

Brewhouse Types and the Oil Brewhouse



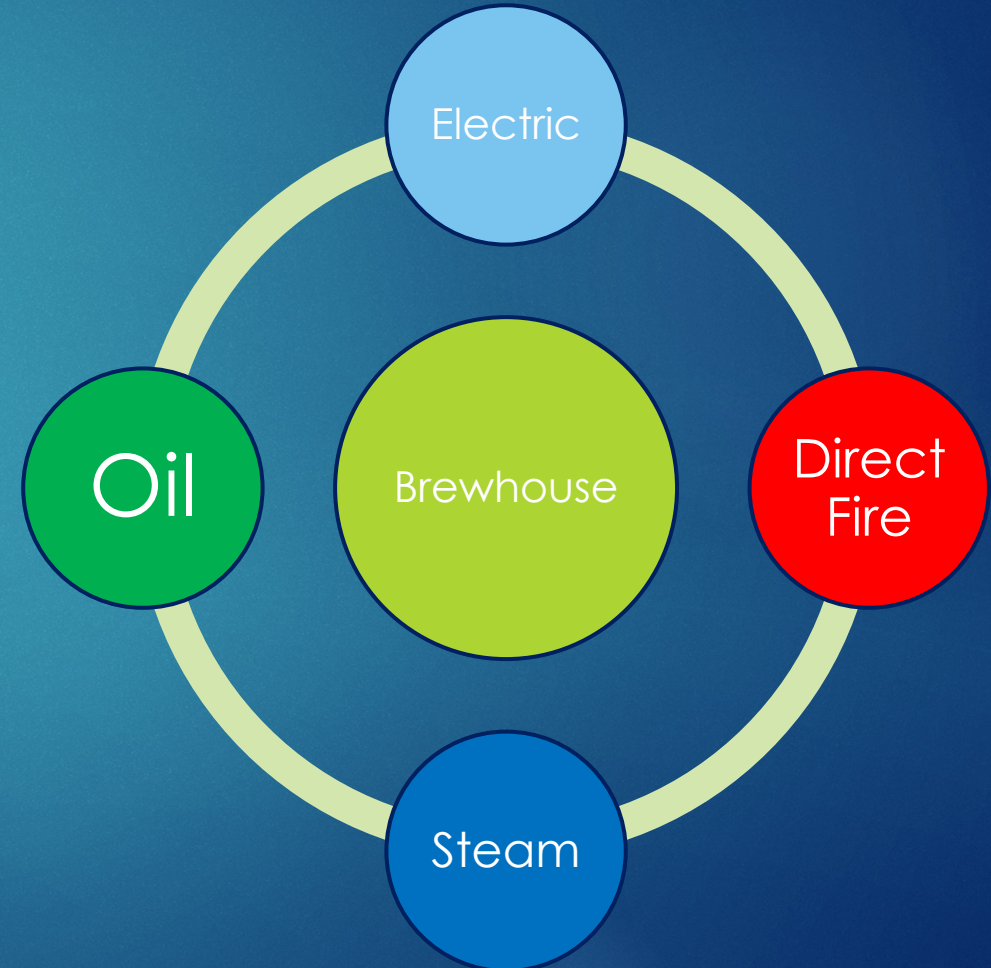
Colin Kaminski

- Started brewing on a direct fired 7 bbl in 1998
 - The system had been installed in 1984
- Designed my first 3.5 bbl direct fire brewhouse in 2000
 - Never went to market. – “Too small.”
- Brewed on 7 bbl direct fire for 1200+ batches in 15 years as a one man department
- Designed pro tanks and brewhouses for MoreBeer (MB) for the last 5 years
 - 1-120 bbl Fermenters and Brites
 - 3.5 and 7 bbl electric
 - 2-10 bbl oil heated (as partner company)



Main brewhouse types

- Direct Fire
- Electric
- Steam
- Oil Fired



Factors to consider when choosing a brewhouse



THIS IS A CHOICE YOU WILL HAVE TO LIVE WITH!

