

USER MANUAL

500L Brewhouse System

Supplier: Carry Brewtech

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Carry Brewtech · Focus on your BEER & KOMBUCHA Brewing Equipment Solutions

Date: May.2023

Overview

This user manual is the basic instruction on how this brewhouse will be used for your brewing requirement. Maybe it won't cover the special technical aspect you or your brewer needed. Please consult with our sales guy for more details.

It's highly recommended to simulate the whole brewing process with water before pouring your ingredients in. This will allow you to familiar with the operation process, and also gives time for trouble shooting if have.

We are available for your technical service online, please get in touch with our sales guys if needed.

Wish you a successful brewing and looking forward to seeing your beers on tap.

Cheers!

Carry Brewtech Team



1. Set Up

Design power Standard: 380V, 50HZ, 3 Phases

This product is wired ready in factory and debugged before shipment.
You will need to find a licenced electrician to finalized the final wiring from brewhouse to your building electrical power.

Total consumable power(maximum) is:
18KW*2 (kettle/whirlpool) + 5KW(RIMS) + 0.55KW(wort pump) + 0.1KW (Control cabinet)
= 42.2 kw

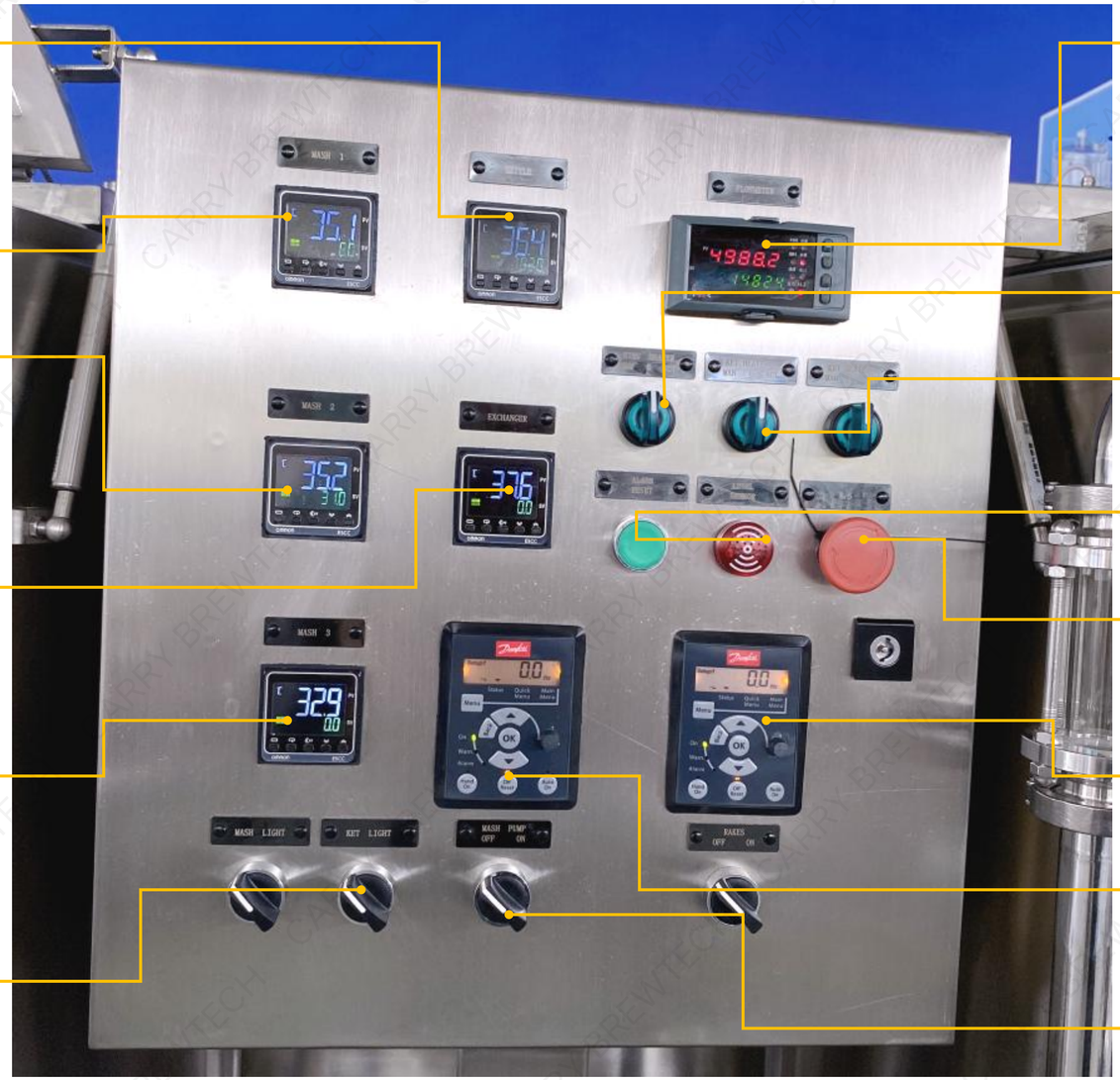
Attention:

- Always turn off the main power before servicing the electric box
- Don’t open the panel when the brewhouse is working
- Please make sure the electrical power box is away from any sweat and heating risk



2. Control Panel

This Control panel is fixed with tri-clamp near the Mash/Lauter tank. Please don’t take it off without the permission of manufacturer.



Kettle Tank Temperature meter

1st Mash/lauter Tank Temperature meter

2nd Mash/lauter Tank Temperature meter

Plate heat exchanger Temperature meter

3rd Mash/lauter Tank Temperature meter

LED Light on/off switch in each tank

flowmeter data panel

RIMS heat on/off switch

Kettle heat 1st and 2nd on/off switch

Low level sensor alarm for mash tun

E-STOP

Grain rake VFD Speed adjusting panel

Wort pump VFD Speed adjusting panel

on/off switch for each VFD panel

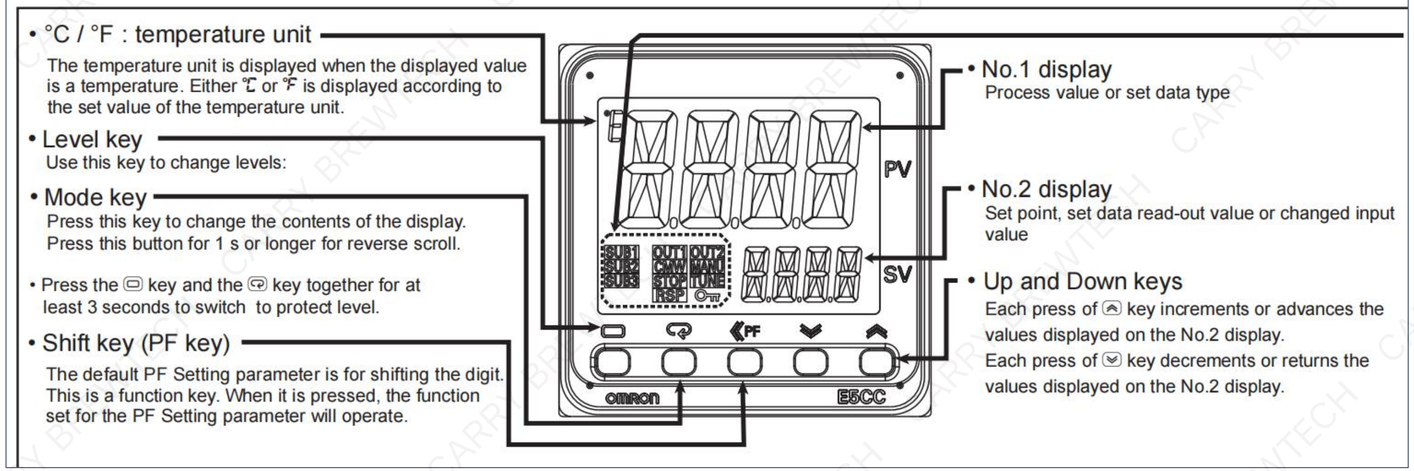
2. Control Panel



This PID meter is for heating up functions. Debugged in factory for basic application. Wiring linked together with heating elements:

When PV<SV, Heating on;
When PV=SV, heating stop.

