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ALLIED DOMEcq WINE DISTILLERY AUTOMATION, TOMELLOSO, SPAIN

Allied Domecq produces wine distillates for brandy production at its Tomelloso plant, Spain. In August 2003, Allied Domecq decided to automate the two distillation towers at the plant as well as the plant's water-cooling towers. The automation was planned in order to increase operational efficiency at the plant and push production figures to new levels. The automation process would only be for the distillation, allowing much more control over the constituent of the spirit produced.

From the first distillation, the brandy maker takes the heart, or the middle portion, known as the 'brouillis'. This portion of the spirit is then distilled a second time. The heart of the second distillation, or 'eau de vie', is then carefully selected for aging in Limousin oak barrels. For every ten gallons of wine distilled, only one gallon of brandy is produced. The decisions about where to take the cuts in brandy production is a highly skilled process, so automating this particular area of the production process where the quality of the product can be made or lost is a prudent move.

PLANT AUTOMATION CONTRACTOR

The contract for the plant automation was awarded to Emerson Process Management of Austin, Texas, USA. The automation solution was based on the production capacity of each of the distillation towers, which can process and distil 15m³ of wine per hour.

Allied Domecq needed a system which was robust, reliable and accurate. The solution was the installation of Plant Web® digital plant architecture.

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The Tomelloso brandy distillery where Allied Domecq produces wine distillates for brandy production.

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A selection of Allied Domecq brandy products.

The system incorporates the user-friendly Delta V™ digital automation system, which makes use of open interoperable technologies and AMS predictive maintenance software.

PREDICTIVE MAINTENANCE SYSTEMS

The AMS software can communicate with intelligent field devices via the Plant Web field network, which uses Foundation fieldbus open digital communications protocol. Field devices in the plant include Fisher® valves with Fieldvue® digital valve controllers, Rosemount® pressure and temperature transmitters, Micro Motion® Coriolis flow meters and Rosemount Analytical analysers.

The field devices carry out diagnostic tests and provide real-time data which describe the state of the process and the field devices (in diagnostic self-test mode). This allows the plant to function under a predictive maintenance regime.

The Rosemount Analytical analyser used in the plant consists of a gas chromatograph that can analyse the composition of the spirits being produced by the distillation process at any one time. The live data can then be used to advise the operator where to take the optimal cut to maximise production but minimise contamination by methanol and Fusel oils.

ALLIED DOMECQ PRODUCTIVITY

The new Plant Web architecture has improved the efficiency of the operation and the productivity at the Tomelloso facility. When the automation was completed towards the end of 2003 the production of the plant increased by 14% compared to the same period in the previous year.

The automation costs were US\$2.15 million dollars but the productivity improvements should return more than that in a short space of time. The installation of the system, i.e., wiring, installation, testing and commissioning was accomplished in a short space of time with the minimum of disruption as

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Fieldvue® digital valve controller.

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Barrel making for brandy maturation.

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Grapes to produce wines for distillation to brandy.

the plant was still at full production during the process.

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