

How can small breweries make big strides in efficiency?



BRAUMAT Compact:
the process control system for breweries

Answers for industry.

SIEMENS



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It's all about the beer

As a craft brewer, you seek perfection in every beer you brew. Whether it is mastering the repeatability of your recipes, improving the quality and consistency of your brewing process, or just lowering the costs associated with running your brewery, you are always looking for new methods to produce more and improve the quality of your beer. That's why Siemens has created a powerful and cost-effective process control system specifically designed for the craft brewer – introducing BRAUMAT Compact.

What is BRAUMAT Compact?

BRAUMAT Compact is a user-configurable process control system that provides you with everything you need for the automation, monitoring, and control of your entire brewery. Based on Siemens BRAUMAT package, combined with the automation technology of the SIMATIC® PCS 7 platform, BRAUMAT Compact is unique because the system offers you the same process control capabilities that are offered to large breweries. This enables you to run your brewery with more precision. It also provides you with the recipe management and

scheduling capability needed to help you increase your barrel count without compromising quality.

The system offers more capabilities for helping you increase efficiency, boost production, and eliminate variability than what is found in other types of systems. Capabilities like scheduling, archiving, reporting, and trending functions come standard with the system, which also includes engineering software, the operator interface, controller, and I/O modules for connecting to your installed instruments, pumps, and valves.



Key benefits

- Increase production without adding staff
- Improves quality, repeatability, and consistency by automating labor-intensive manual tasks
- Automates the temperature control of your fermentation cellar to optimize cooling efficiency
- Optimizes the operation of your existing brewhouse to produce more brews in a day
- Reduce energy usage (heating and cooling)
- Boosts productivity of your staff by reducing the number of hours required to tend to the process, allowing them to focus on other tasks in the brewery
- Pays for itself in improved quality as well as productivity

Maintaining the craft in craft brewing

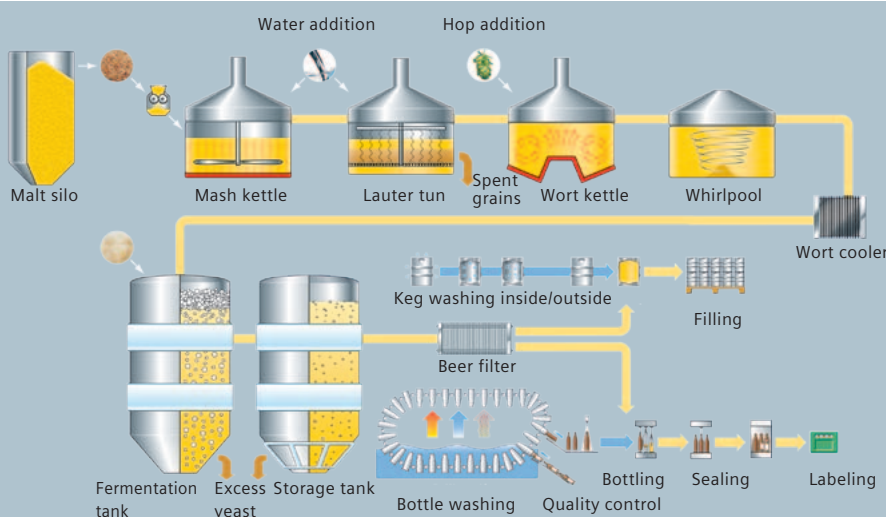
As a craft brewer, you want a process control system that can help you increase your productivity, improve the quality and consistency of your product, and boost production levels – all without turning your staff into system programmers.

The intelligent combination of craft and automation

BRAUMAT Compact, our cost-effective craft brewery process control system, gives you the flexibility to automate as little or as much as you want so you can focus on what you do best – craft great-tasting beer – without losing the “craft” in the craft brewing process.

Having a process control system that allows you to tap into all the critical facets of your brewing process, from the brew house to the fermentation cellar, all from a central location, helps you optimize the

process while keeping you focused on your craft. With a complete set of predefined monitoring tools that are built into the system, that run systematic checks over your entire process, you will be able to see everything at a glance using centralized overview display, faceplates, trends, batch reports, recipe viewers, and production schedulers. Now, for example, you can scan all of your fermenter actual values and instantly see that one fermenter temperature is 3.8 degrees lower than it should be, or view the complete data collected automatically for a batch using Microsoft® Excel.