●Names of Parts on Front Panel





This panel has lots of cfgs, while for current application, you only need to use below functions:

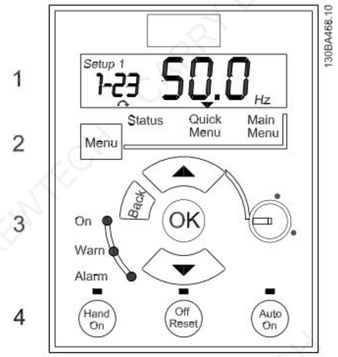
1. Hand on
2. Off Resets
3. Rotary Knob

Please don't adjust the settings without checking with supplier

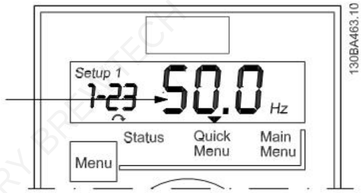
Value range: 0~50.0Hz
ig: V=20.0, then the motor is rotating with 40% of it's speed;
if v=50.0, then it's working 100%.

The LCP is divided into four functional groups:

1. Numeric display.
2. Menu key.
3. Navigation keys.
4. Operation keys and indicator lights (LEDs)



The large digits in the middle of the display show the value of the selected parameter.



The right side of the display shows the unit of the selected parameter. This can be either Hz, A, V, kW, hp, %, s or RPM.



3. Tips before start

Pump:

You have 1 set of pump on your brewhouse system, it is wort pump, used for transferring your worts between tanks.

Attention:

A: liquid inlet
B: Liquid outlet

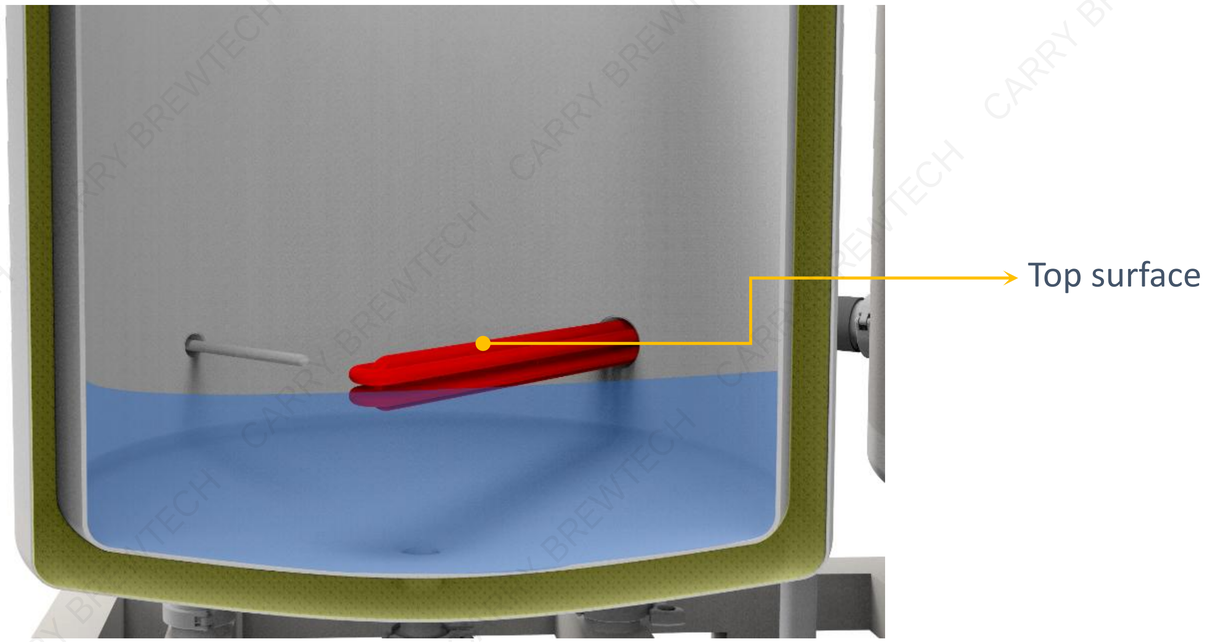
please don’t turn on the pump if there is no liquid medium between!



Electric heating element:

You have 3 sets of elements for this system, 1 is 5kw as RIMS fitting, another 2 of them are 18kw elements inside of K/W tank.

Please make sure all the switch for them are turn off when you power on the brewhouse.
Be sure to switch it on only if the liquid level is beyond the top surface of element. Otherwise there will be potential damage or burnt.