Choosing the size

- Floor space
 - Offsets from walls
 - Working space
 - Expansion?
- Production needs now and in the future
- Labor
 - Don't underestimate this reoccurring cost



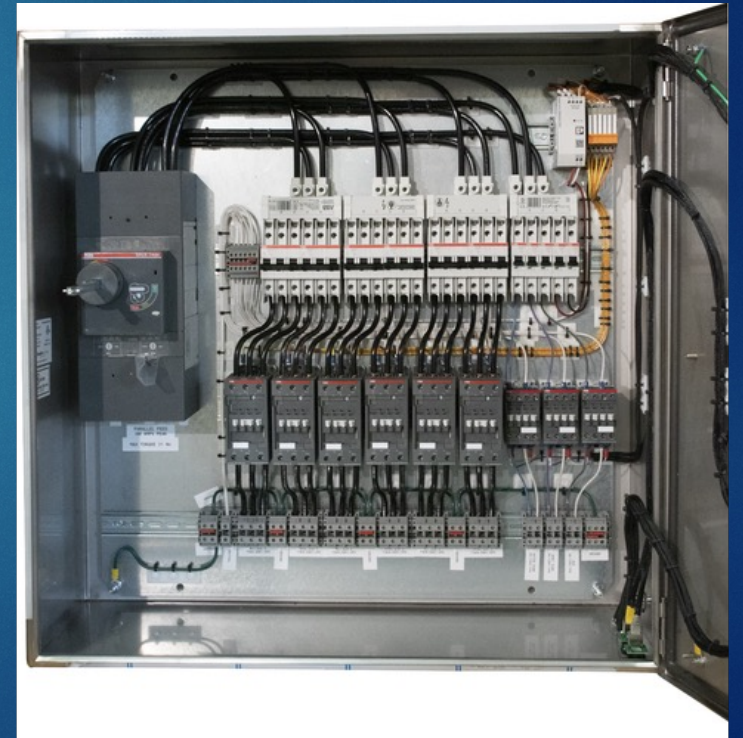
Capital Costs

- The purchase price is what most people think of as the cost of a brewhouse but it is not the only thing to consider

Only \$9.99!

Installation

- These costs are not recoverable when you move. Do you own?
- Electrical requirements
- Gas line size and meter
- Propane tank freezing?
- Flues – Gas and kettles
- Floor and drains



Location Restrictions

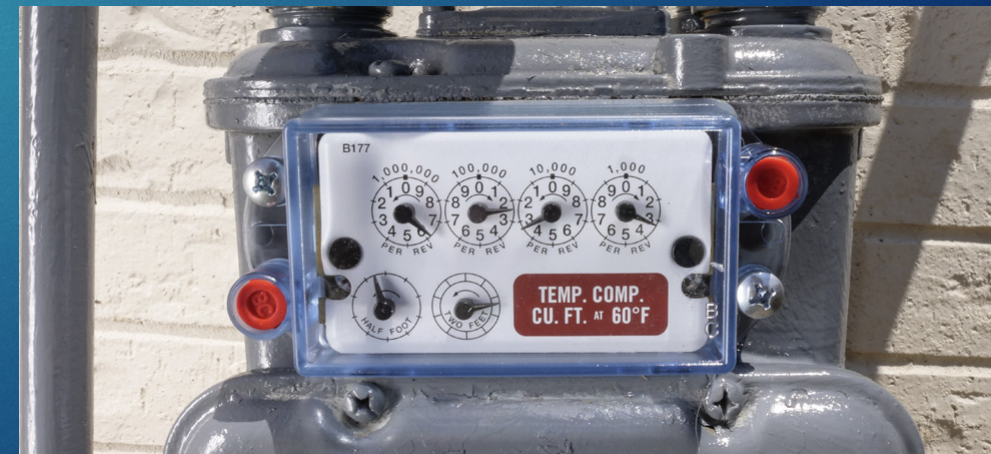
- Can you penetrate the roof?
- Do you have access to gas?
- Do you have enough electrical supply for an electric system?
- Sanitation?
 - City restrictions?
 - Septic?
- Water?
 - A brewhouse uses anywhere from 1.5 gallons of water to 8 gallons of water per gallon of beer brewed



