

Taiwan Cement Corporation adds flexibility, speed and consistent quality to the production process using Rockwell Automation's integrated architecture solution

Rockwell Automation's Logix technology based solution for cement production process offers 60% faster reaction time, 30% less program time and 50% less cost than the previous DCS alternative.

Background

Incorporated in 1946, the Taiwan Cement Corporation (TCC) is Taiwan's first listed company and its largest cement manufacturer – it produced and sold more than 7 million metric tons in 2001.

With more than 1,400 employees, TCC serves customers in the construction industry who complete projects as diverse as high-rise housing units, the Fuitsui Reservoir and the Chientan Station of Taipei Mass Rapid Transit System. Its product lines include: Cement Type I, Cement Type II, Low Temperature and Low Alkali Cement (including Types I and II), Cement Type III, Cement Type V, High Strength Cement, High Performance Cement, Ready Mixed Concrete, High Performance Concrete (HPC), Paper, Paper Bags and Sludge Treatment Agent.

Key company values include sustained high levels of quality to provide products and services that are tailored to customer needs, as well as encourage environmental protection and improvement.

Challenge

In the past, cement manufacturers, including TCC, have used DCS solutions



to control the cement production process in their facilities. But TCC came to realize it needed a steadier, more flexible, more cost effective system for one part of the process in particular.

TCC also determined that DCS reaction time – the responsiveness between the operation console and the control system – was too long and slow for its purposes. Further, the company was vigilant to prevent any flaw in production quality – which could potentially affect its cement market share. In order to maximize throughput and consistency, and maintain the highest quality of cement, TCC needed a new control system.

Solution

TCC turned to Rockwell Automation Taiwan for its alternative options to the DCS solutions. The company has been a Rockwell Automation customer since 1990. We recommended a solution based on our integrated architecture technology, a solution that would allow more powerful functionality, be more user friendly, run faster, and have a shorter reaction time – all at a lower cost.

TCC Information Systems Corporation (TCCI), another company in the conglomerate that owns TCC and a distributor of

Rockwell Automation products since 1995, led the project's sales and service efforts, and provided the complete solutions. Rockwell Automation Taiwan supported TCCI by providing hardware and technical support.

The installation included a complete set of ControlLogix control systems – which have been stable; efficient; and easy to use, debug and maintain. ControlLogix now controls all the main equipment for one part of TCC's cement production process – including motor, damper, fan, elevator, mixer, silo, mill, classifier and more – with a third party human machine interface system.

The ControlLogix solution provides more flexibility than the DCS option. (A distinguishing characteristic of Rockwell Automation's control system is that they are open, and easily integrate with other systems.) The Remove Insert Under Power (RIUP) function has been particularly beneficial, because engineers do not have to shut down power when removing the insert modules for maintenance. Furthermore, the

ControlLogix I/O capacity is large enough to implement in many applications. And ControlLogix technology can help decrease operation time and increase reaction time because of its user friendliness. User manuals are also easy to find on the Rockwell Automation web site.

In addition, Rockwell Automation's NetLinx integrated data communication architecture allows seamless integration between all the components in an automation system, from the simplest device to the Internet. It enables TCC to simultaneously control, configure, and collect information at any point – with benefits including reduced cost and easier access to the information needed to improve productivity. ControlNet, one of the networks in the NetLinx architecture, has helped TCC ensure accurate transmission of instructions from the operator to the control system.

Results

The project has been completed successfully and the system is working

as expected and the Rockwell Automation solution decreases operation time by taking 30% less time to program. It also offers faster reaction time – 60% faster than the DCS option – costs 50% less than the DCS alternative, and increased final throughput.