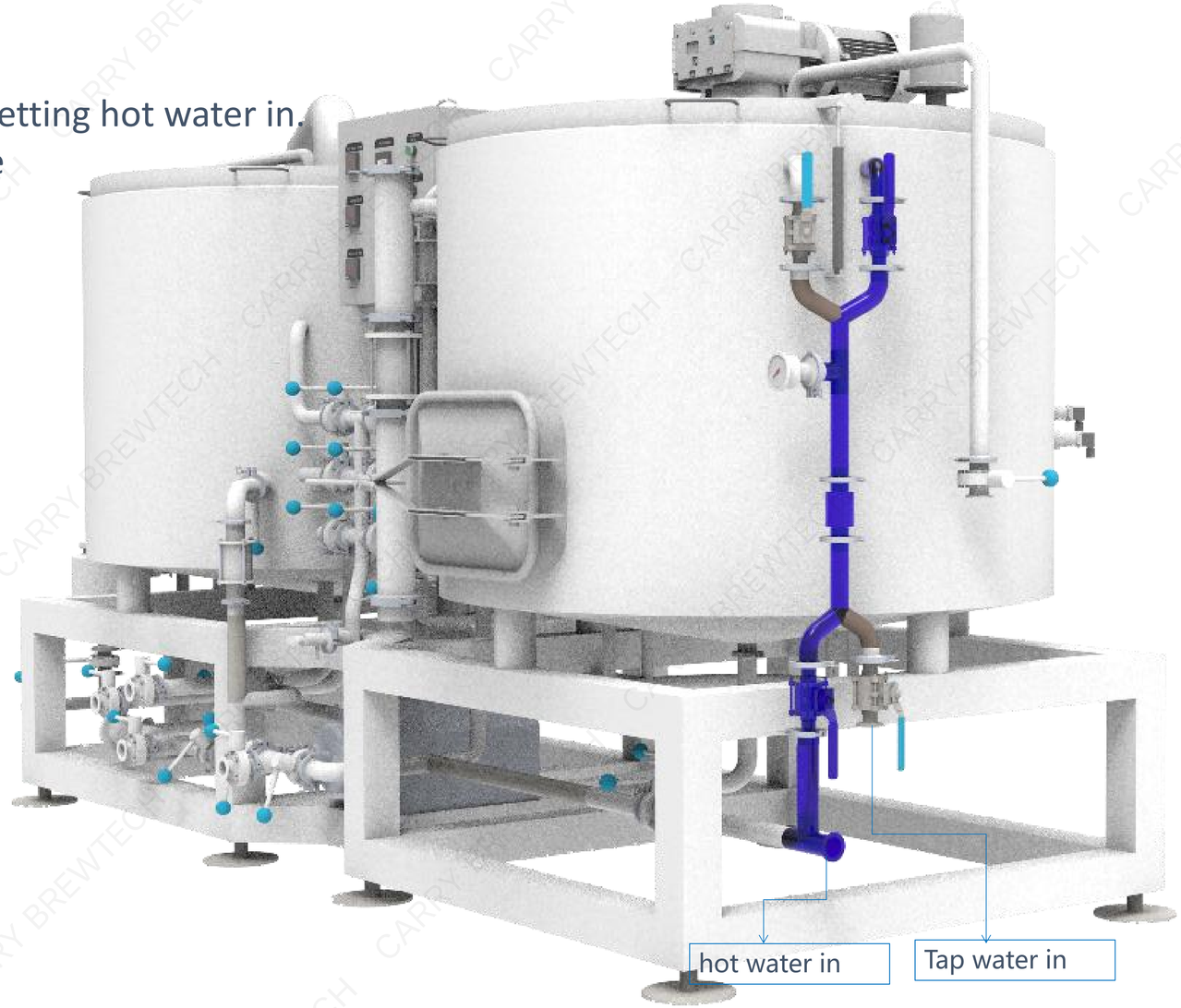


4. Start from Mash

This is the initial step to start your brew day. Please make sure your malts are milled ready to use during this step.

Before pouring the grains into mash tun, please fill in brewing water with corresponding volume.
Then, power onthe grain rake to mix grains into water.

See attached pic, make sure the valves on this line is open before yougetting hot water in.
You can control the flow speed by adjusting the degree of valve on the side of mash tun.
The port of “Tap water in” can enable you to adjust the mash in water temperature if needed.



Comments:
This instruction is for the very basic brewing procedure, helping you work out how this system & pipelines works.
Please always trust your recipe is the best one. As long as it’s workable, just give it a try, you can do it.

Tips:

> Make sure the mash tun is warmed up beforehand to minimize the loose of temperature during mashing process. You can do so by circulating the hot water from your HLT to the mash tun.

4. Step Mashing

Considering each tank is coming with insulation layer, it can maintain temperature duing mashing process very well.
For step mashing recipes, we add RIMS (Recirculating Infusion Mash System) device on outside of the mash tun, there is a heating element built inside of the sleeve, it can enable to heat up the temperature of worts in short time, to get different temperature level as requested.
For example: 1st stage: 67C - 60 min; 2nd stage: 72C - 15 min; 3rd stage: 78C - 15 min;

1st stage is easy to get, as it's the very basic step. Now we look at HOW TO HEAT UP procedure:
Comment: RIMS heating element is linked with PID meter of "MASH 2"

Target: heat up temperature from 67c to 72c;

1. Set SV of "MASH 2" at 72C

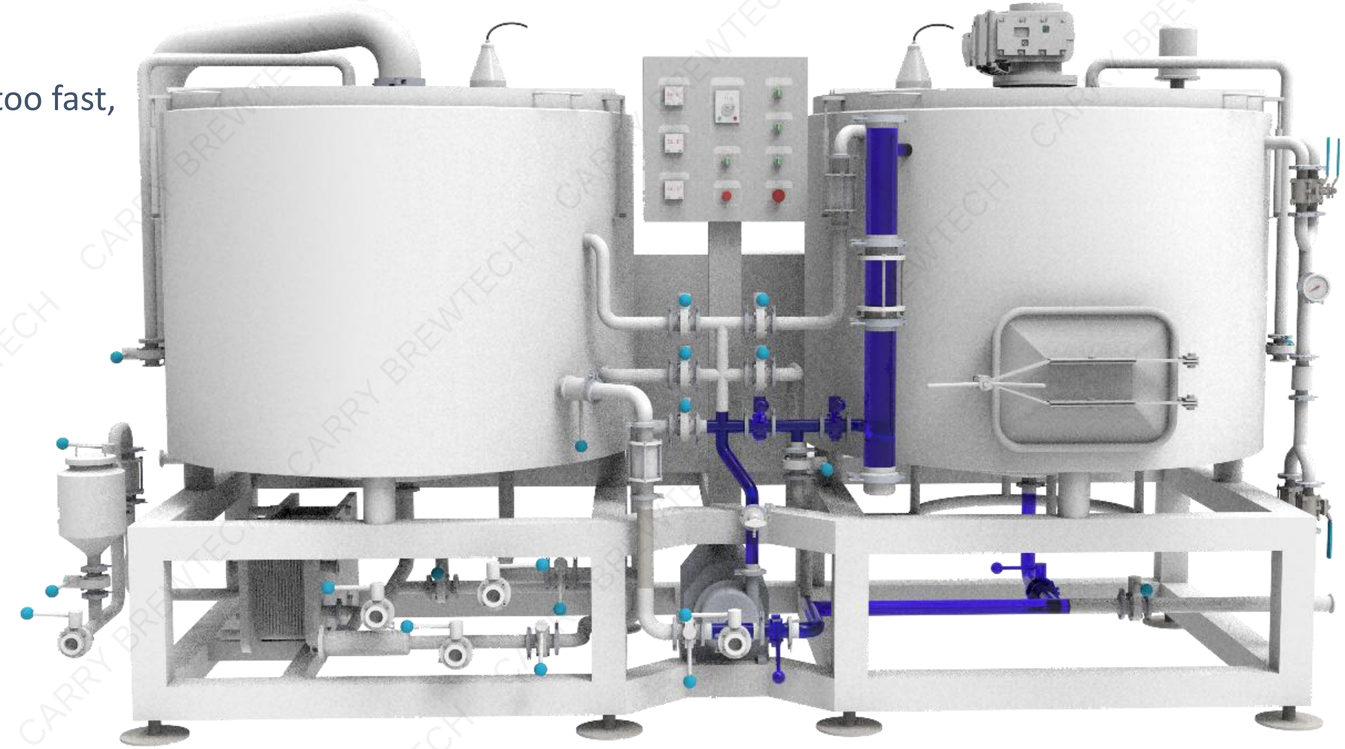
2. Switch on the wort pump, increase VFD data from 0 to 10 gradually; considering the grains are thick and tight, do not suggest to set this speed too fast, give it time to seperate worts from grain, otherwise it will generate too much power underneath the sieve plate, and cause empty space.

3. When the worts are circulate properly through this pipeline as shown in the picture, then switch on the RIMS Heat switch, now the RIMS element is starting to heat, worts will take away its temperature during circulation process.