Credit: www.buffalonerphotography.com/old_buildings.html

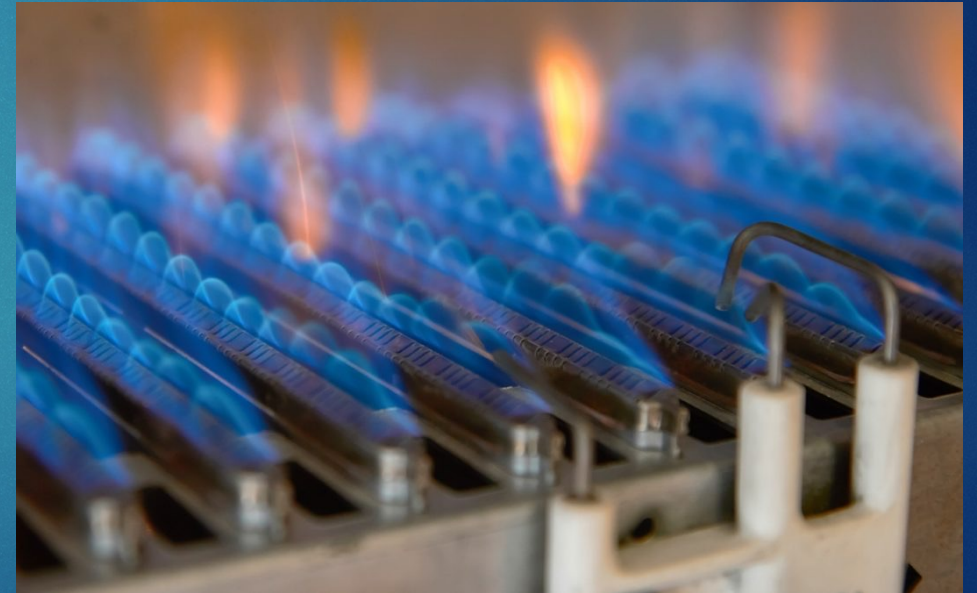
Heating costs

- Heating costs and labor costs are a significant cost per bbl in an operating brewery
- Energy costs vary around the US but natural gas heating at 85% efficiency is 1/3 the cost of electric resistance heating at 100% efficiency in general
- Propane and electricity can be comparable
- Solar wind, and geothermal can change this balance



Maintenance costs

- All brewhouses will require maintenance
 - Cleaning burner jets
 - Cleaning flues
 - Sooting on the kettles
 - Boiler water chemistry
 - DIY or outside company?
 - Cleaning electric elements
 - Replacing oil



Repair Costs

- Components have a limited life
 - Jets wear out
 - Flues need replacement
 - Controls wear out
 - Piping can fowl
 - Electric elements can fail
- Repair Skill
 - Local access to qualified personnel is important



Direct Fire

- Advantages
 - Fast heating (depending on the design)
 - Easy to adjust boil rate
 - Familiar
 - Low capital costs
- Disadvantages
 - Large gas line required
 - Gas safety systems
 - Large flues
 - Has a max size without a firebox



Electric

- Advantages
 - No gas flue for bottom floor installation
 - Low capital costs
- Disadvantages
 - Scorching
 - Large wiring runs
 - Elements are difficult to clean - Labor
 - Code requires you to have enough power to have HLT and Boil on at the same time



MASH TUN



BOIL KETTLE



HOT LIQUOR TANK

Steam

- Advantages
 - Large area heating for short time to boil
 - Large heating area means no scorching
 - Very adjustable evaporation rate
 - Easy cleaning
 - No gas flue on kettles (boiler can be removed from brew area)
- Disadvantages
 - Highest capital costs
 - Boiler needed
 - Boiler safety
 - Pipe fitter required for installation
 - Water chemistry upkeep
 - Descaling
 - Pressure piping installation

