

Energy Efficiencies in Brewhouse Operations Then and Now

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Abita Brewing Co. in 2002

40, 000 BBL per year production

30 BBL Brewhouse

Steam Jacketed Kettle

9 % Evaporation rate

Brewed 24 hours per day

Brewed 5-6 days per week

Peak season brewed 7 days

Running into capacity issues

We need to begin exploring new brewhouse options

Energy Recovery in our brewhouse

Nothing modern

Ice water >> Heat exchanger >> Hot Water

How do we build a new brewhouse in the most economical way?

Energy efficiency was key to building new brewhouse

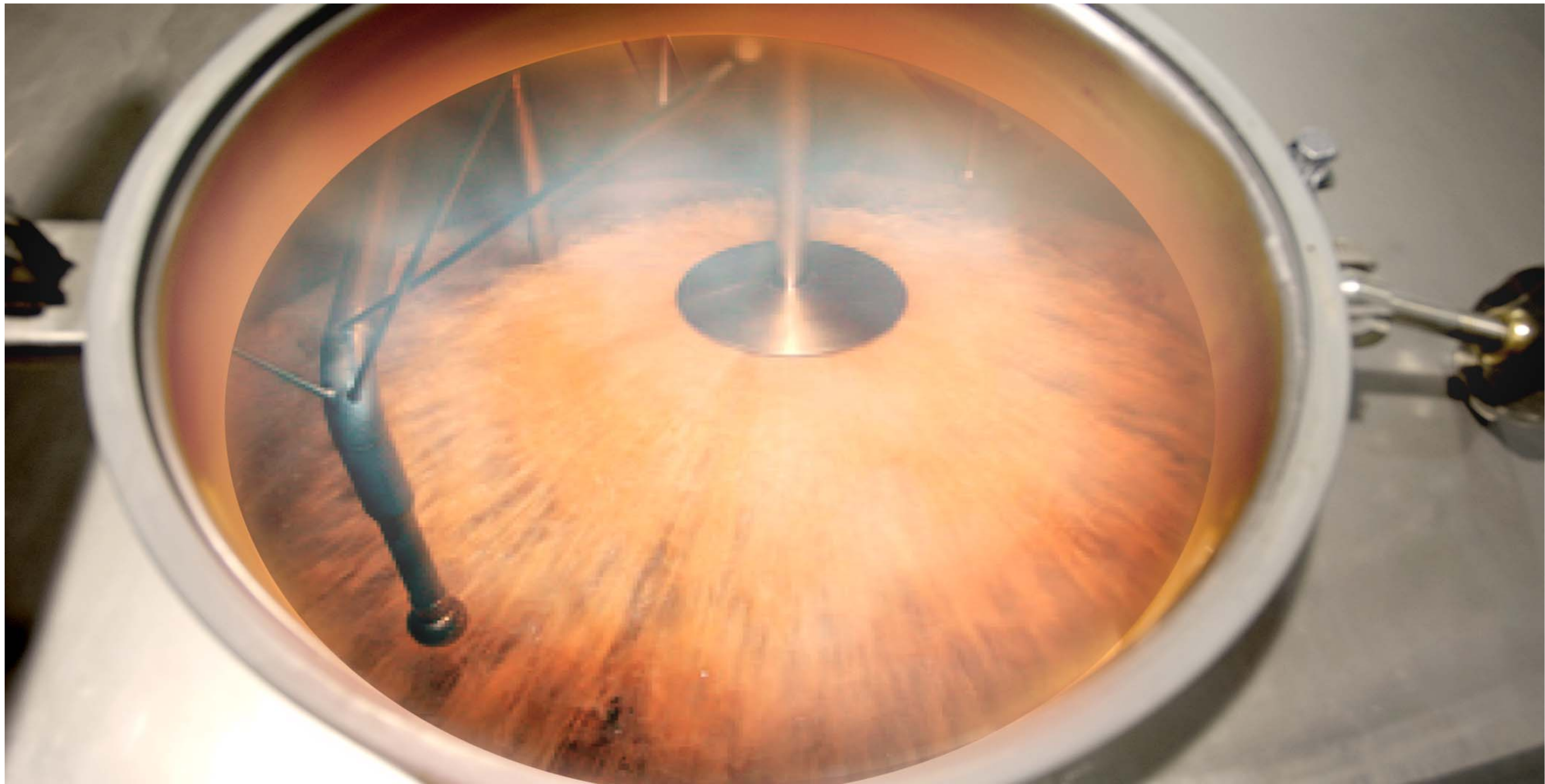
Focus was on using less energy/conservation

