ASIA CEMENT'S PUKRANG PLANT UPGRADES TO THE MOST ADVANCED ECS/CONTROLCENTER™

When it became crystal clear that Asia Cement's Pukrang Plant, in Saraburi Province, Thailand and Fuller Technologies (previously FLSmidth Cement) was going to need to upgrade its control system, the plant found the best available automation system on the market, discovering that it was the most cost-friendly choice, too.

Time for an upgrade

Asia Cement's Pukrang plant consists of two dry-process production lines with a capacity of five million ton nes of cement per year. Since the commissioning of line 2 in 1997, it has deployed an Fuller control system based on a Rockwell PLC5 hardware and VMS software-based control system. After many years of successful operation, it became clear that it would need to be upgraded to avoid an inevitable loss of production due to downtime.

The system upgrade had been previously postponed, but maintenance and the procurement of spare parts had grown increasingly costly and time consuming. Additionally, Asia Cement recognised that the plant had and would continue to expand its production to meet the market demand, anda newer, state-of-the-art system would be betler able to meet the uptime required for the growing production.

The search for a solution begins

So, in order to improve productivity and keep pace with the rapid advances in industrial automation technology, Asia Cement decided to search fora control system that would boost the plant's capacity. It was important to install a system that would meet its needs in terms of efficiency, process optimisation and fault analysis, as well as process reporting and monitoring.

Asia Cement's Project Manager for the upgrade, Deepak Choudhary, explains other important aspects of what he and his colleagues were looking for:

„In our search for the best automation tool, we considered specific criteria for suppliers, namely, service and pricing. Along with a good technical solution, the east was a factor, taking into account both the installation price and the total east of ownership. We evaluated three leading manufacturers, including Fuller, as part of the hunt fora control system that could deliver what we needed within the budget and timeframe for the project."

After thoughtful consideration, Asia Cement awarded Fuller the order to upgrade its ageing system to the latest Fuller control system, based on ECS/ControlCenter'" version B and modem Controllogix PLC hardware from Rockwell. Asia Cement had previously worked with Fuller and chose it again because it was clear the company understood the requirements of its production process and could be expected to avoid delays. It was also important thai the work could gel starled soon after the agreement was made.

Plant operator at Asia Cement using Fuller®ECS/ControlCenter

Invaluable knowledge sharing

Operators and engineers were invited to share knowledge with Fuller at its Chennai facility to learn the system while it was being built. Senthil Raj Krishnan, Engineering Manager at Fuller explains, „This knowledge-sharing approach is important to us because it establishes a trust in us and in aur systems, which is an important aspect of the way we work."

Asia Cement was particularly happy to be offered the opportunity to have their operators trained while the system was being developed using the built-in device simulation function. For example, start and stop process simulations, which test whether process failures still result in safe operation of the equipment, were demonstrated to plant operators in the lab.

On-time arrival

„To us, productivity is the customer's critical success factor - a need that can only be supported when products and services are delivered on time and as promised," says T. Subathra, Project Manager at Fuller, adding, „The installation at the Pukrang Plant was an exemplary project in this way."

The plant system required complete reprogramming and recommissioning, but because most of the pre-planning was done at Fuller's location in Chennai, disruption at the plant was minimal. Same of Asia Cement's plant operators went to Chennai during the system development for knowledge-sharing purposes.

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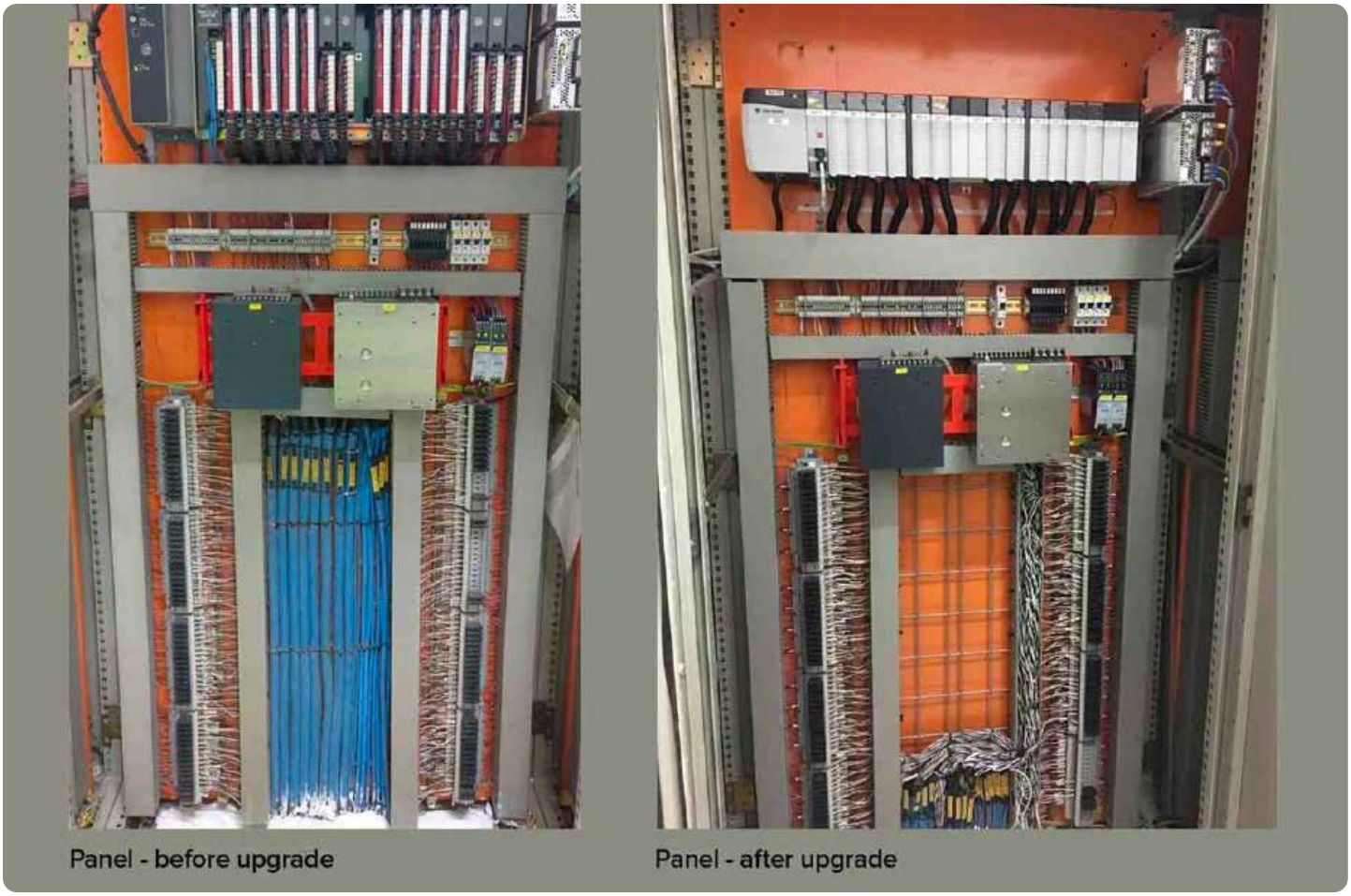
SUBATHRA THAMBIDURAI
Project Manager at Fuller

