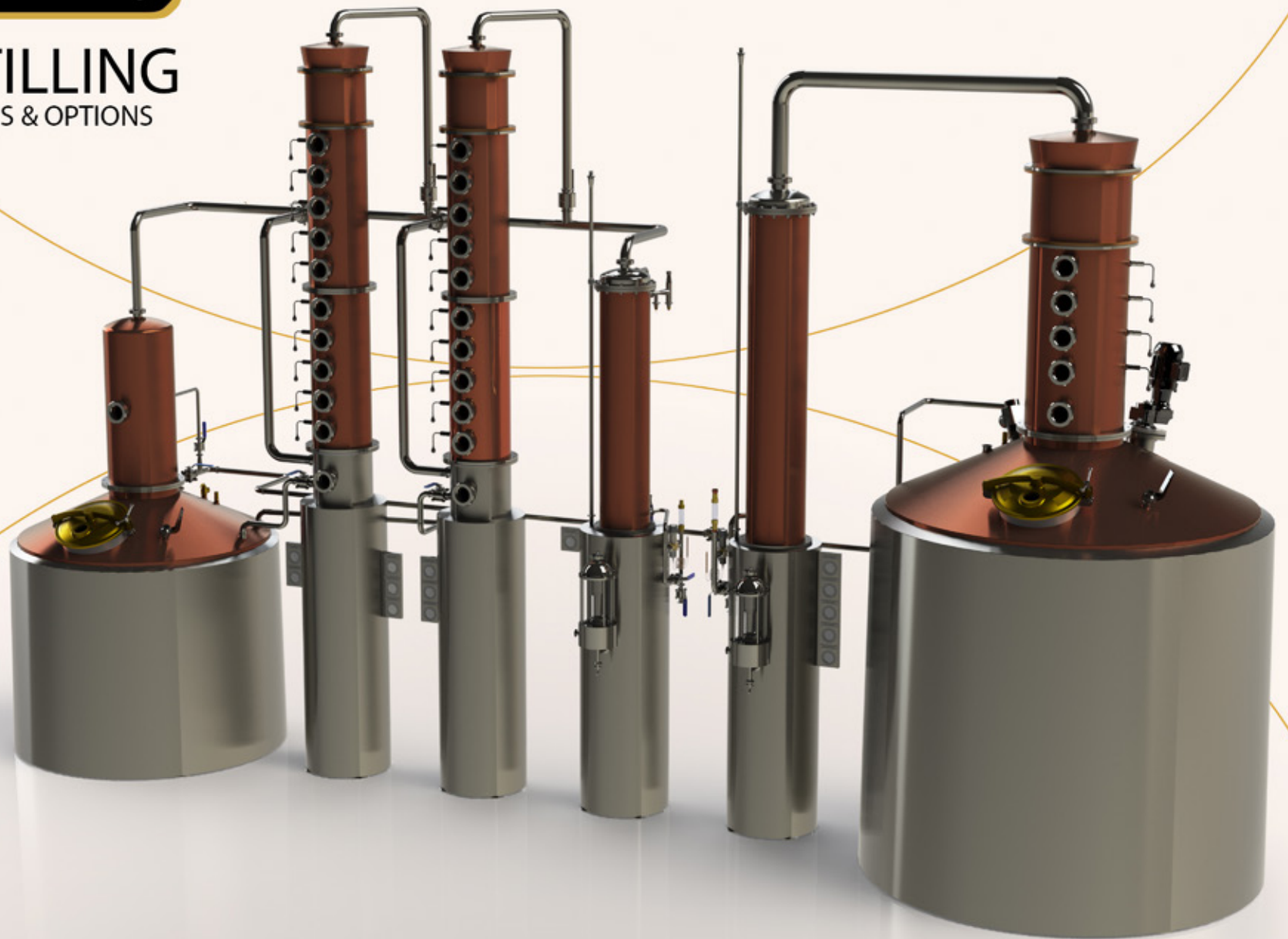




# DISTILLING

SYSTEMS & OPTIONS

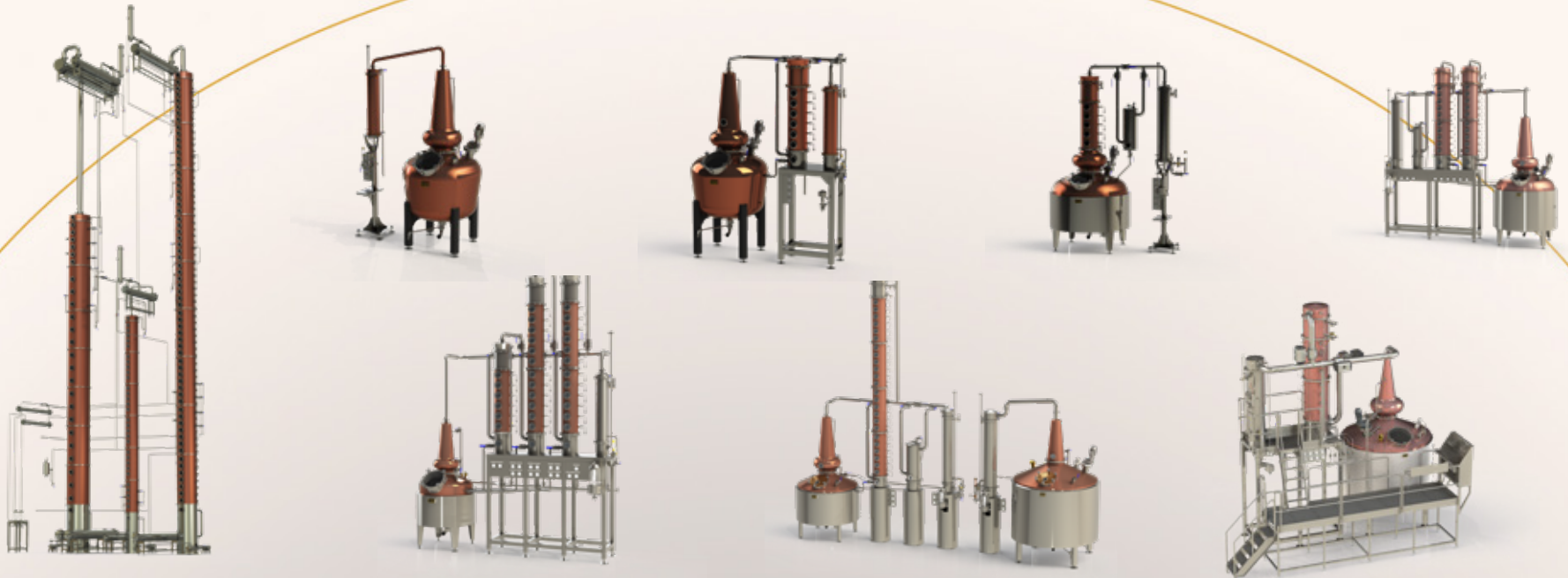


# Crafting Solutions, Fabricating Excellence.

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.



# DISTILLATION – The Pot Still

A pot still is commonly used to produce flavoured spirits, such as single malt whisky, tequila, brandy and any other spirit where the desired proof of the distillate is between 120 and 160 (60% – 80% ABV). The typical design of a pot still includes the pot, a helmet or head, lyne arm and a condenser.



## Pot Still Sizes & Pricing

Pot stills are available in a variety of sizes from 500 litres to 10,000 litres (approx. 120 gallons to 2,500 gallons), with a starting price for the smallest still approximately \$50,000.

## Configurations

Pot stills can be built either of copper or stainless steel. When built from stainless steel, the bottom and side shell of the pot are made of stainless, while the top of the pot is built from copper and welded together.

The pot still can be built with various head designs, depending on the spirit being produced. The slope of the lyne arm can be positive, neutral or negative, and made from either copper or stainless steel. The condenser, which cools the vapour to liquid, is of a shell and tube design and can be built from either copper or stainless steel.