4. Suggest to keep grain rake on work with slow speed as well;

5. When PV=SV, the RIMS heat will off work, now turn off this RIMS switch; OFF SET the wort pump to 0, OFFSET rake to 0.

6. Stay for 15mins until next HEAT UP loop.

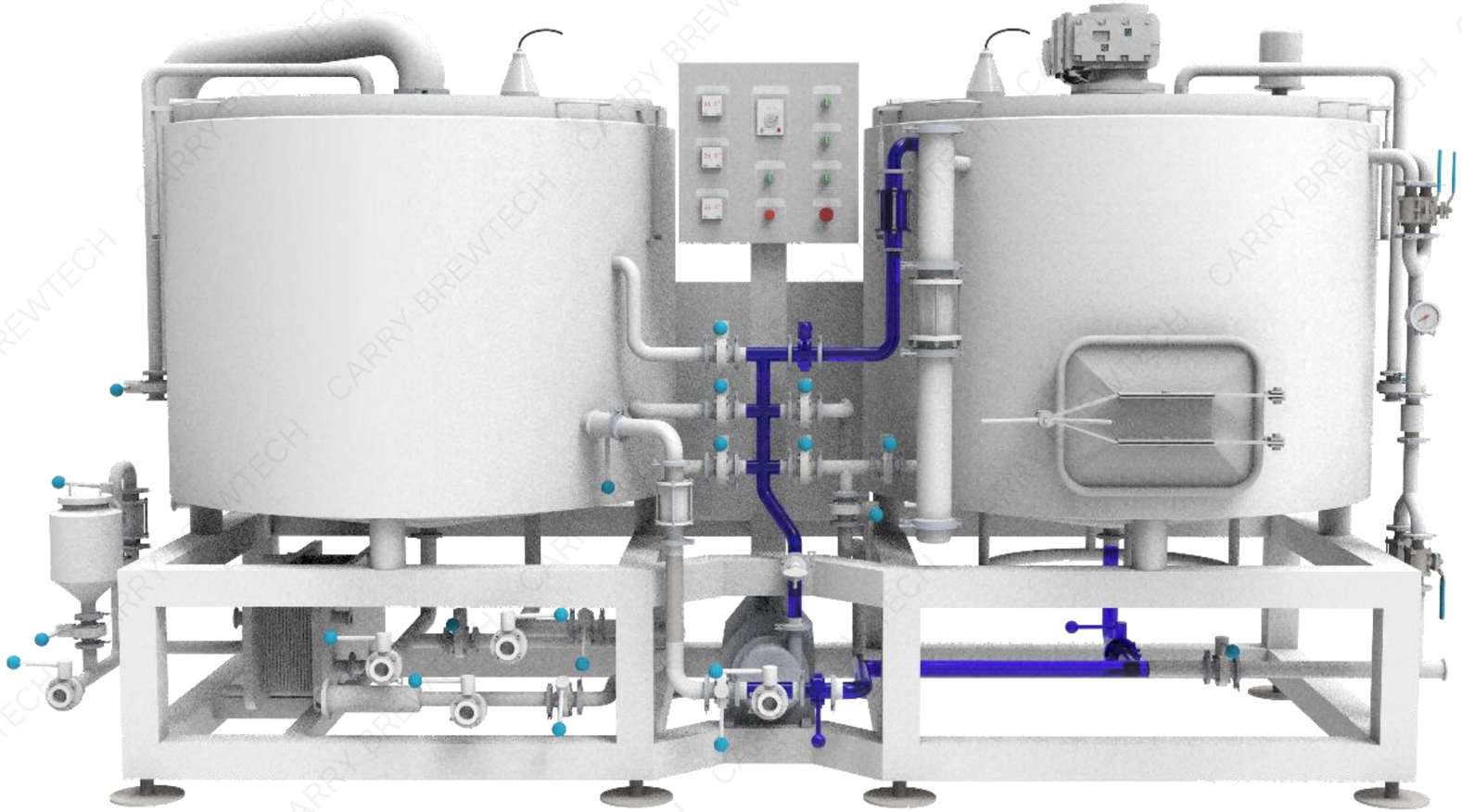


5. VORLAUF (Wort Backflow)

VORLAUF (Wort backflow) is the process to filter (clarify) the wort underneath the sieve plate before lautering into the kettle tank.

See below pic, open valves along this pipeline firstly, then power on the wort pump gradually, suggest to start from 0 to max of 20.0, to enable worts flow off from bottom and back into mash tun on top smoothly.

It can be stopped when the liquid is clear seeing from the sight glass.



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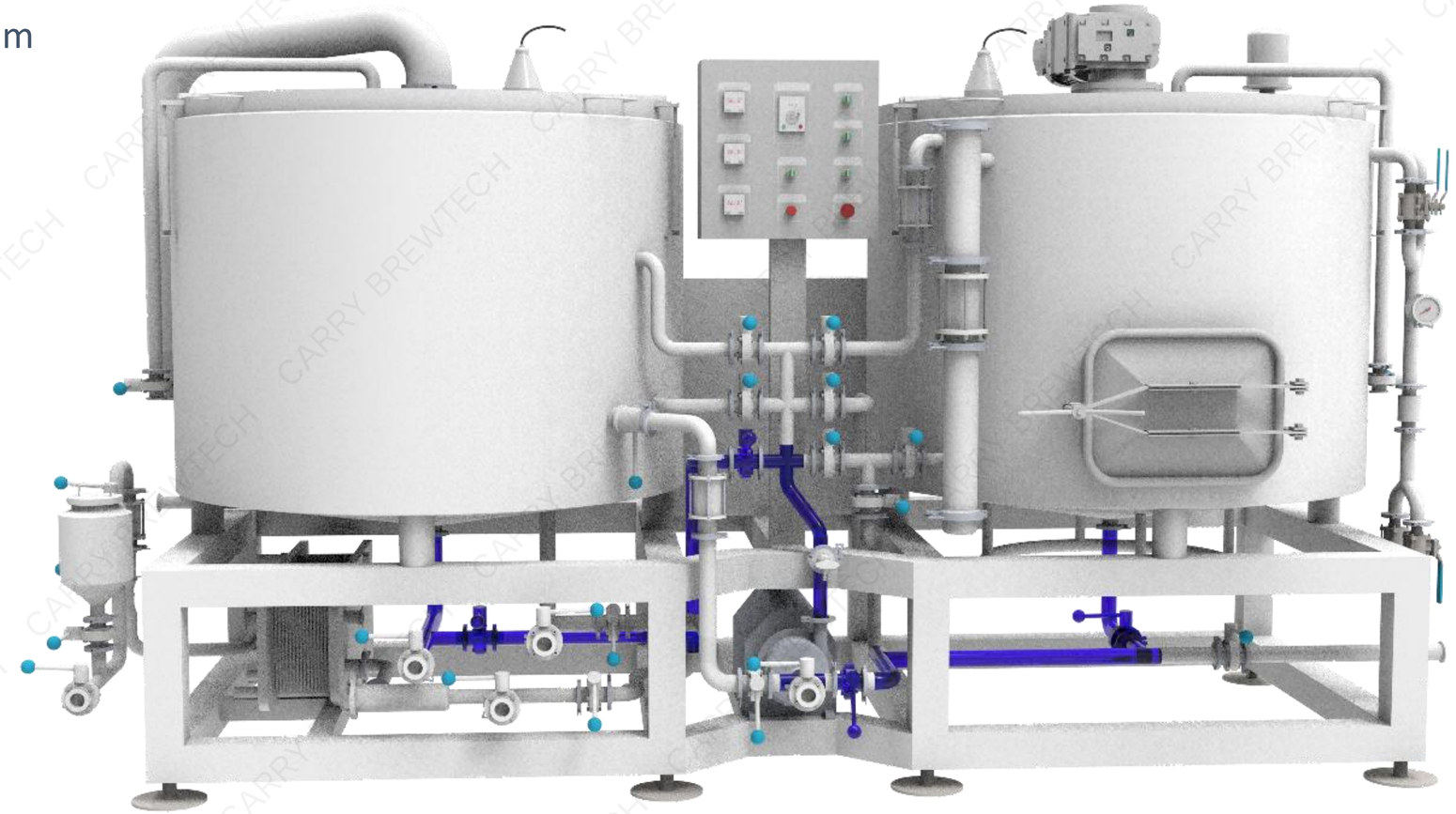
6. Lautering

Once the mashing and VORLAUF process are completed, it’s time to lauter your worts into kettle tank.