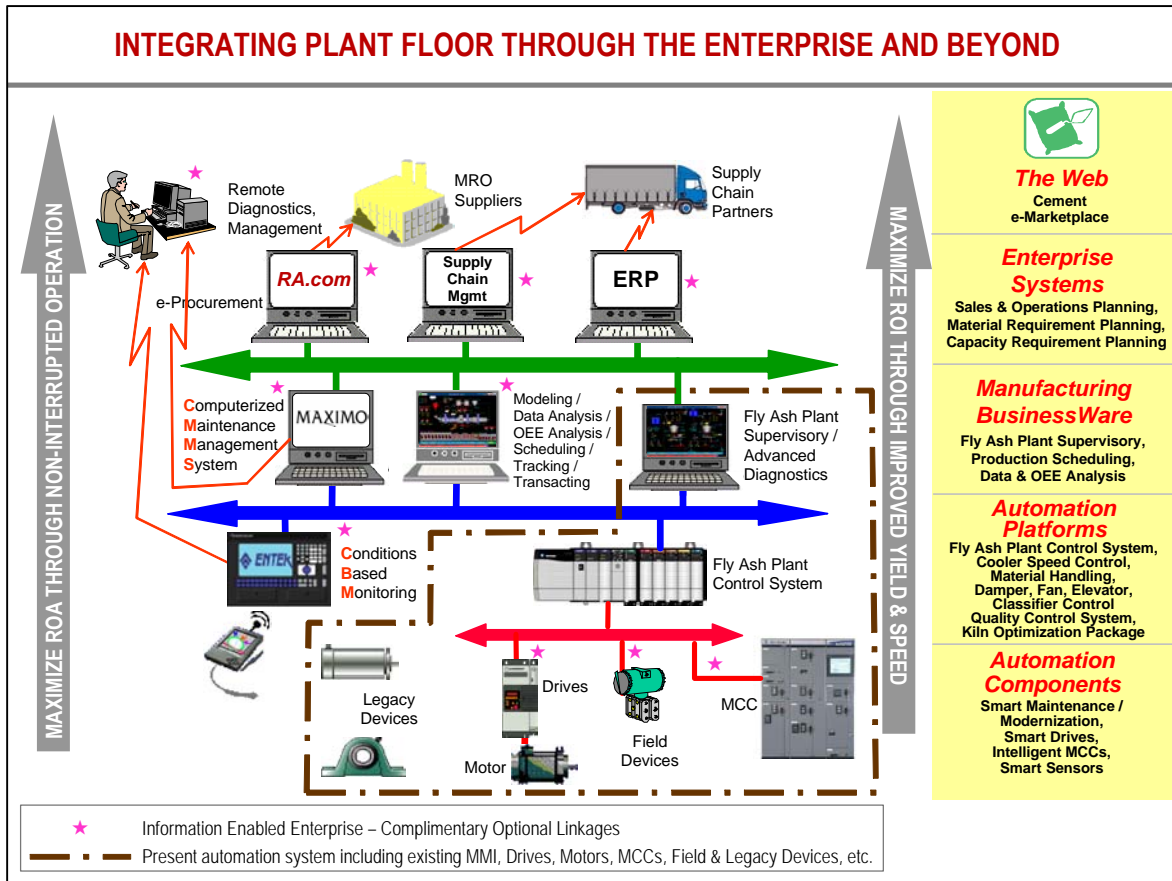
"Rockwell Automation Taiwan and TCCI were trying to give our client a new vision of a Rockwell Automation PLC based control system, with a productive solution that would show what it could achieve," says Mr. Ming Fung Lo, manager of TCCI. "Using ControlLogix has helped TCC shorten reaction time in its cement production process, but it has done so stably – with a lower breakdown percentage. In addition, it has offered full functionality, through flexible integration with other systems, but easily and in a user friendly way."

As this was the first project in which TCC used ControlLogix and ControlNet for a part of its cement production process, the company viewed it as a proof of performance improvement. Because the results were very positive and successful, TCC plans to continue to implement this type of system in the future.

The architecture on the following page depicts Rockwell Automation's concept of an Information Enabled Enterprise. The area outlined with a brown dash line represents the present automation level in the TCC facility discussed in this document. The remaining portion illustrates a host of solutions Rockwell Automation can provide today to integrate the plant floor to the enterprise and beyond.



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Corporate Headquarters

Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53202-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

Headquarters for Allen-Bradley Products, Rockwell Software Products and Global Manufacturing Solutions

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36-BP 3A/B, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Headquarters for Dodge and Reliance Electric Products

Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433

Europe/Middle East/Africa: Rockwell Automation, Brühlstraße 22, D-74834 Elztal-Dallau, Germany, Tel: (49) 6261 9410, Fax: (49) 6261 17741

Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 6356-9077, Fax: (65) 6356-9011