

steam is that the heating surface is not limited to the vessel bottom. Additional surfaces on the shell, in the form of an internal or external boiler, can increase your heating capacity to the state of the art.

A steam-heated bottom allows great variations in volumes, which can be important for different mash types. An internal boiler is limited in that regard. External boilers are more costly. For 1 brewhouses with a separate wort kettle, an internal boiler is the standard installment today. A well-designed wort kettle delivers a highly homogeneous wort quality at a highly defined evaporation rate.

It may even be possible to combine these installations with modern energy recovery systems such as a vapor compressor. Currently vapor compression systems (mechanical or thermal vapor compression) are only feasible on a large scale, but they may be available on a smaller scale in the future.

Installing a steam generator is not dependent on plant size any more. Steam generators are available for all sizes and needs, from small electric units to large steam vessels. And as soon as a significant volume of your beer production goes out in kegs, you need steam to sterilize them. Once you have any other steam consumer besides the brewhouse, the decision for a brewhouse heated with steam should be easy.

Hot Water and Electricity — "Exotic" Alternatives

A smart alternative to steam on larger brewhouses is hot water. Pressurized water at 320° to 340° F is pumped

through semi-coils at bottom and shell. It allows the best possible control and works without any condensation losses but requires bigger pipes and pumps and therefore a significantly

larger initial investment. For small breweries this technology is not currently appropriate.

Very small brewhouses could also work with an electric heating device, as a lot of homebrewers

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