Additional benefits you'll find with BRAUMAT Compact:

- Improves the work environment for brewery staff by adding technology that makes their jobs easier, not harder
- Expands the flexibility of your process to help you create new recipes, modify existing recipes, and try new types of brews
- Eliminates the need for manual data collection through automatic collection and reporting of production data
- Centralized display and production planner provide an at-a-glance overview of the complete process flow

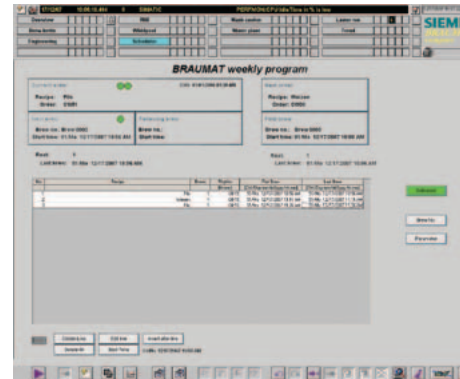
Brewing process expertise built in

With brewing process expertise built into the BRAUMAT Compact system, you can focus on crafting great-tasting beer instead of on the system that is controlling your process.

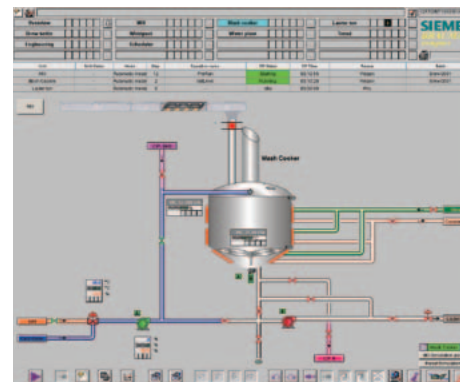
Experience-based expertise for daily production

Whether it is monitoring and controlling the temperature in your fermentation cellar, creating automated batch reports, or reviewing the production schedule for the week, your craft brewery will be running with the same precision and efficiency as a large brewery.

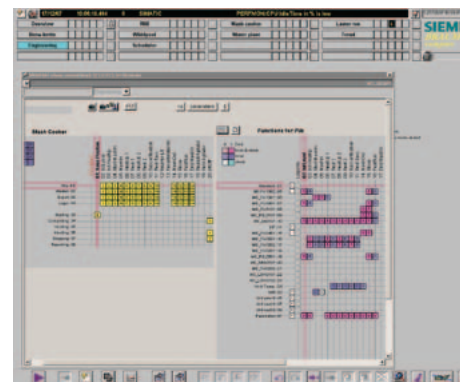
The pre-engineered brewing libraries developed for BRAUMAT Compact are based on years of brewing experience accumulated by Siemens experts and leading brewing OEMs throughout the world. Its modular design allows for breaking up the brewing process into smaller independent units allowing you to manage tasks more efficiently.



Production scheduler



Operator interface for monitoring and controlling the process



Recipe viewer

Key benefits:

- Brewing Engineering Libraries built in with predefined solutions for the craft brewing process in small breweries (brewing, fermentation cellars, filtration, etc.)
- Production scheduler helps you easily manage your Production Order List and CIP orders
- Integrated, user-friendly system for monitoring, control, and planning is designed explicitly for the craft brewer



Key benefits of compact size:

- Reduces cost – minimizes material and labor cost for wiring
- Distributed (remote) I/O – allows you to place the I/O modules wherever you want them in the brewery
- Small footprint – fits easily into the brewery's existing space

Key benefits:

- Intuitive and easy-to-use displays help you master and maintain your recipes
- Point-and-click configuration of recipes (parameters, steps, start/stop times, and conditions) saves time and streamlines the brewing process
- Modify or add individual recipes online without interrupting production

Compact size fits anywhere

Installation is a breeze with BRAUMAT Compact. With the flexibility and scalability of our system, we are able to fully meet various brewery needs.

Tailored functionalities

One example is using SIMATIC PCS 7 Box to optimize its form factor and compact size. By combining all the essential functionalities for automation, monitoring and control, and engineering of your craft brewing process, you will be connecting your brewery to one of the most powerful process automation systems on the market today.

The system uses PROFIBUS technology to maximize installation flexibility while minimizing costs. With PROFIBUS, a single cable is run throughout the brewery to connect your I/O points, instrumentation, pumps, and valves into the process control system without the requirement of running individual wires or conduit. This eliminates the labor and material costs typically associated with running parallel pairs of wires throughout your brewery, resulting in a cleaner installation which is easier to maintain and expand.