„The task of supervising and executing the replacement of existing PLC5 hardware with the Controllogix PLC hardware was huge, and good quality control is absolutely essential", says Brian Pedersen, Operations Manager from Fuller. „That said, the first phase of rewiring was completed in 14 days, using seven PLCs, approximately 10,000 connections, and 45 10 Cabinets and the second phase was completed in just five days, using three PLCs, approximately 5,000 connections, and 18 10 Cabinets."



Rewiring for the plant system took a smooth 21 days, because of the efficient planning between Asia Cement and Fuller.

Solid, proven processes

The entire PLC programming code and process interlocking had to be replaced as well. To address this, Fuller employed several proven engineering and processing tools to ensure consistent and uniform structure of PLC programs. The structured output from these tools enable faster modifications, updates and troubleshooting during both commission and operation phases, and the tools are compatible with the major PLC brands, including Siemens, Schneider and Rockwell.

Thoughtful planning and cooperation between Asia Cement and Fuller laid a strong foundation for a smooth, rapid commissioning process. Additionally, the teamwork of local building contractors, Fuller engineers and the Asia Cement project team made extensive signal testing prior to the software testing and commissioning activities possible, which greatly contributed to the success of the project. The onsite system installation and commissioning was completed in just 21 days and Fuller was quite pleased to complete this sizable retrofitting job well within the scheduled period.

Other things also contributed to the efficiency of the commissioning. While Asia Cement had decided to replace the complete control system, including the PLC and IO cards, the old IO cabinets were found to still be in very good condition, and it made sense to reuse them. Jay Wong, Sales Manager at Fuller, says, „Reusing existing equipment is always a good thing because it makes lasting use of the customer's previous investments and is an opportunity that we will try to take advantage of whenever possible."

Clearly upgraded productivity

The ECS/ControlCenter system provides a process automation platform with dual redundant servers that collects I/O data from PLC (motors, drives, field instruments, process values, etc). It also provides HMI/SCADA functionality for operator supervision and control of all departments in large production facilities like the Asia Cement plant.

The system also includes machine control right at the equipment site, such as crusher and packing plants. The users at the Pukrang Plant appreciated the system's ability to view or operate only specific departments or equipment using operator display screens, trends, alarms and reporting tools, and by making use of the user role concept on the local operator station.

„It's a known strength of Fuller to make efficient and clear process displays that help the operator to keep the process running smoothly," says Deepak Choudhary, explaining: „The feel of the VB-mimics layout is engineered to be almost identical to the V7-mimics on the static part, but with new equipment symbols based on the ACESYS v8 standard (ed. Adaptable Control Engineering System), making it easy to operate. These familiarities also facilitated a smooth transition to the new system.

„Fuller has been working with control systems in cement projects for 40 years, and it's clear to see that experience comes through in the ACESYS control standard's expanded functionality. We also appreciate thai the complete PLC programming and process interlocks of the existing system have been fully incorporated into the new system."

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DEEPAK CHOUDHARY
Project Manager for the upgrade at Asia Cement

Deepak Choudhary comments thai plant management was very satisfied with the upgrade installation and transition to the new system, saying, „It was a big achievement to deliver the upgrade project during the scheduled shutdown period without any extension and without any effect on the planned production. We are pleased that we could implement a system that significantly increased uptime at the plant at a competitive price."

Anders Noe Dam, Global Product Line Manager at Fuller, echoes this sentiment stating, „It's always wonderful to see a job done well as the result of the hundreds of hours our engineers put into development, configuration and collaboration with the customer in preparation for a commissioning like this one. Without Fuller's three-pronged approach to control systems, which includes sophisticated pre-planning by engineers, on-sile commissioning, and highly skilled project management, big jobs like this couldn't become the success stories they are."

About Asia Cement's Pukrang Plant

- **Located in the Saraburi province in Thailand on an area of about 400 acres**
- The first production line was installed in 1993, the second in 1997
- Produces various types of cement, including Portland cement and dry mortar cement

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