

# Arnott's Biscuits

Streamlined processes optimize operations for Australia's largest biscuit manufacturer



## The Challenge

To provide Arnott's Biscuits with an online batching system that would interface the Manufacturing Resource Planning (MRP) software with plant floor systems and streamline process operations.

## The Solution

An integrated control system from the sequence control and recipe handling to the ERP interface. The customized solution now integrates the customer BPCS, SQL Server, CitectSCADA, CitectHistorian and Allen Bradley PLCs.

## The Benefits

The system is easy, reliable, and improves production processes by removing the paper trail and manual data entry error. Arnott's are now able to make more effective and timely decisions to optimize operational performance.

The Arnott's Biscuits Huntingwood production facility near Sydney is the largest biscuit manufacturing facility in Australia, producing over 31,000 biscuit products per year. Arnott's engineering manager, Mike Dwyer, proudly describes it as "the most sophisticated biscuit making factory in the world today."

The Huntingwood factory occupies 44,000 square meters, and its five manufacturing lines operate 24 hours a day. Each line consists of a mixer, a forming line, ovens, secondary processing and packaging.

## The Challenge

Arnott's Biscuits required a single integrated control system that would link its Manufacturing Resource Planning software with the plant floor controllers. The goal was to remove the paper trail traditionally found in the manufacturing process and streamline process operations.

Arnott's Biscuits needed much greater capacity than typical batching systems to allow for an unlimited number of recipes. Arnott's also wanted to report batch statistics from the plant floor to their administration and warehousing computer system (BPCS) and to integrate inventory control, accounting and quality control information.

## The Solution

The solution was a single integrated batching system, custom designed and engineered to interface seamlessly with Arnott's multiple production and manufacturing systems.

The system integrates all production systems, including BPCS, SQL Server database, CitectSCADA, CitectHistorian and Allen-Bradley PLC-5s, to provide a complete enterprise-wide automation solution.

ITEM	
Number of CitectSCADA Tags	46,218
Number of Digital Alarms	4,600
Number of Trend Tags	432
Number of I/O Devices	17 x AB PLC-5/80
	88 x AB SLC
	5 x AB PLC-5/30
	4 x Memory
	8 x Disk
Average Response Time	0.8 Seconds
Observed Response Time	Sub 1 Second
Observed Time to call up a Graphics Page (with all display data)	1 Second
Network Utilization (measured at primary file server)	5% to 12%
I/O Server CPU Usage	15% to 25% (Primary)
Trend/Alarm Server CPU Usage	4% to 33%
Report Server CPU Usage	0% to 10%
Display Client CPU Usage	6%
PLC Brands	Allen-Bradley
Other Systems Interfaced	BPCS Corporate System
	SQL Server with Microsoft Access Front End

The integrated solution comprises a CitectSCADA operator interface presenting shop order requests to operators, allowing them to select the most appropriate order for batch production. CitectSCADA then downloads the attached recipe to the PLC for production execution.

The automation system also provides the plant floor operator interface for normal HMI purposes. At the completion of a given batch, statistics and valuable data are collected, stored and integrated into the manufacturing resource planning system by CitectHistorian.

This level of data has proved invaluable to Arnott's in improving product consistency and increasing output with specific and detailed batch statistics, such as temperature fluctuations, tallied at the completion of a given batch and then compared to test results and product quality.

This valuable production data can be stored and called on for historical analytical purposes in optimizing efficiency and production for Arnott's.

### Benefits

Arnott's are now able to report batch statistics from the plant floor to the administration and warehousing computer system, as well as integrate inventory control, accounting and quality control information throughout the enterprise.

The user-friendly, reliable system improves production processes by removing errors that previously resulted from manual data entry. Furthermore, the system now has the capacity to run an unlimited number of recipes.

As a result, Arnott's are now able to make more effective and timely decisions to optimize operational performance. Arnott's have subsequently decided to implement an identical automation control system at its Victorian plant in Burwood.



**“The result of the partnership is a user-friendly system of operator graphics which interfaces to each process of the factory.”**

Mike Dwyer,  
Engineering Manager,  
Arnott's, Huntingwood

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