# DISTILLATION – The Hybrid Still

The addition of a rectification column can allow the distiller to produce distillate with an ABV beyond 80%. The more trays that are included in a column, the higher the ABV that can be achieved. Each tray is in itself, a single distillation.



## Pot Still Sizes & Pricing

Hybrid pot stills are available in a variety of sizes from 500 litres to 10,000 litres (approx. 120 gallons to 2,500 gallons), with a starting price for the smallest still approximately \$70,000.

## Configurations

Hybrid pot stills can be built either of copper or stainless steel. When built from stainless steel, the bottom and side shell of the pot are made of stainless, while the top of the pot is built from copper and welded together.

The hybrid pot still can be built with various head designs, depending on the spirit being produced. The tray quantity in the rectification column is dependent on the desired ABV of the final distillate.

The condenser, which cools the vapour to liquid, is of a shell and tube design and can be built from either copper or stainless steel.

# DISTILLATION – The Gin Pot Still

The addition of an optional gin basket allows for the infusion of botanical flavours into the distillate vapour. The gin basket is provided with bypass valves, meaning vapour can bypass the gin basket if required.

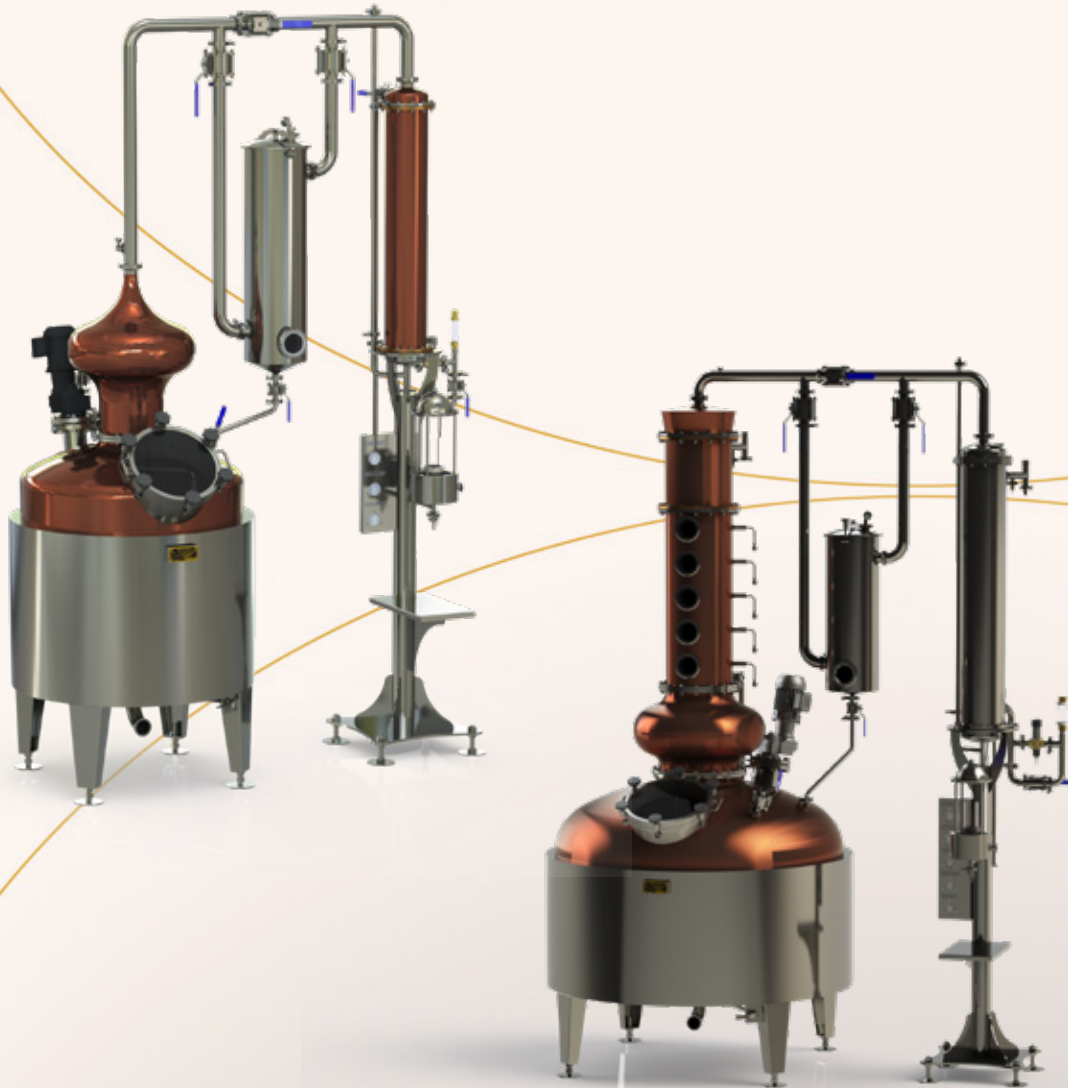
## Gin Pot Still Sizes & Pricing

Gin pot stills are available in a variety of sizes from 500 litres to 10,000 litres (approx. 120 gallons to 2,500 gallons), with a starting price for the smallest still approximately \$70,000.

## Configurations

Gin pot stills can be built either of copper or stainless steel. When built from stainless steel, the bottom and side shell of the pot are made of stainless, while the top of the pot is built from copper and welded together.

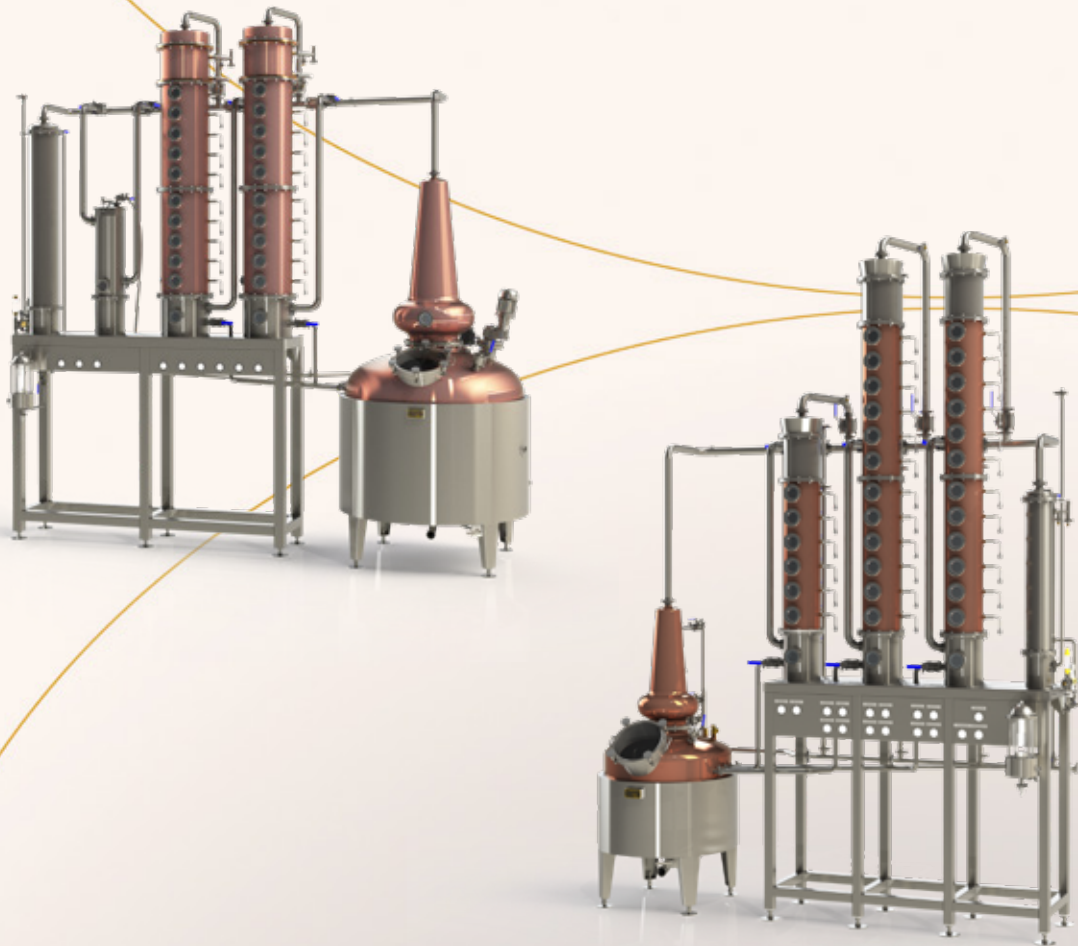
The gin pot still can be built with various head designs, depending on the preference of the distiller. The tray quantity in the rectification column, if chosen, is dependent on the desired ABV of the final distillate. The condenser, which cools the vapour to liquid, is of a shell and tube design and can be built from either copper or stainless steel.