See attached pic, open all these valves before switch on the wort pump. Just in case, you won’t have to open valves in full rate, hold the liquid flow steady before you are satisfied with the lautering effect.

Power on VFD device of wort pump to enable it to work.
Then, turnning its rotary knob on the panel
clockwise, start from minimum rate of 0 to maximum rate of 20.

Attention:
To protect your grains and get rid of stucking mash, suggest to hold the VFD rate under 15.



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7. Sparging

Sparging is the process of “washing” the grains to get enough usable wort and preferable Brix into kettle tank.

You can hold the hot water liquid flow-in rate by controlling the openning degree of valves.

For this user manual, we will use “fly sparging” method, which means the speed of water in to mash tank closely equal to the speed of lautering wort into kettle tank. This is the most popular and time-saving way.

Of course, this will bring down the brix density with more waters in, please take this into consideration if you are planning to brew high gravity beers.

Anyway, with this unit, it’s flexible and permit more creative brewing technology.

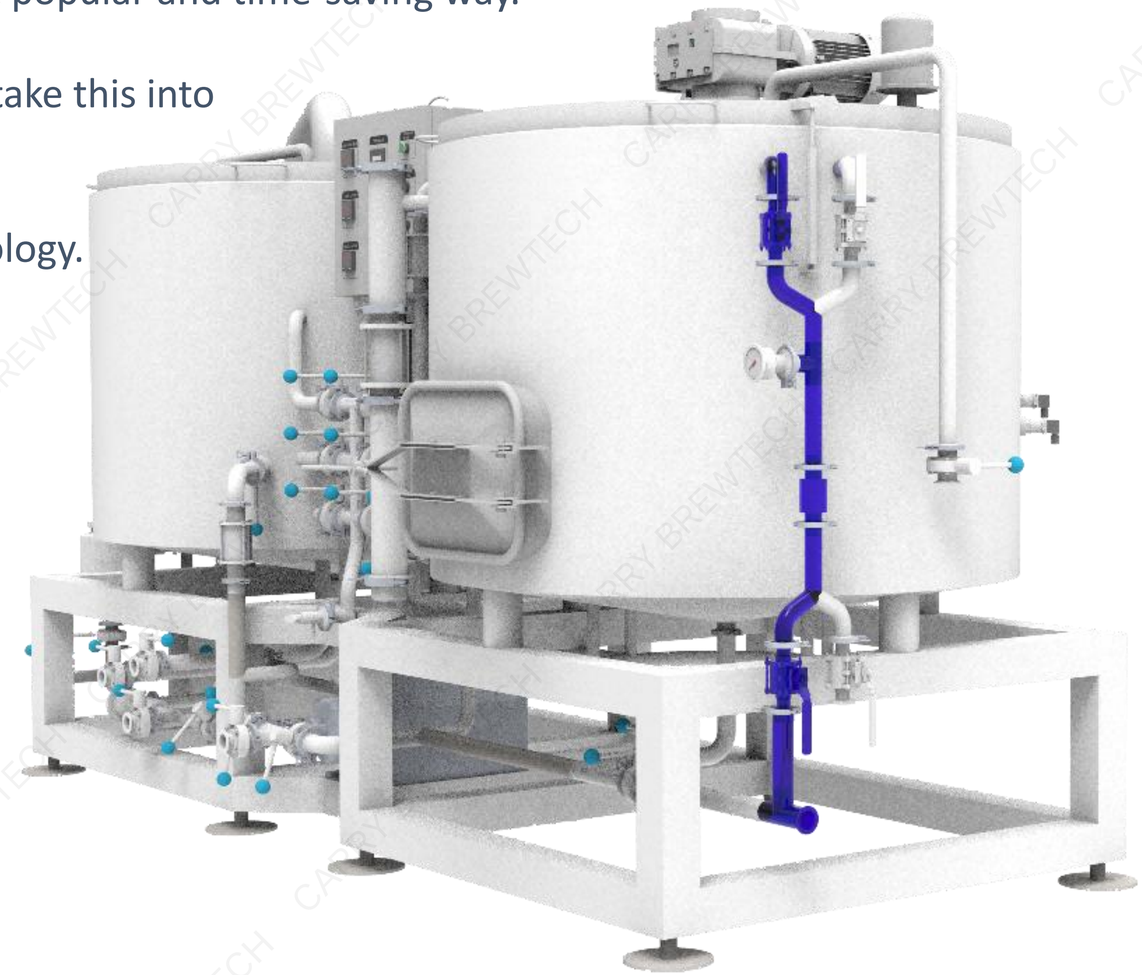
Tips:

when to start sparge?
> When the liquid level is around 50mm above the grain bed surface.

You also have an material level sensor installed in this position, you can get alarm from the panel when it’s time to sparge.







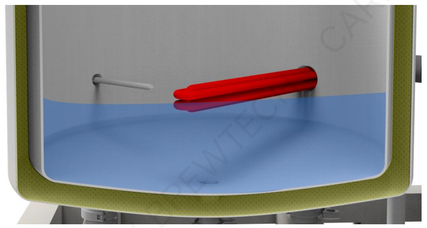
8. Boiling

You can start to heat up the wort inside of kettle tank once the elements is fully submerged during the lautering process.

Set the PID Meter of BOILIING TEMP onto 100 degree celsius, switch on the button of “Kettle heat 1 & 2”, then the HEAT UP is start.

