



# BREWING

SYSTEMS & OPTIONS



# Crafting Solutions, Fabricating Excellence.

Since 1984



Since 1984, Specific Mechanical Systems has handcrafted brewing and distilling systems for the craft beer and spirits industries, in addition to supplying various industries with complex processing equipment. Originally a two-person company, we now employ a team of over 85 people.



# The Brewhouse • 2-Vessel

The 2-vessel brewhouse configuration is common for new breweries and those using recipes with single infusion mashes.

The configuration consists of a Mash/Lauter Tun to perform both the mashing and lautering processes, and a Kettle/Whirlpool to both boil the wort and whirlpool the wort to separate the trub. A 2-vessel configuration is ideal for breweries whose recipes primarily include single infusion mash conversions. The 2-vessel brewhouse is designed for the brewer's ease of use with all process valves and pump controls positioned in optimal locations.

The image below depicts the basic configuration. We also offer a custom design variation that features the addition of a Mash Mixer inside the kettle to create a Mash/Kettle/Whirlpool. In this scenario, the brewer would perform mashing, wort boil and whirlpool in the same vessel, while the Lauter tun would be a single purpose vessel. The addition of the mash mixer gives the brewer the ability to use recipes with multiple step infusion mash rests. Starting from \$100,000.



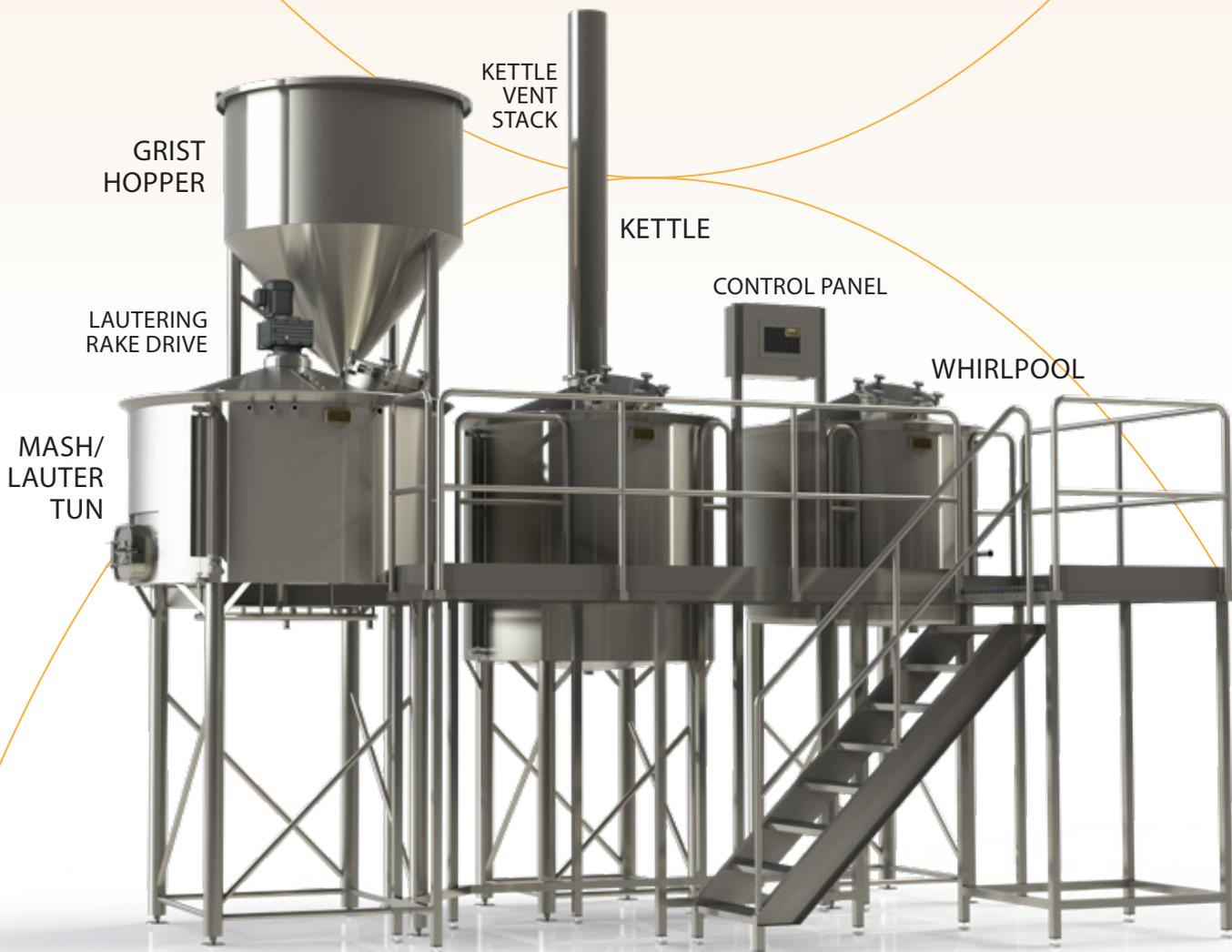
# The Brewhouse • 3-Vessel

The 3-vessel brewhouse configuration allows for more flexibility in brewing styles and productivity.

The configuration is typically either 1) Mash Tun, Lauter Tun, Kettle/Whirlpool, or 2) Mash/Lauter Tun, Kettle, Whirlpool. Choosing between these two configurations depends on the intended benefit of the 3rd vessel.

If the brewery plans to brew a lot of recipes using step infusion and/or decoction mashes, the use of a dedicated Mash Tun would make sense. If the goal is to reduce the amount of time taken by each brew, the use of a dedicated Whirlpool would be a good choice.

An alternative configuration can be to use a Mash/Lauter Tun, and two Kettle/Whirlpool vessels. This configuration would allow for simultaneous boils and also offer the brewer a kettle to use for sour beer production while maintaining throughput of other brews in the second kettle. The image below depicts a Mash/Lauter Tun, Kettle and Whirlpool. Starting from \$135,000.