# DISTILLATION – The Vodka Column Hybrid Pot Still

Vodka distillate is typically distilled to an ABV above 95% or 190 proof. We recommend a rectification column with at least 20 trays. The more trays that are included in a column, the higher the ABV that can be achieved.

Each rectification column will have a dephlegmator and a top hat. The dephlegmator is a shell and tube heat exchanger. Water passes through the dephlegmator at a given temperature, allowing vapours at a temperature lower than the water to pass along the vapour path. The top hat is the vapour collection point above the dephlegmator which connects to the lyne arm or vapour tube.



## Vodka Column Hybrid Pot Still Sizes & Pricing

Pot stills are available in a variety of sizes from 500 litres to 10,000 litres (approx. 120 gallons to 2,500 gallons), with a starting price for the smallest pot still assembly approximately \$100,000.

## Configurations

Vodka column hybrid pot stills can be built either of copper or stainless steel. When built from stainless steel, the bottom and side shell of the pot are made of stainless, while the top of the pot is built from copper and welded together.

The hybrid pot still can be built with various head designs, depending on the spirit being produced.

The column can be a single large column or split into shorter sections. The column, dephlegmator and top hat can each be built from copper or stainless steel.

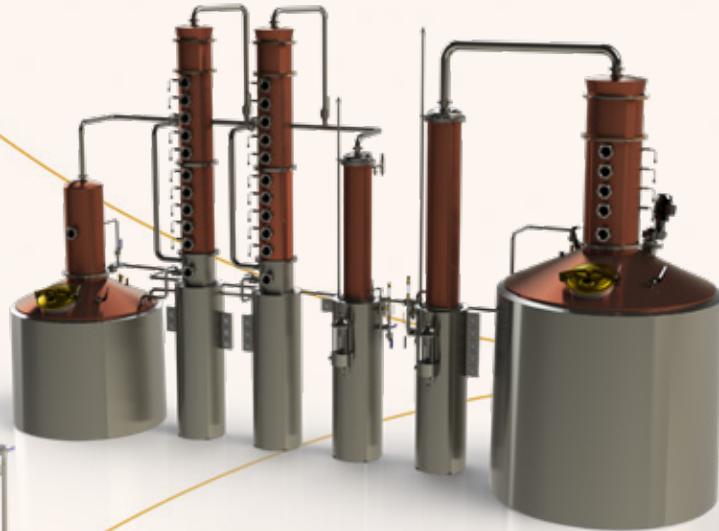
The condenser, which cools the vapour to liquid, is of a shell and tube design and can be built from either copper or stainless steel.



# DISTILLATION – Dual Pot Stills

Many distilleries will utilize two pot stills to produce distillate. A Wash Still is commonly used to perform a “stripping run” where the ethanol present in the mash or wash after fermentation is distilled to collect “low wines”. The low wines can then be transferred into the spirit still for a “spirit run” or second distillation.