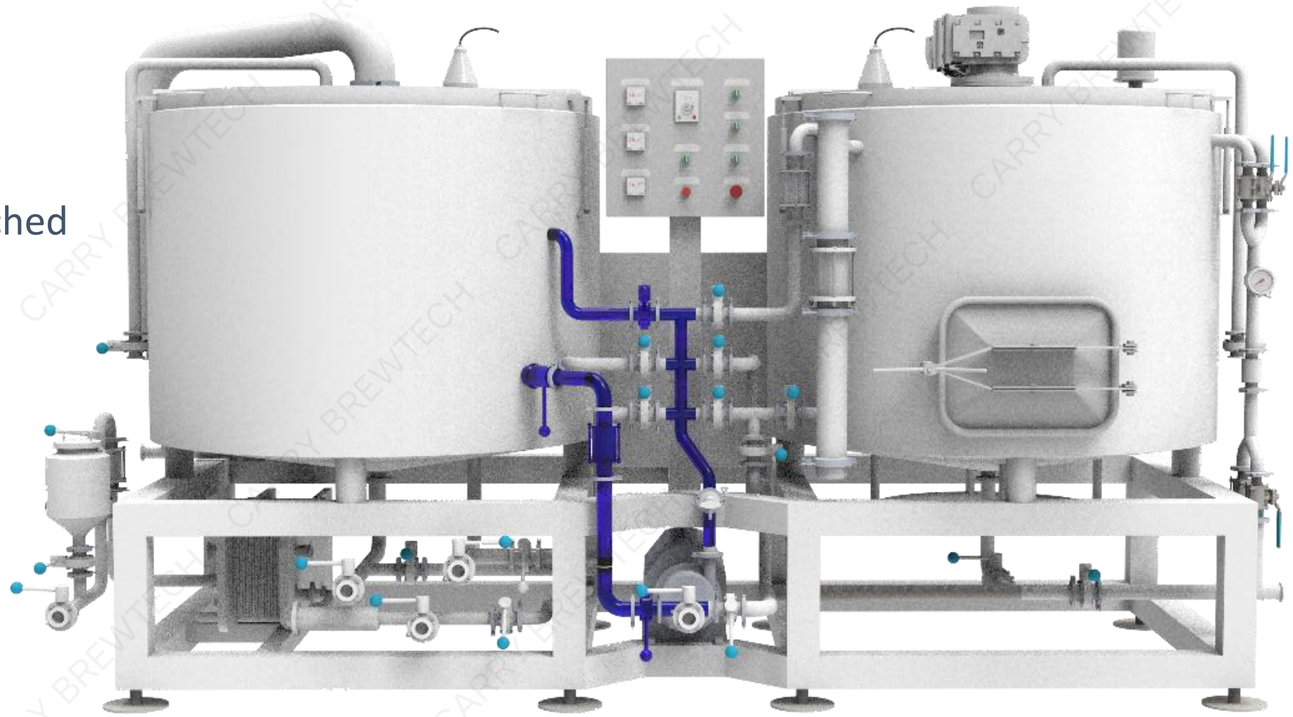
Tips:

1. Protect the electric elements as requested, always keeps the liquid level upper than the elements when you power them on.



2. Another way to protect the electric elements from burnt, see attached pic, have this pipelines & valves on, and the Wort pump on (est. VFD speed at rate of 1~20).
Let the wort circulate itself inside of kettle tank, make sure the sugar contents won’t stick on the elements during heating up process.

3. Adding hops according to your recipes.



9. Whirlpool

Whirlpool is the most important procedure before knocking out worts into fermenter. Its very helpful for wort clarification, and get rid of risk of clogging the plate heat exchanger.

See below pic, open the valves on this pipeline before power on the wort pump, same as before, increasing the speed of wort pump gradually from 0 to max value, or the value you prefered. In this process, the faster speed, the better whirlpool effect.

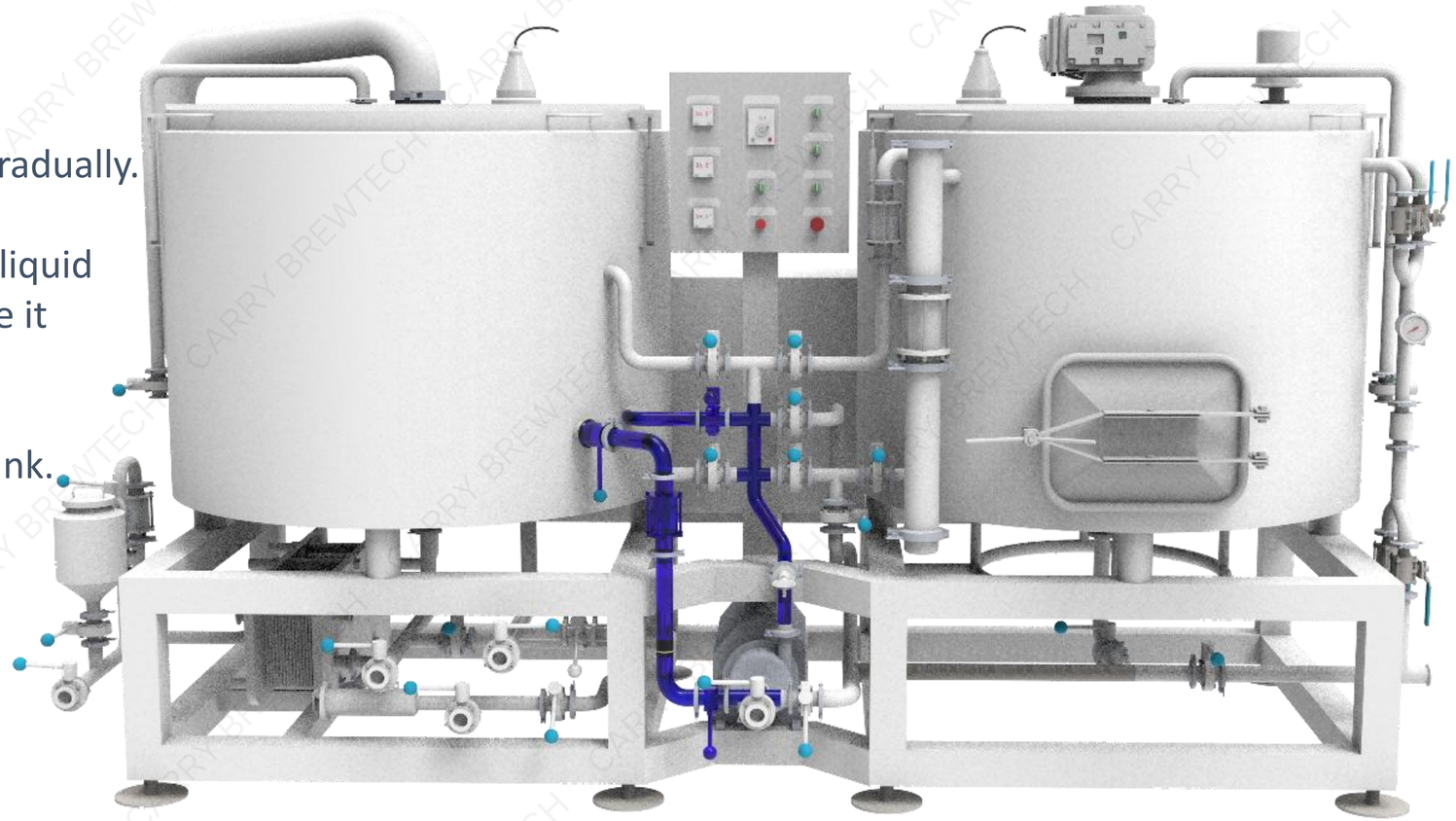
Tips:

1. The liquid inside of kettle tank is almost 100 degree celsius, please be careful when you swith on any of the valves.

2. Always remember:
Power on and increase the wort pump transferring speed gradually.

3. Keep Wort Pump running for around 15 mins, When the liquid produces a natural swirling vortex, can stop pump and leave it for natural whirlpool for 30 mins until liquid is still.

Now you will get a natual cone in the center of the kettle tank.

