

Recording and control in the Food & Beverage industry

Monitoring and control of the malting and mashing process



Improving efficiency and productivity

Measurement made easy

Introduction

Malting and mashing are key stages in the production of beer and whiskey. Both processes use malted grain. Depending on the region, barley, wheat or sometimes rye are used as malted grain.

Best quality malted grain is first steeped in water and then spread out on malting floors to germinate. It is turned regularly to prevent the build-up of heat. After 6 to 7 days of germination, the grain, now called green malt, goes to the kiln for drying. This halts the germination.

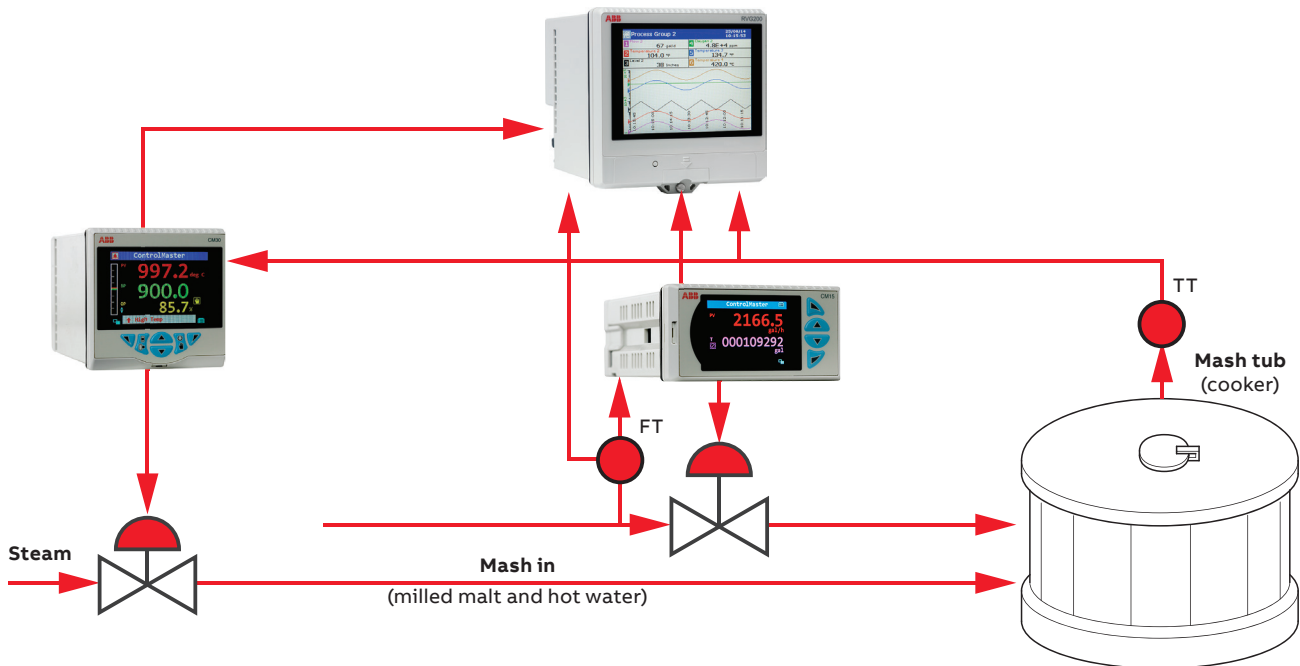
The heat is kept below 70 °C (158 °F) so that the enzymes are not destroyed. Peat may be added to the fire to impart flavor from the smoke.

The dried malt is ground into a coarse flour or grist. The grist is then mixed with hot water in the mash tub. The mash is stirred, helping to convert the starches in the malt to sugar. After mashing, the sweet sugary liquid is known as wort. The spent grains, the draff, are processed into cattle feed.

The process

ABB's ControlMaster and ScreenMaster range of products are widely used in the malting and mashing processes. The ControlMaster controller (CM10, CM30 or CM50) is used to control the temperature of the mash tub. The ControlMaster CM15 indicator can be configured as a simple, accurate and reliable batching unit, to introduce fixed amount of mash to the mash tub for cooking.

ABB's paperless recorders are protected to NEMA 4X and IP66 as standard and are used to record critical process parameters (for example, temperature, flow and valve-open or -close signals). Also, the ScreenMaster's optional batch recording function enables data, including batch numbers and product type information, to be recorded alongside process data. The recorded data can be analyzed easily on a computer using ABB's DataManager Pro application.

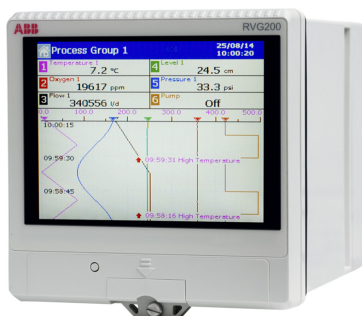


Mashing process overview

What ABB products are suitable?

ScreenMaster RVG200

The RVG200 paperless recorder provides a versatile and secure solution for data recording. It is ideal for recording the temperature and pressure of the mashing and malting process making it easier for the data validation process.



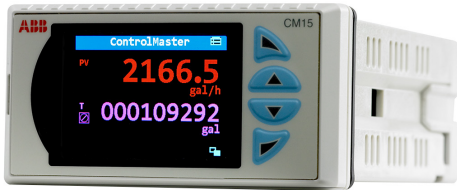
ScreenMaster RVG200

RVG200 features include:

- High specification 21CFR Part 11 compliant data security.
- High visibility process displays.
- Remote access and operation via Ethernet.
- Hosedown protection to IP66 and NEMA 4X.
- Automated process data management.
- Batch recording option enables simple recording and reviewing of batch processes.
- Batch information can be scanned directly from product paperwork using a barcode scanner, reducing the chances for human error.

ControlMaster CM15 process indicator

The panel-mount CM15 is a feature-packed 1/8 DIN universal process indicator. A crystal-clear, full-color, TFT display shows operators exactly the information they need to know and provides operation and configuration menus in full text, making the CM15 intuitive to use and very quick to install and commission.



ControlMaster CM15 process indicator

CM15 features include:

- Direct, high accuracy connection to electromagnetic flow meters such that frequency signal can be totaled and displayed on screen. Totalization and counter functions for calculation and display of flow total values and pulse counting capability.
- Dual-point indication enabling two process values to be displayed simultaneously.
- IP66 and NEMA 4X environmental protection for on-site measurement and indication.
- MODBUS® and Ethernet communication options for flexible connectivity into virtually any higher level system.

ControlMaster controllers

The CM10, CM30 and CM50 controllers offer a wide range of control functions and feature straightforward operator controls. With their full-color TFT displays, all controllers in the ControlMaster range provide engineers with a clear and comprehensive overview of process status and key information. These displays can be tailored to show specific process data, while a chart display provides short-term trending information.

ControlMaster features include:

- Advanced recording and design features (0.1 % measurement accuracy), including password protection.
- A choice of communications options including MODBUS and Ethernet.
- MODBUS (RTU or TCP) enables easy integration with larger control systems (for example, Freelance or 800xA), and allows both read and read / write access to real-time process value data as well as most other variables.
- Ethernet communications can provide automatic notification of critical process events via email or remote monitoring of the controller and process via the ControlMaster's integrated webserver by simply addressing it in a standard web browser.
- NEMA4X (IP66) rating as standard, making them suitable for use in almost any location in a modern food processing plant, where cleaning of all surfaces takes place.



ControlMaster CM10 / CM30 and CM50 controllers

Acknowledgements

MODBUS is a registered trademark of the Modbus-IDA organization

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