

Lion Nathan leverage on MES system to increase fermentation turnaround and improve on quality KPI's

G.H. Moore, Lion Nathan, PO Box 23 Auckland New Zealand

Lion Nathan's investment in the Proficy Plant Applications MES suite at four of its breweries is paying dividends, particularly at its Auckland plant.

Information from the system has allowed brewers to track not only the effects of adjustments to recipe parameters in fermentation but also allow them to see correlations with changes in various quality and process parameters back in the Brewhouse. Improvements in various performance and quality KPI's have been achieved since implementation of the system.

The system provides immediate visibility to laboratory and brewery technicians on the state of batches in the cellar and provides a communication medium that signals when tests should be carried out.

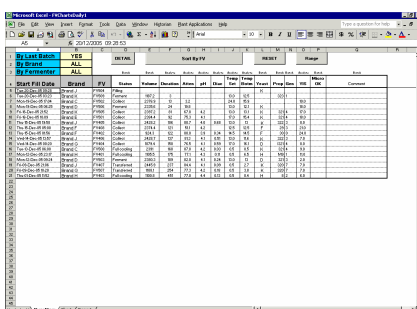
The progress of fermentation is tracked and when all quality criteria are met the technician has all the information necessary to decide when the fermenter is ready for CO2 collection; end of fermentation cooling and subsequent transfer. This has led to a significant reduction in turnaround primarily by eliminating or reducing delays in communication between laboratory and brewing teams.

The increased turnaround (average of half a day) has deferred additional investment in capital plant. Recent requirements to process additional wort/green beer streams would otherwise have caused a capacity constraint.

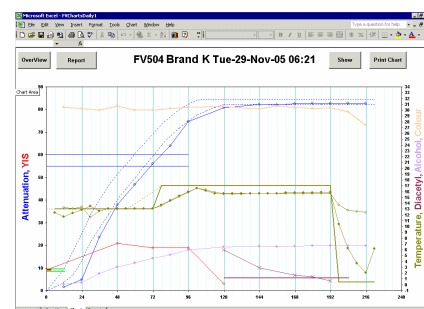
The system has also allowed maximum demand energy savings initiatives to be implemented which provide cost savings for the site but have a negative impact on fermenter turnaround.

Reports

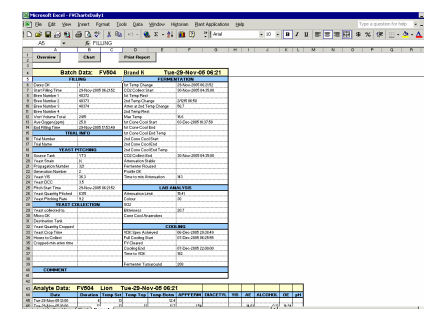
Reports allow data from MES to be analysed in different ways



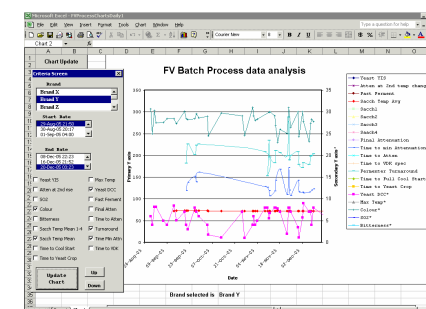
Fermenter Daily Report (Cellar Batch Overview)



Fermenter Daily Report (Detail for specific batch)

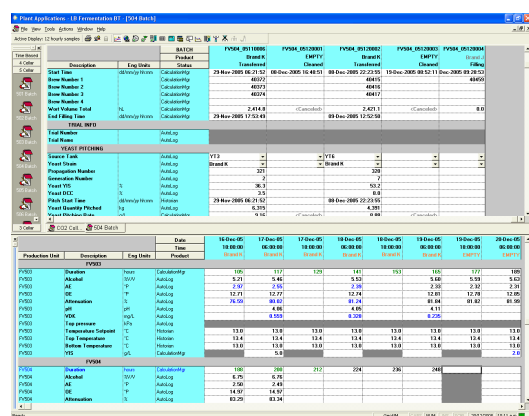


Fermenter Daily Report (Report Detail)

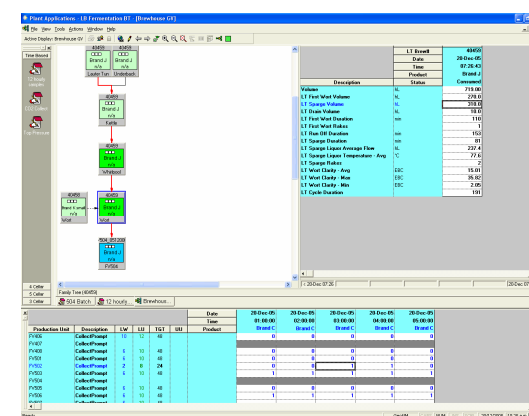


Fermenter Batch Analysis Report

Proficy MES



Fermenter Batch and 12 hourly samples displays



Fermenter Genealogy and CO2 Prompt calculation displays

Data built into MES specification model

Data from Control System monitored and Tracked by MES

Manual Lab/QC data entry

Automated Prompting for CO2 Collection to SCADA

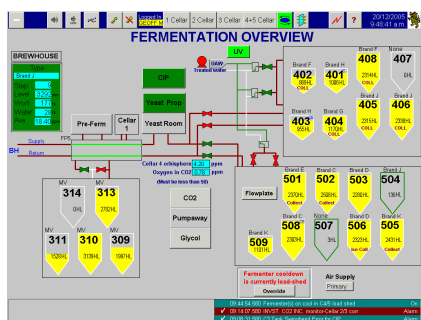
SCADA

Data from PLC's & field devices

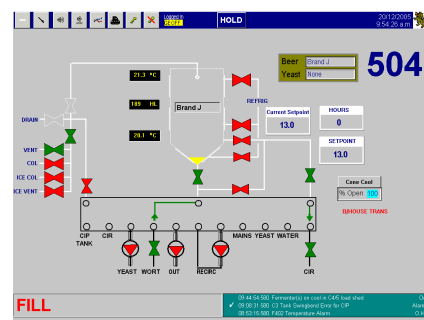
Placing a fermenter on CO2 collect is a manual process. The ideal time at which it is done is dependent on a number of factors including the brand, the fermenter size and the number of brews (volume) transferred. It relies on the diligence and experience of the operator to initiate. In order to maximise the CO2 collected an automated system has been configured to provide a prompt on the SCADA screen when this ideal time has elapsed. It has been based around the requirements (defined in table 1) which encapsulates this "knowledge".

Beer	Large fermenter		Small Fermenter	
	3 brew	2 brew	1 brew	2 brew
Brand K	6	10	48	6
Brand D	6	10	48	6
Brand E	6	10	48	6
Brand G	6	10	48	6
Brand H	6	10	48	6
Brand J	10	12	48	10
Brand C	2	8	24	2
Brand L	10	12	48	2

Table 1 - Hours after last wort transfer before prompt for Collect



SCADA Screens showing Fermenter Overview and detail for a specific fermenter



Data from PLC's & field devices



SCADA Alarm Summary screen (showing collect prompts)

Turning Data into Information!