It is very common for the spirit still to be sized at 1/3 the volume of the wash still. For distillers who like to blend feints with low wines for spirit runs, the size of the spirit still may be larger.



## Dual Pot Still Sizes & Pricing

Pot stills are available in a variety of sizes from 500 litres to 10,000 litres (approx. 120 gallons to 2,500 gallons), with a starting price for the smallest dual pot still assembly approximately \$150,000.

## Configurations

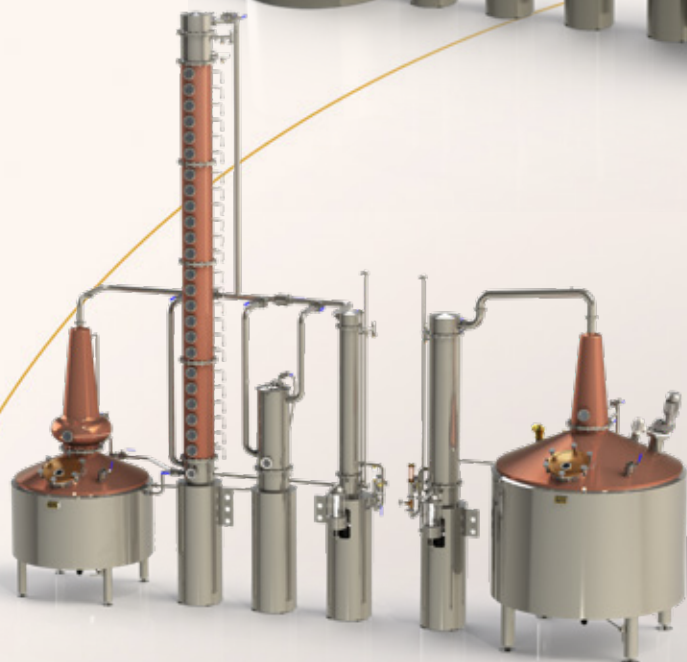
Pot stills can be built either of copper or stainless steel. When built from stainless steel, the bottom and side shell of the pot are made of stainless, while the top of the pot is built from copper and welded together.

Pot stills can be built with various head designs, depending on the spirit being produced. In dual still configurations, it is common for the wash still to have a simple, tapered head while the spirit still will have a configuration suited to the types of spirits to be produced.

If a column is required for producing vodka or gin distillate, it can be built as either a single large column or split into shorter sections. The column, dephlegmator and top hat can each be built from copper or stainless steel.

Other configuration choices include a gin basket, a single or double thumper/retort, or a shorter column dedicated to whiskey or bourbon.

The condenser, which cools the vapour to liquid, is of a shell and tube design and can be built from either copper or stainless steel.



# DISTILLATION – The Continuous column

A continuous column, also known as a coffee still or column still, is a more modern approach to the distillation of spirits and commonly used for industrial and large scale commercial production. Columns can be used to produce both neutral spirits like vodka, gin and bulk ethanol, as well as distillate for flavoured spirits like tequila, rum and whiskey.