Specific Mechanical



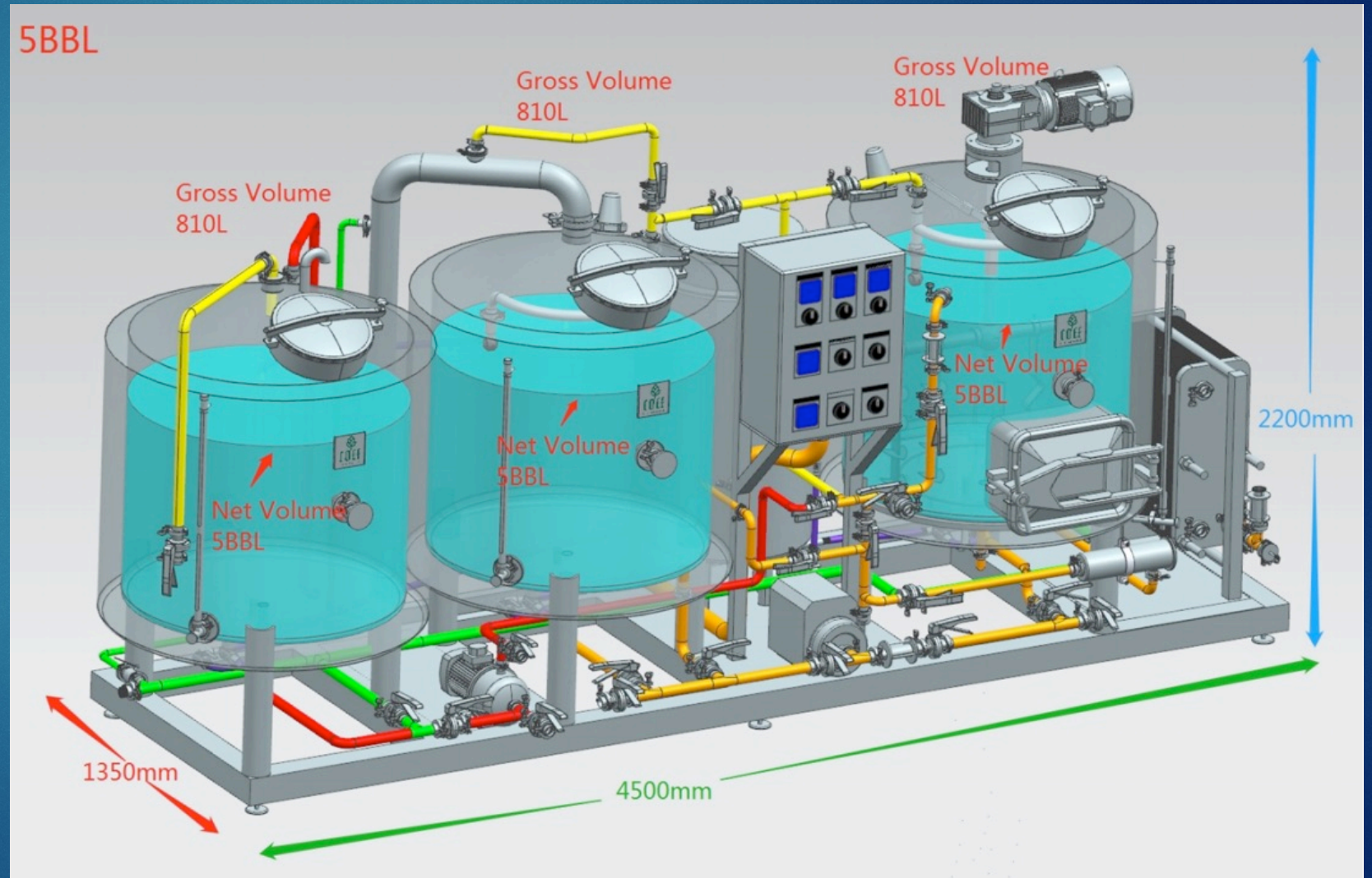
Oil

- Advantages
 - Medium capital costs
 - Large jacketed heating area
 - Adjustable evaporation rate
 - One electric element for all kettles = lower installed power requirement
 - No contact between high temp elements and product
 - No gas flue
 - No boiler water chemistry
 - Heated mash
- Disadvantages
 - Slightly harder to clean than steam
 - Oil life and cost



