected using dedicated equipment, separated through a Redecam QT series filter, and redirected to the packer. Next, a special belt will check the bag's weight in order to prove its integrity and a bag-rejecting device will reject the broken bags or the ones with an incorrect weight.

The heavy bagging device's spillages and the cement coming from the bag-rejecting device, after separating the paper from the material in the bag destroyer, are transported

through a set of two screw conveyors to the elevator to be reintroduced into the packer.

The palletising set is located at the bagging zone's outlet. This is composed of one belt conveyor that includes a horizontal bag flattener station, one gravity storage roller conveyor, one metering timing conveyor and one Beumer paletpac®, which makes it possible to palletise bags automatically with a capacity of 3000 bags/h in units of 25 kg and 2500 bags/h in units of 35 kg.

Using a Beumer set of three driven full pallet roller conveyors and one full pallet centring device, the full pallets are guided to the Beumer stretch hood, for securing goods stacked by a PE film hood, provided with an electrical control cabinet adjacent to the machine.

At this point, the full pallets are stocked, ready to be loaded into trucks and dispatched.

Control system and supervision

The control room is the heart of the cement storage plant, where all production and auxiliary processes come together, i.e., where processes are synchronised, and synergies between first-class electrical equipment can be exploited.

Cemengal supports process development, engineering and modern automation with innovative technology and strategic long-term concepts. The company's experience and expertise in automation, analytics, IT and process technology enables it to guide the customer step-by-step.

With Siemens' WinCC, process operation and monitoring has been integrated into a powerful and flexible process control system. The system also offers full scalability for everything from small-scale lab solutions to automating complex processes. Failsafe operation and redundancy have been integrated in the solution for each level via the central engineering system, and a wide range of intelligent field instruments with powerful configuration and diagnosis.

The result is a process that is optimised throughout, delivers perfect quality, and remains flexible at all times. 🔄