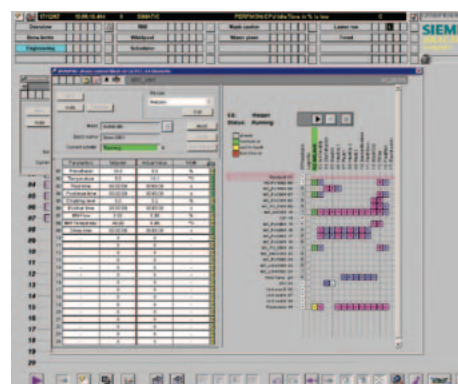
You're always in control of your recipe

Repeatability is critical to pleasing your customer's taste buds. It is also the special part of what it means to be a master craft brewer. Creating the color, aroma, and taste profiles for each beer on a consistent and repeatable basis can make or break a craft brewer's reputation. That's why the BRAUMAT Compact system has been designed to help you master the management, development, and execution of your recipes.

Everything for the perfect craft

One of the key tools for recipe management is the Recipe Unit Procedure (RUP) Viewer, which provides your staff with simple and easy-to-read graphical displays for monitoring and viewing the status of the running recipe. In particular, the viewer provides an interactive display of recipes, recipe parameters, control modules (e.g., pumps and valves), and the sequence of operations for executing the recipe.

With a few clicks of the mouse, you can modify your caramel malt recipe target and then change it back on the next brew if you want to. You can also set up the system to automatically perform entire steps in the brewing process; such as opening and closing valves, starting and stopping pumps, or changing temperature setpoints; all at the precise time or according to measurement values. Automating the key steps in the brewing process reduces cycle time and increases the number of brews your existing equipment can handle.



Recipe viewer – recipe parameters and control modules

Monitoring your process to improve quality and consistency

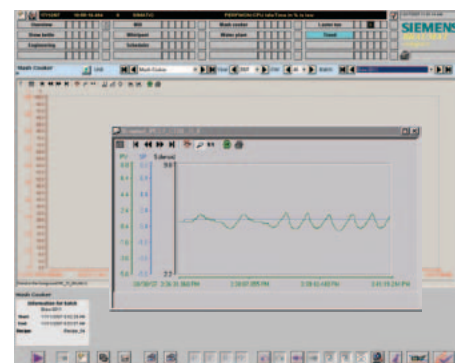
Brewing first-class beer involves seeing the bigger brewing process picture. That's how it's always been, and how it always will be. What's truly new, however, is the ease with which this process can be monitored in craft breweries – with BRAUMAT Compact.

Highest transparency for every batch

One of the most significant benefits of BRAUMAT Compact is to make it easier for you to monitor the quality of your brews. Thanks to powerful data evaluation tools, the system gives you the capability of trending, archiving, and analyzing the efficiency of your production, so you can go back and analyze your data or trouble-

shoot the batch. Production data can also be analyzed using Microsoft Excel.

The collection in storage of production information makes it easy for tracking and tracing of raw-material lots to finished batches of beer. This helps you comply with the Bioterrorism Act by increasing the level of accountability within your brewery.



Batch-specific trend screen



Key benefits:

- Lab/Quality data can be entered manually or automatically assigned to the respective brew
- Generates batch reports automatically so that it no longer has to be done by pen and clipboard
- Display of production efficiency
- Tracking and tracing from grain to finished beer

Better temperature control means better beer

When it comes to crafting great-tasting beer, temperature control is king. That's why BRAUMAT Compact has been designed to help you optimize the temperature control in the brewhouse and in the fermentation cellar.

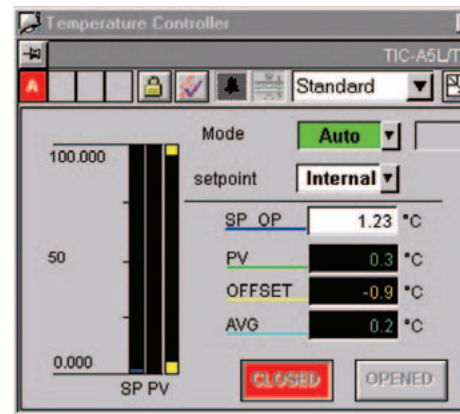
Temperature monitoring at a glance

On a single screen, the brewer can now monitor and control all of the data from each process unit, such as all fermentation tanks, trending process parameters such as setpoint and actual temperature as often as every second (if needed). This eliminates the need for you or a staff member to walk up to each individual tank throughout the cellar just to record data or control the temperature profile.