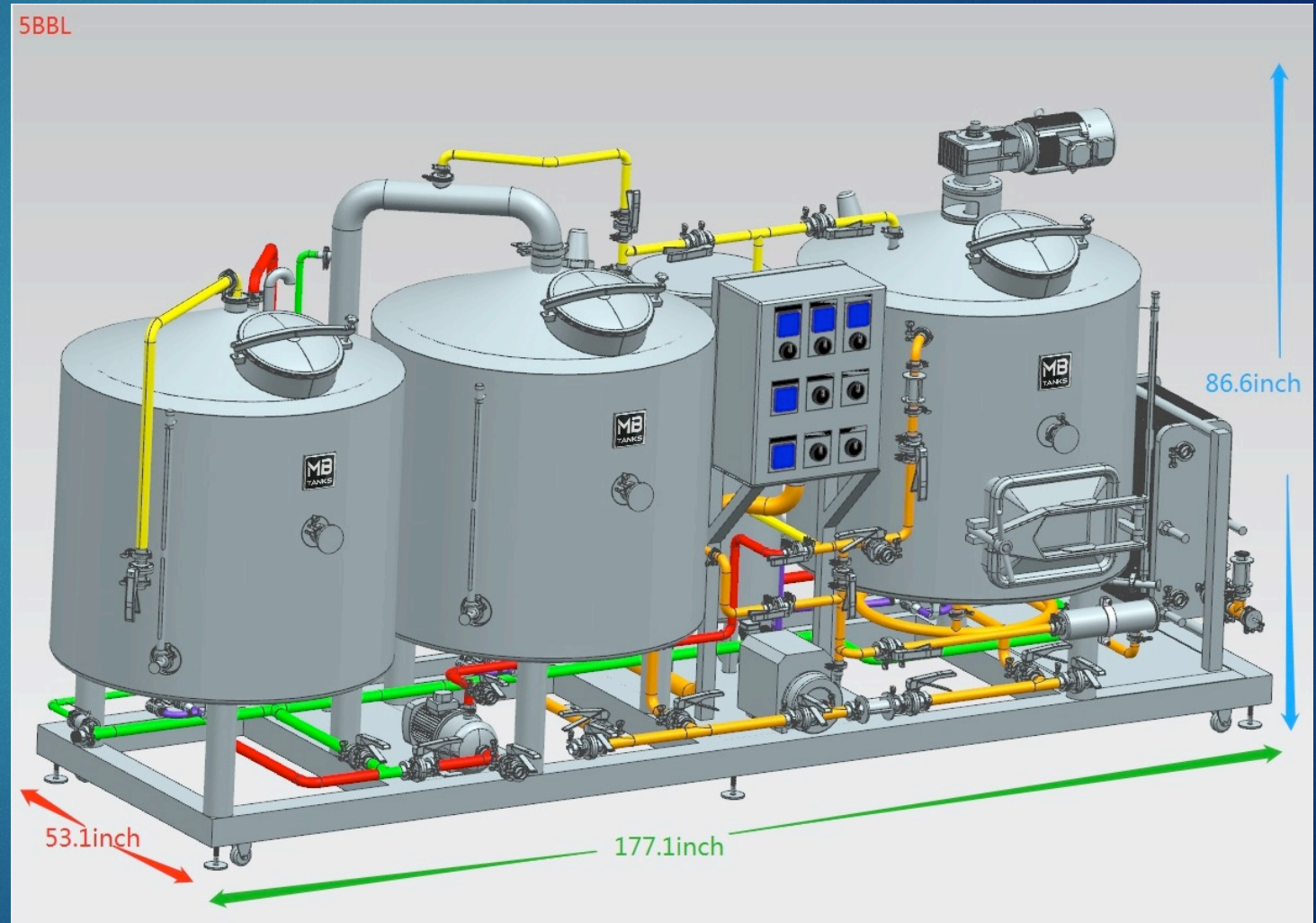
The MB Oil System

- Layout
- Sizes from 2 bbl to 10 bbl
- Small footprint



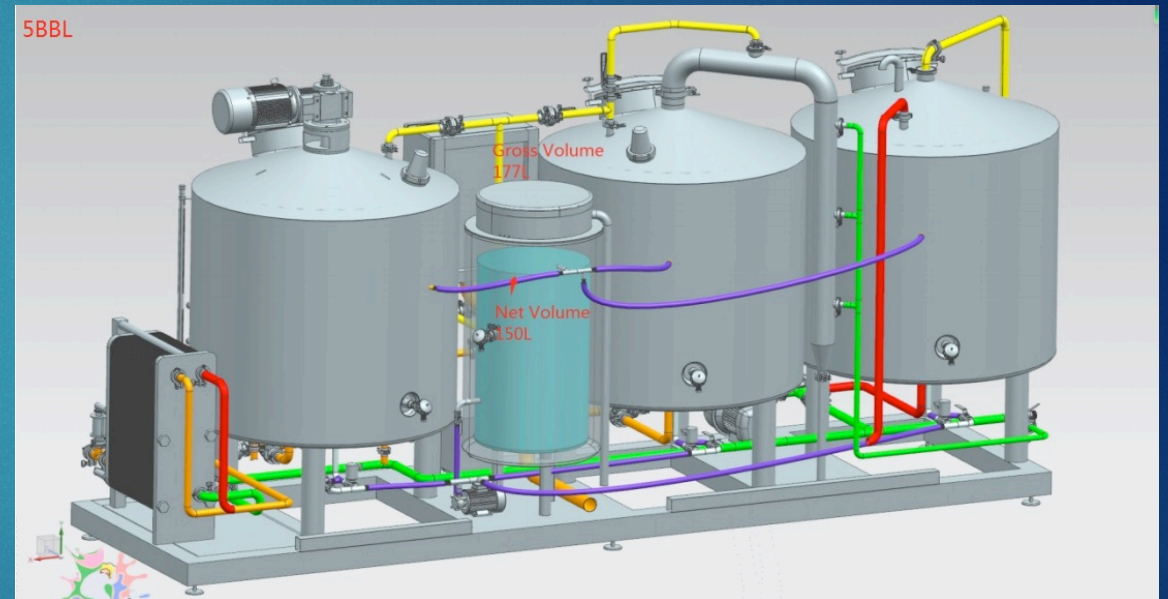
Features

- Insulated vessels for energy efficiency, brewer comfort and safety
- Large HLT
- Timer to have hot liquor ready to brew when needed
- Quick heating
- Adjustable evaporation rate
- Logical processes
- Manifold for controlling all fluid flows
- Spray balls in all areas.
- US Technical Support