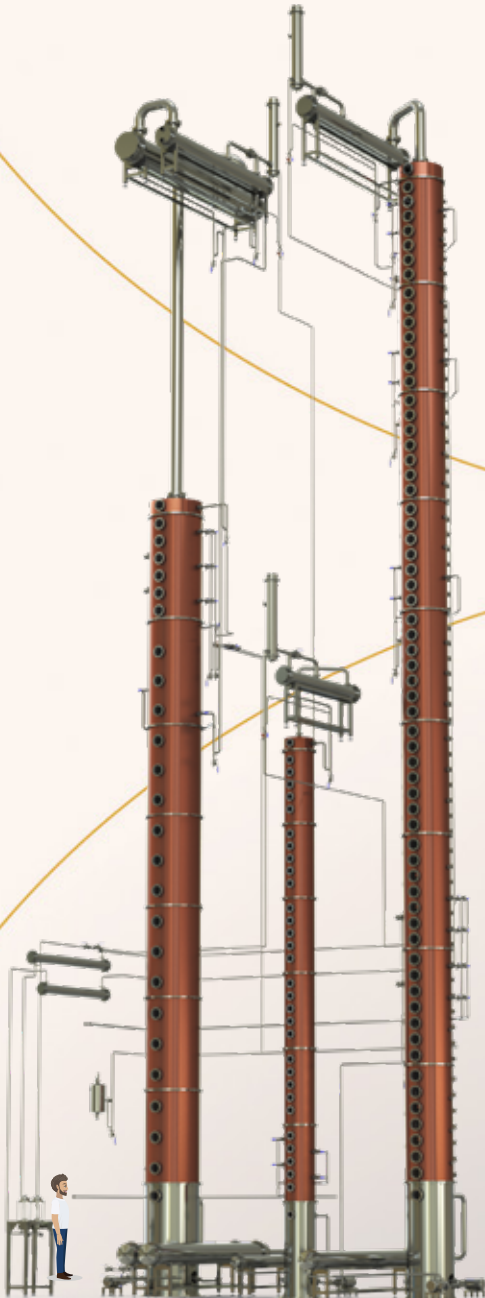
## Continuous Column Sizes & Pricing

Columns are available in a variety of sizes. We will recommend a size based on the volume of distillate to be produced over a given period of time. Other important criteria to help size a column include, the make-up and ABV of the fermented mash/wash to be pumped to the column, the spirit to be produced and the operation schedule for the column. The starting price for the most basic continuous column would be approximately \$200,000.

## Configurations

Continuous columns can be built either of copper or stainless steel. When built from stainless steel, the rectification sections would include internal copper components. The primary components of a column system include a stripping column, purifier column and rectifier column. The stripping column includes the feed section, stripping trays and a selection of rectification trays. The purpose of the stripping column is to separate the ethanol in vapour form from the mash and distill it to the desired ABV. The quantity of rectification trays on the stripping column depend on what distillate is to be collected and at what ABV. If a neutral spirit is to be produced, the column system will include the purifier and rectifier columns. These two columns will further distill the ethanol to achieve a higher ABV in excess of 96% and also remove undesirable congeners to produce a clean and clear distillate.

Continuous columns include a control system, a collection of pumps, heat exchangers and an interconnecting piping system. Columns can be anywhere from 25 – 65 feet tall (7.5 – 20m) and require infrastructure to provide access at various heights.