The system also enables you to optimize cooling efficiency and extend the life of your solenoid valves. By continuously monitoring and automatically making adjustments, it can spread the heat exchange load out more evenly over time, eliminating temperature swings and maintaining more stabilized tempera-

tures in the tanks. Cycling of the solenoid valves that open and close to control the temperature can be curtailed, helping to minimize temperature fluctuations and minimize wear.

Even more impressive is how the system communicates with you. For example, if the temperature goes out of tolerance because of an equipment problem, an alarm is generated within the system and is immediately displayed on the operator interface. Optionally, the alarm message can be sent to a messaging device, such as a cell phone, depending on the criticality of the alarm. The entire process can be securely monitored and controlled remotely, thus providing coverage for your brewing process while the brewers are at home.



Faceplate for fermentation tank temperature control



Key benefits:

- Electronic Brew Sheets are generated automatically from the data that is collected by the system
- Adjusts temperature automatically to precisely match the selected temperature profile during fermentation, thus increasing repeatability
- Minimizes energy usage for heating and cooling

Integrated instrumentation gives you more “eyes” in the brewhouse

With BRAUMAT Compact’s ability to link to different types of equipment throughout the process, you will be able to get a broader view of your entire brewery.

The eyes and ears of the process

SITRANS flowmeters from Siemens, for example, can be added to your brewery to measure Plato concentration. Thus you can achieve a whole new level of visibility that will increase repeatability and consistency of your process. This new view into your process helps you reduce the amount of time needed for mashing and boiling, enabling you to optimize your existing brewery without adding more tankage. It can also minimize consumption of raw materials (grains) and energy (for boiling the wort), which will ultimately save you money down the road.

Placing a flowmeter in the run-off of the lauter tun allows you to optimize the lautering process. This

flowmeter also has the capability to measure yield at the beginning of the brewing process.

By adding a Plato meter, the wort concentration can be continuously measured, monitored, and controlled. This measurement enables BRAUMAT Compact to control the boiling process in a way that minimizes energy consumption, ensures that the wort’s profile matches its target, and makes sure that the target concentration is reached at the appropriate time. It also allows you to add hops or other ingredients at the precise time in the boiling cycle.

A flowmeter can also be integrated into the system to allow you to automatically calculate your total beer production for tax determination purposes.



Key benefits:

- Optimizes the lautering and boiling process to reduce cost and improve production
- Automatically captures first and last wort concentrations for each brew and calculates total extract
- Helps identify problems so that you can correct it before it effects quality, yield, or energy use
- Avoids undesired temperature fluctuations during production



1 Magnetic flowmeter provides accurate measurement of wort flow assuring adequate aeration of wort for fermentation

2 Coriolis flowmeter for measuring lauter tun run-off



Growing your brewery – made simple

Looking to produce more without having to overhaul your system or add more staff? No problem. Whether you want to expand the production capacity of your brewery or get more out of your existing brewing equipment, just start with what you need and add on when you're ready.

As flexible as needed

The flexibility that you will find in the system has been designed for both the craft brewer who wants to evolve slowly over time and the brewer who is running at full capacity and wants to expand immediately. What is great about BRAUMAT Compact, both can be done without interrupting your production schedule. Because of its modular design, additional auto-

mation controls can be easily integrated within the system's infrastructure no matter where you start. With a few clicks, you can add e.g. a new bright beer tank to your overview screen. You will be able to run everything from grain handling through the brewhouse, fermentation, filtration, and bright beer tanks, all the way up to finished beer and packaging. No task is too small or too big. It's all about the beer.



Global support delivered locally:

- Telephone technical support provided at no charge
- Project execution: Do it yourself or use our network of brewing-certified Siemens Solution Partners
- Backed by our internal brewing experts from around the globe
- Work closely with the world's leading brewery equipment suppliers (OEMs) to expand or augment your existing facility

As an example let's look at the cost savings for grain that can be achieved by improving the lautering efficiency in the brewhouse. Assuming that 1,000 lbs. of grain cost on average 40 cents/lb. and that 50,000 lbs. of grain are needed to brew 1,000 barrels (at 12.5 Plato), then the following savings could be achieved:

Increase in efficiency	Savings per 1,000 lbs of grain (\$)	Saving per 1,000 barrels of brew (at 12.5 Plato) (\$)
1 %	4	200
2 %	8	400
5 %	20	1,000
10 %	40	2,000

More information:

www.siemens.com/brewery

Siemens AG
Industry Sector
Food & Beverage
P.O. Box 4848
90026 NUREMBERG
GERMANY

www.siemens.com/food-beverage

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