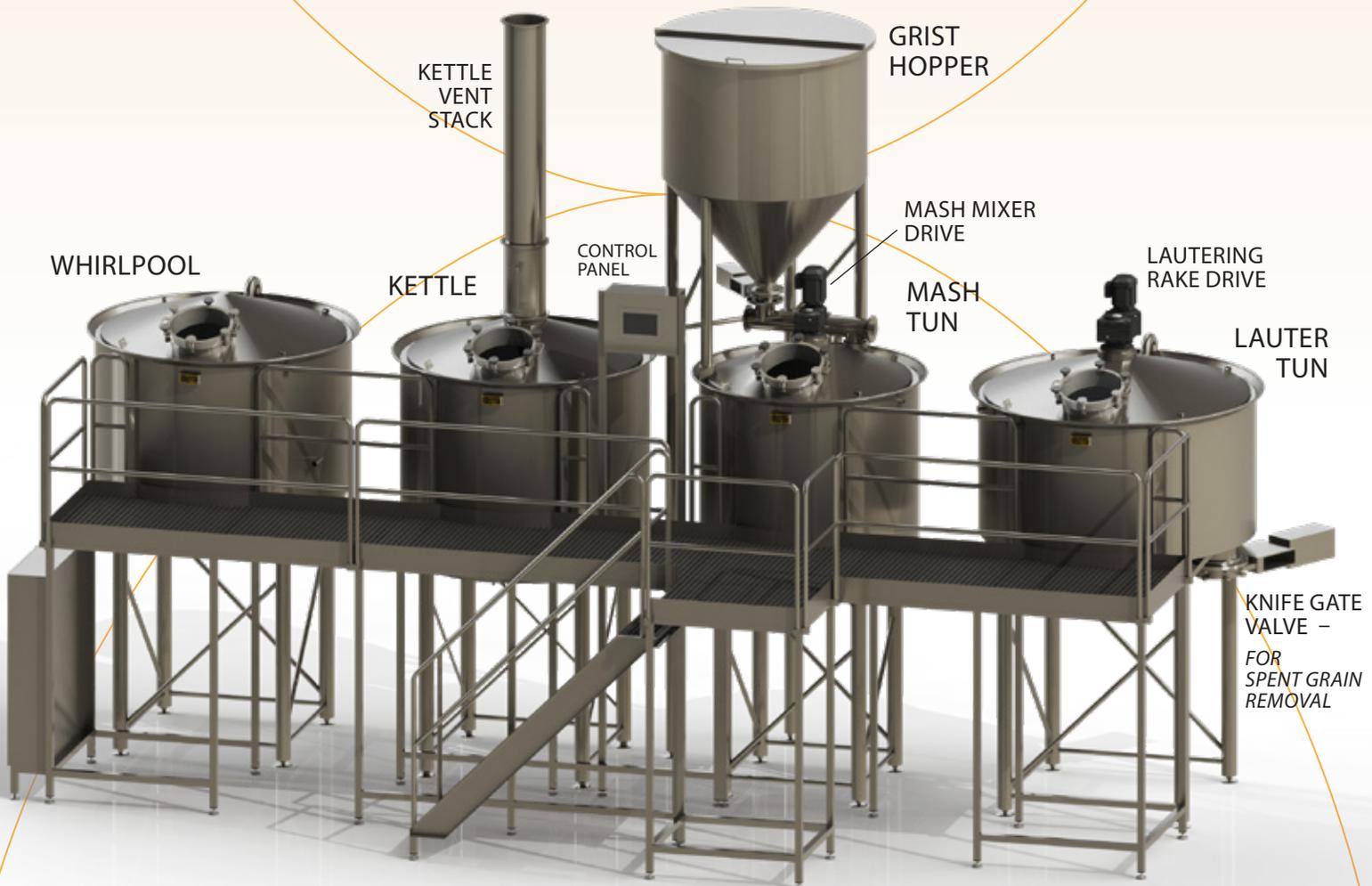


# The Brewhouse • 4-Vessel

The 4-vessel brewhouse configuration is geared for productivity.

A standard 4-vessel system consists of a Mash Tun, Lauter Tun, Kettle and Whirlpool. A dedicated vessel for each specific process within the brewhouse allows for flexibility in recipes and the ability to brew more batches each day.

A 4-vessel brewhouse can be configured either in a rectangular or linear orientation. It is optimal to have the lauter tun and the whirlpool vessels easily accessible at either end of the brewhouse. This allows for easy spent grain removal from the lauter tun and for plumbing connections between the whirlpool, heat exchanger and wort lines running to the fermentation area. Starting from \$160,000.



# The Brewhouse • 5-Vessel

## Custom Configurations to meet your unique needs.

Adding a 5th vessel to the brewhouse can offer brewers significant advantages in brewing flexibility while maintaining peak productivity. The addition of a decoction cereal cooker to a standard 4 vessel layout gives the brewer a vessel ideal for performing decoction mashes. If kettle sours are a significant percentage of the production schedule, adding a second kettle for sour beer production would allow for the primary kettle to continue turning over batches while the sour kettle remains occupied.

We can design and fabricate brewhouses to meet the needs of each customer. Let us know what you'd like to achieve with your brewhouse and we'll work with you to build the system to meet your needs. Starting from \$190,000.



# Standard Brewhouse Features

Every brewhouse delivered comes with the following features:

## Vessel Pumps

We provide dedicated pumps for each brewhouse vessel, including liquor tanks. Pumps are mounted on a stand with adjustable foot pads and are provided with a motor and a variable frequency drive to allow you to easily control speed. Pumps are sold in accordance with their process to ensure optimal performance. This includes consideration to the inlet, outlet and impeller sizes, as well as motor horsepower and RPM rating. Pumps are all washdown rated for easy cleaning in the brewhouse.