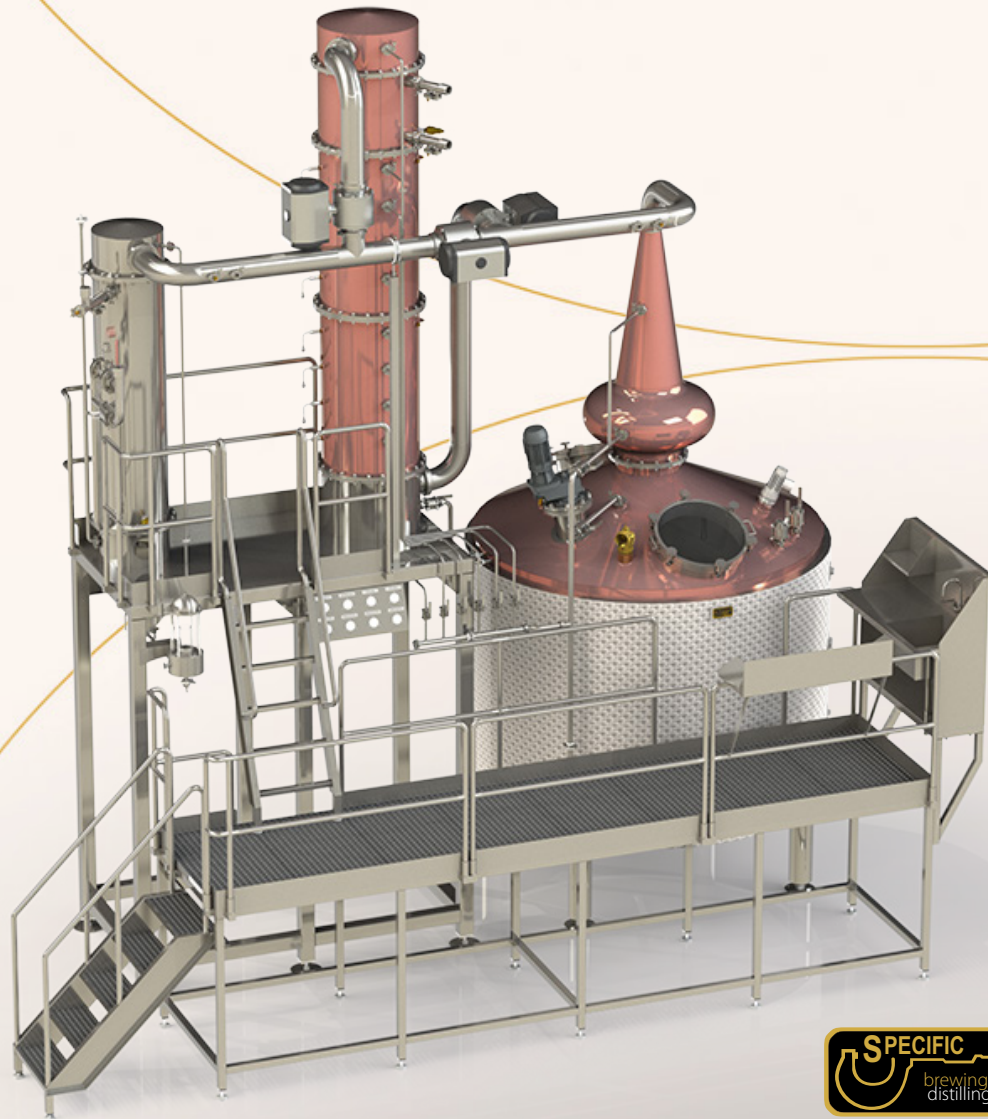




# DISTILLATION – Custom Pot Stills

It is rare to find any two distilleries with the same layout. Often, the system we propose will have some form of unique characteristic in the final design. The reason for the customization may be due to building restrictions, or perhaps it is a result of a unique or traditional process in which the distiller crafts a spirit.

Specific Mechanical Systems designs and fabricates all of our systems in-house, and offers our customers the opportunity to collaborate with us on the design of the system. It is this partnership approach that makes us unique as a manufacturer and the customer unique in obtaining a “one of a kind” custom system.



## Custom Pot Still Sizes & Pricing

We can customize the design and layout for pot stills of any size from 500 litres to 10,000 litres (approx. 120 gallons to 2,500 gallons). The starting price for the smallest pot still is approximately \$50,000.

## Configurations

Please [contact us](#) to discuss the pot still design and configuration that makes sense for your business.



# DISTILLATION – Common information for all stills

Regardless of the system you decide is right for you, there are certain elements common to all installations. Below are some of the factors that should be considered in when making your choice.

## Automation

Specific Mechanical Systems has a team of automation engineers, who develop and update our proprietary automation software.

The distillation process can be automated to control:

- pot still temperature
- the temperature of the distillate
- the “cuts” performed during the distillation process, based on either vapour temperature or distillate ABV.

## Building Requirements

Important considerations when selecting or constructing your building for your distillery 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 pot still sizes based on several factors:

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

## Heating Method

Pot stills are heated by steam. Steam heat is transferred using either “jackets” welded to the side and bottom of the pot still, an internal coil within the pot or an external re-boiler (shell/tube heat exchanger). Electrically heated pot stills are available for sizes under 1,000 litres in volume.

Continuous column stills are heated by steam either via direct steam injection or a re-boiler. Direct steam injection requires Clean Steam.

## Cooling Method

Distillate vapour produced during the distillation process is cooled with water in the condenser. Glycol can also be used as a coolant if water supply is an issue. Other cooling needs in the distillery can include fermenters and cold water tanks.





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