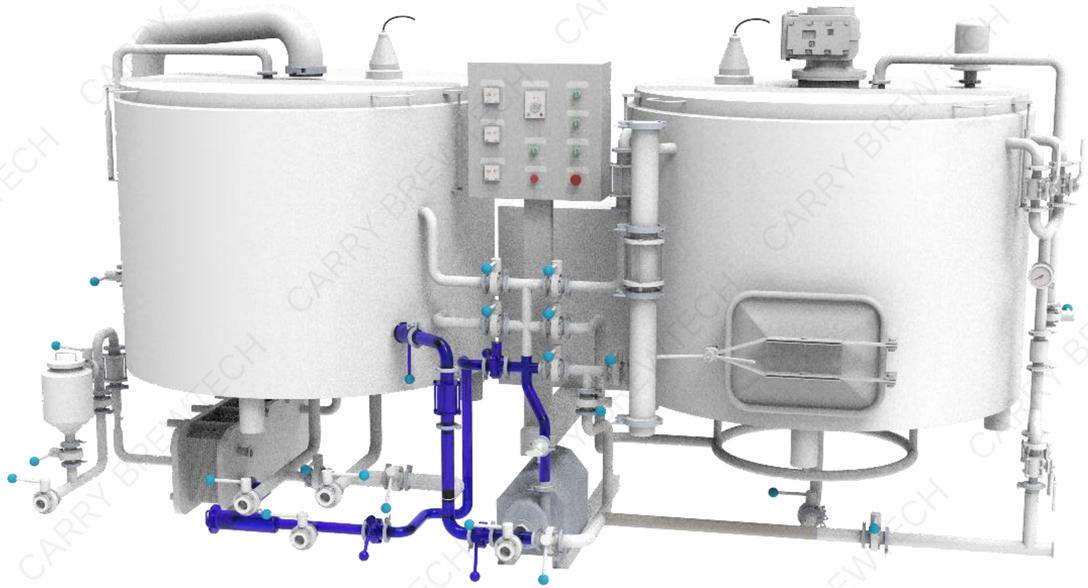


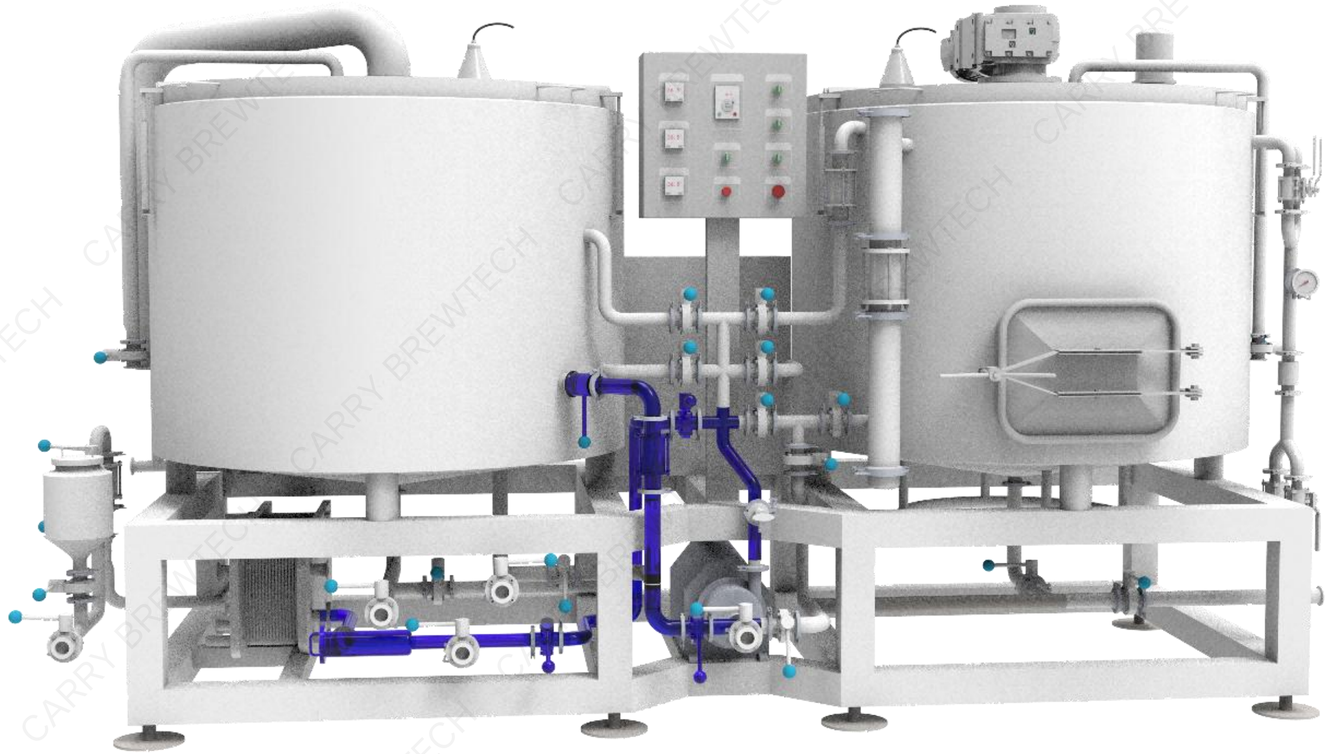
10. Knocking-Out

After around 30 mins of whirlpool process, now it’s time to knock out the wort through plate heat exchanger into fermenter.
You will need to prepare sanitary hose and fermenter to be ready for this process.

Tips:

1. Connect hose on the outlet of heat exchanger and the bottom drain port of your fermenter.
2. Make sure the pressure relief valve/spunding valve of fermenter is working properly before pumping worts in.
3. see below pic, familiar with all the pipeline & valves before openning them. It’s very important to open valves & pumps slightly to make sure the liquid inside of kettle won’t get muddy; Turn the racking arm face to top and down slightly.
4. Connect your cold water source (glycol water, tap water or any other cold liquid source) onto your heat exchanger water inlet port.





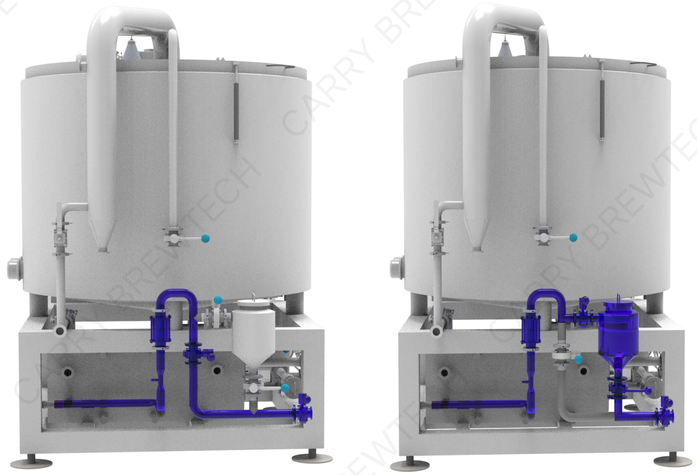
10. Knocking-Out

Before switch on the knocking off pipelines & pump, please make sure the cold source (glycol or cold water) in & out lets are established ready. Tap water going through the plate heat exchanger, it can be drained into the drainage, or recapture these water back into your hot water tank for the next brewing batch (if you have).