## Ventilation Stack / Vapor Condenser

Each kettle will be provided with a ventilation stack to exhaust the steam to atmosphere. If ventilation routing is a challenge, a vapor condenser can be mounted to the kettle to condense vapor to water. The condensed water can be plumbed to a floor drain and the cold water used to cool the vapor can be recovered to your hot liquor tank.

## Interconnecting Process Plumbing, Instrumentation and Valves

All brewhouses are built with instrumentation, valves and interconnecting piping for process transfer, water distribution and CIP. Flow meters, butterfly valves, micro adjustable valves, pressure gauges, thermometers, sight glasses, etc., are all included to complete the system. Your local contractors only need to connect incoming utilities to our designated connection points, which are all identified on our system diagrams created by our project management department.

## Heat Exchangers

Thermal exchange is an everyday occurrence in a brewery. The primary heat exchanger is the wort cooler, a plate and frame unit that wort passes through as it leaves the brewhouse and transfers to the fermenter. The plate and frame heat exchanger can either be a single stage unit or a two stage unit. A single stage unit relies on cold water, either from a cold liquor tank or a reliable external source. A two stage unit will use utility water in the first stage and glycol from the brewery chiller system in the second stage.

Other heat exchangers that can be found in a brewhouse include a steam calandria for boiling wort and a double tube wort cooler to reduce the temperature of wort post-boil and before the whirlpool process to allow for hop dosing at a lower temperature to capture hop aroma oils in the wort.

## Platform

The platform offers the brewer access to the brewhouse vessels. This is where the brewer operates the brewhouse and where valves and controls are located for ease of access. The platform design is variable based on the configuration of the brewhouse. Depending on the features of your brewhouse, the platform height is optimized for brewing efficiency.



# Standard Brewhouse Features

## Controls

The brewhouse control panel offers the brewer control of all pump and drive motors. The panel can also control valves, actuated either pneumatically or via electricity. Vessel temperature display and control can be managed here too. For more enhanced controls, please ask about our SpecBrew automation and semi-automation, featuring automated processes from malt silo through to your cellar from the convenience of your HMI Touchscreen.

## Heating Method

The most common source of heat in a brewery is a steam boiler. Each heated brewhouse vessel is built with dimple jackets welded to the vessel shell. Depending on the size of the brewhouse, a steam calandria (heat exchanger) can also be plumbed with steam supply to boil wort. Other heating methods include 1) Direct Fire, using a burner inside a firebox located underneath the kettle, and 2) Electricity, using heating elements immersed in the wort and water as part of the kettle and hot liquor tank, respectively.

## Cooling Method

A glycol chilling system is used in breweries to maintain temperature control of each cellar tank. Fermentation tanks, bright beer tanks, lagering tanks, cold room air heat exchangers, cold liquor tanks and wort coolers can all be plumbed to the glycol chiller. Proper sizing of a glycol chiller should consider all of these duties and the operational schedule of the brewery.

## Grain Handling Equipment

The grain handling process in a brewery can be as simple as opening a bag of pre-milled grain purchased from a supplier. It can also be as comprehensive as configuring SpecBrew to manage multiple outdoor silos, a multi-bag super sack station, a speciality malts hopper, a malt cracker, a post mill hopper and a multi conveyance system. Depending on the needs of your brewery, we can quote a complete system with grain handling included from silo to spent grain tank.



# Standard Brewhouse Features

## *Things to consider*

### **Building Requirements**

Important considerations when selecting or constructing the building for your brewery include:

- is this your forever home or will you relocate
- the weight load of the equipment on the floor
- the available ceiling height for the equipment
- entrance to the building for the equipment and supplies
- incoming utility (electricity, natural gas/propane, water)
- waste management, emissions
- expansion/growth
- customer experience

### **System Sizing**

We recommend brewery system sizes based on several factors:

- the volume of beer you intend to produce over a given period (month/year)
- growth projections
- planned work schedule
- space available in the building





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