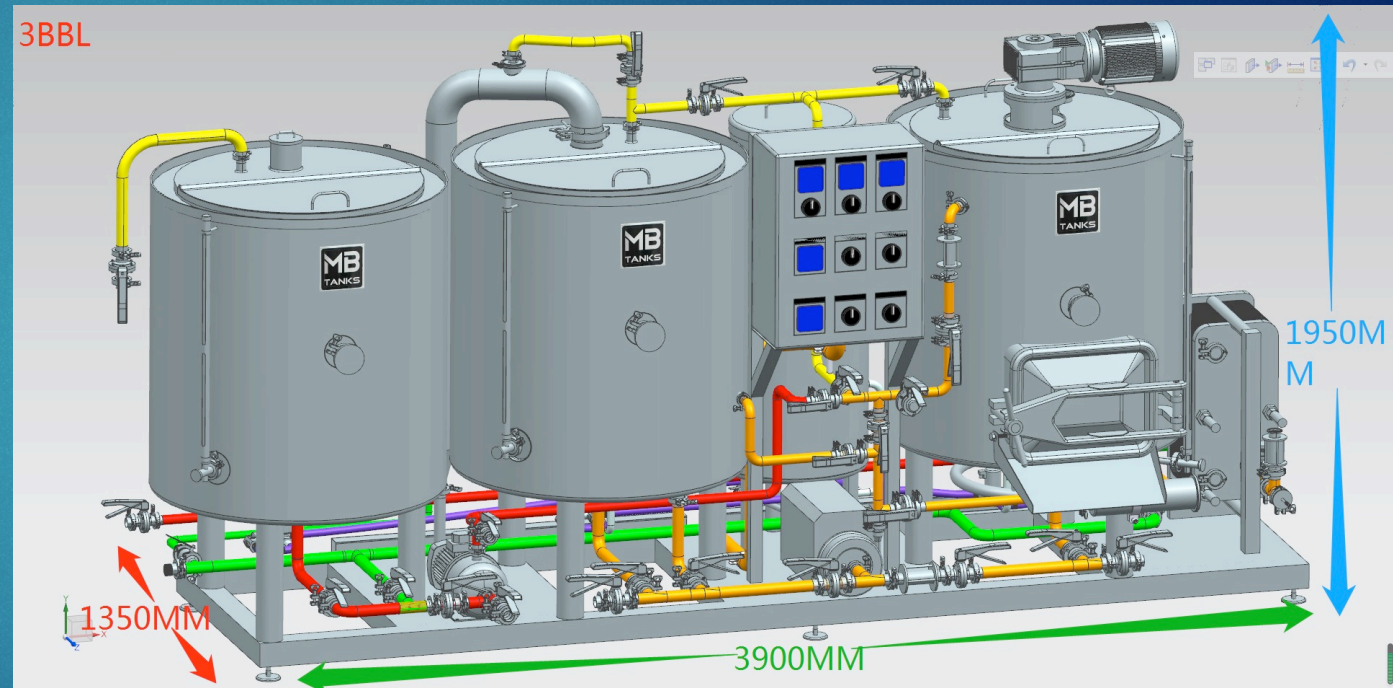
Installation

- Skid mounted
 - The skid is installed and removed easily.
 - Lower install cost
 - Removes easily for short leases
- Single electrical connection
- Single water connection
- Single drain outlet
- Steam condenser (no flues to exit the building)
- Skid includes Control panel, Oil Heater, Mash, Boil, Pumps, and Heat exchanger. Also includes HLT on all sizes to 5 bbl. HLT is off the skid for 7 and 10 bbl sizes to accommodate shipping.



What is a brew day like?

- Making water
- Mashing in
- Lauter
- Cleaning the mash?
- Boil
- Knocking out



Cleaning

- Cleaning the mash
- Cleaning the boil kettle
- Cleaning the condenser
- Cleaning the heat exchanger



Questions?



Thank you!

