Arabian Cement Company Automates Rabigh Plant Dispatch Operations with ABB

Rabigh, Saudi Arabia – The Arabian Cement Company (ACC) of Jiddah, Kingdom of Saudi Arabia, has applied ABB’s Dispatch Automation System (DAS) at its Rabigh plant. ABB’s system was selected for the Rabigh operation, as part of the full automation package ABB is providing for the new production line no. 5 at Rabigh.

The goals set for the dispatch system by ACC were threefold: to achieve controlled and orderly traffic inside the plant; to computerize order handling and delivery tracking; and to automate the loading of trucks. This was achieved first by organizing the process in an orderly manner, then automating it.

The most visible problem solved by the DAS at Rabigh was essentially one of traffic congestion. Until this year, the entire dispatch organization was managed manually. With a client base of over 1000 cement customers, the Rabigh operation typically had 60-70 trucks waiting at its four loading stations.

When the dispatch concept was approved in May, 1995, over 350 trucks per day arrived and departed from Rabigh to pick up and distribute the plant’s cement products. By the time ABB’s DAS was started-up in December 1996, the addition of the new line to Rabigh’s production capability had increased the plant’s capacity to 7000 tons per day. Two types of cement, OPC and SRC were each being dispatched in bulk or bag.

Particularly useful to the client is ABB’s development of simultaneous Arabic and English user interface. As 100% reliability is absolutely crucial in the dispatch operation, full redundancy of the system is assured by the installation of the system on a dual computer system, enabling “hot standby”.

Loading station at Rabigh’s site
Significance of the contract to ABB

According to Stefan Zoeger, Product Manager for DAS, “Serious bottlenecks were developing in the system by which trucks were queued and loaded. Now, with the addition of the fifth line, these bottlenecks needed to be broken.”

Since 1989 the ABB Dispatch Automation System has been custom-designed for clients of ABB’s Building Material, Mining and Mineral Industries Business Unit (ABB BMI) to support handling and tracking of out-going cement and the registration and internal distribution of any in-coming cement additives. At Rabigh, the ABB system will control dispatch for the complete plant, including four existing lines as well as the new no. 5 line.

Rabigh has benefited in a more important way than simply easing the congestion of the loading process, however. Medhane Ghebre, ABB’s Project Engineer for the DAS, indicated that “due to shorter queues and faster customer service, (Rabigh) has been able to sell more cement on a daily basis than ever before.”

Further order details

The many functions and tasks that make up the successful automated dispatch system are performed by an advanced network of hardware and software. Key hardware includes a dual-host AlphaServer 1000 server with DSSI Quorum Disk. Five PC’s, ten card readers - four with RS 232 interface and six with RS 422 interface. The server’s application software is ABB’s own Dispatch Automation System 1.0 and the system runs on an open VMS version 6.2 operating system. Data is managed with an Oracle 7 release 7.1.3, with communications between client and server controlled under TCP/IP protocol.

Other interesting information

The process of the Dispatch Automation System is well-illustrated by the steps taken by an empty truck arriving for a load of bulk cement: Arriving first at the registration desk, the customer is identified through the use of a card reader. Here, truck information and the order itself is entered into the system by a registrar. The customer’s solvency information is checked, and the truck is sent to one of two traffic lights that precede the entry gate.

Once signaled inside, the truck proceeds to a weighing bridge, where information is once again tracked through the card reader. The truck is weighed and loading instructions are printed. The truck is then guided to the correct station for loading of either OPC or SRC-type products. Traffic lights control activity at the loading bays. Once loaded, the truck proceeds to the exit weighing bridge, where a card reader once again tracks the order’s fulfillment before it leaves the plant area.

All information associated with the transaction is then available for the various management, control and planning functions that go into running a successful plant.

Of critical value to ACC is the tracking and control of critical sales and inventory data enabled by ABB’s DAS. The full integration of this system into the plant’s business information processes ensures that data is tracked and distributed not only to the plant’s managers, but by modem to ACC’s main office in Jiddah 50 miles to the south. The system can also be monitored and adjusted remotely using a modem link.

ABB’s Business Unit, Building Material, Mining & Mineral Industries headquarters within ABB Industrie AG, Switzerland, offers single products and site services up to large turnkey electrification for the construction, extension and modernization of cement production facilities world-wide. More than 100 cement plants are using ABB control systems. ABB engineers, supplies, contracts and manages electrification from the quarry to the dispatching of cement. ABB is the world’s largest electrical engineering company with annual sales of $34 billion (US) with more than 200,000 employees world-wide.

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