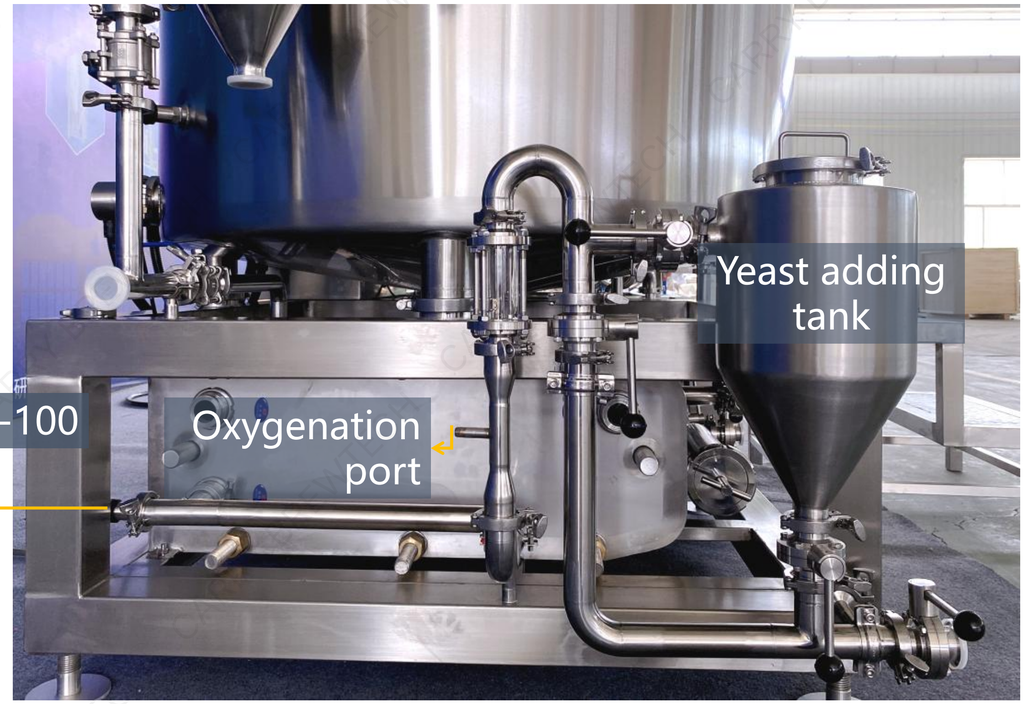
Once the cold crashing liquid flow is setting up, open the knocking out valves and switch on the wort pump slightly. Suggest to keep the speed rate under 10 to make sure there is enough time for the hot wort & cold liquid stay inside of the plate heat exchanger, to getting down temperature to the desire rate.

During this process, you can monitor the after PHE PT-100 feedback temperature data on the PID Panel, adjusting the wort pump speed or valves to control flow speed until you get a desired degree. Oxygen can be blowed in through the air inlet before the sight glass (if needed). Once the wort liquid level inside of the kettle is down to limitation, turn off the wort pump immediately and close off all valves on brewhouse and fermenter accordingly. You can blow more O2 to get the balanced worts into FV.

Remember to add yeast to the “yeast adding tank” only when the temperature has been drop down to a satisfied degree.

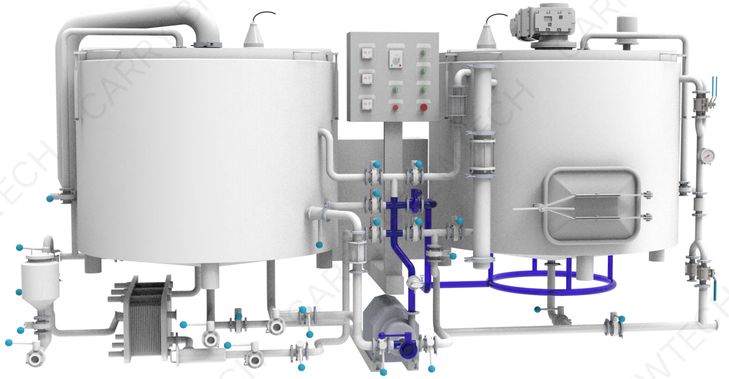




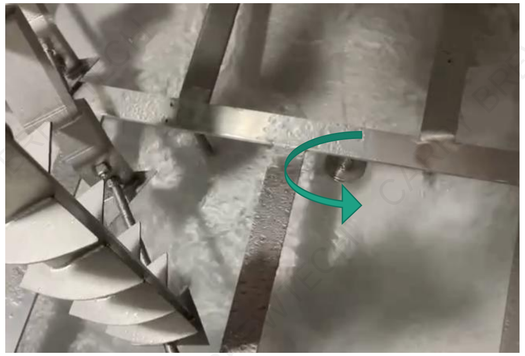


10. Back flushing of sieve plate

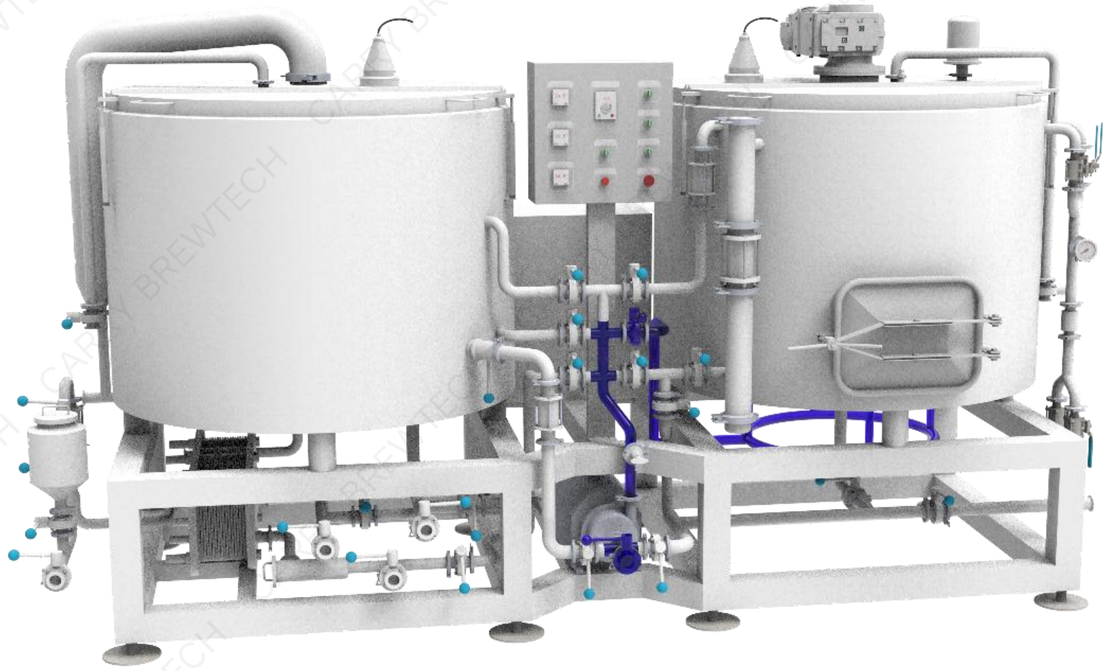
For easy cleaning of the underneath of sieve plate, we have installed back flushing device as below, when the lautering process is finished, you can connect hot water or cleaning water to flow through this pipeline with proper flow speed, thus it can clean the space underneath the sieve plate, and the sediments can be drain off through the bottom drain pipe.











11. Support

Carry Brewtech Technical Support

Carry Brewtech provides life-time technical support to your business.

Generally, we will set up a service group on **Wechat** App, please install this App on your phone, and let us know your wechat ID, we will add you into our group. Our engineer, technical guy will all in the group, any of your questions can be solved asap. Most importantly, this app have auto-translation function, very helpful.

Reference: https://www.wechat.com/

Or, please advise the preferable way you want to keep communication online. We will follow accordingly.

We appreciate any of your feedback on Strengths and Weaknesses of our product & service. That will be the most powerful engine for us to become a better one.

Thanks again for all your cooperation and support. Wish you successful brewing!

Carry Brewtech Team

THANK YOU

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