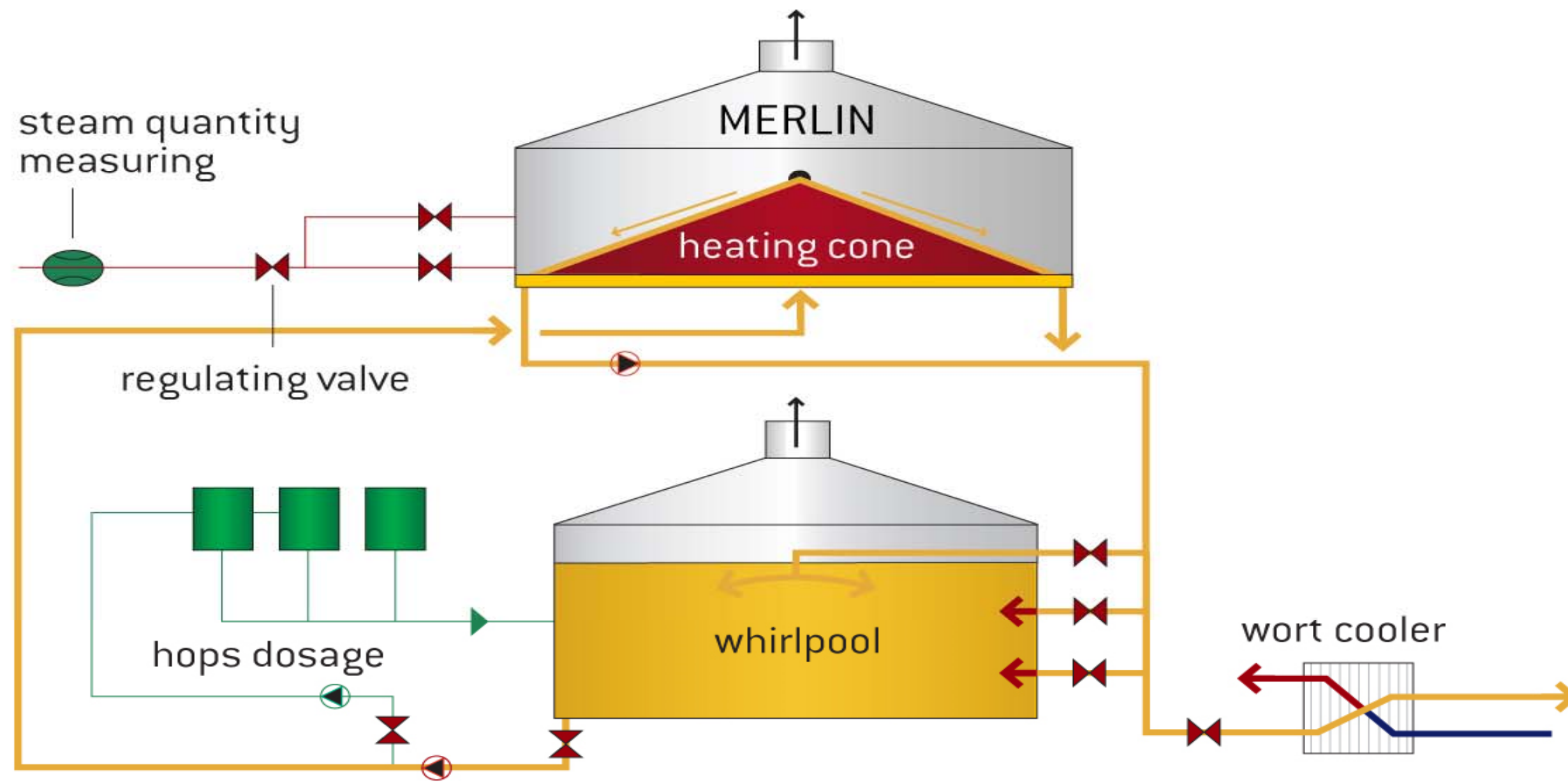
What options are available?

Low evaporation boiling was now being explored

This was most logical step

We decided to build a Steineker brewhouse with a Merlin wort boiling system





New brewhouse/Merlin energy efficiencies

100 BBL brewhouse

4.5 % total evaporation rate-2.5% boiling, 2% stripping

Wort boiling would use 70% less energy

Vapor condenser installed-but this is not optimized because of
unique Merlin system

Steam condensate return installed in brewhouse

This was our best option in 2002 based on

Brewery size

Our growth rate (5-7% per year, 3 years)

Capital cost-What we could afford at time, how long it would last

Information and technology available

Abita Brewing Co. in 2012

150,000 BBL production

15% per year growth rate for 7 years

Brewing 24 hours per day 5-6 days per week

24/7 during peak season

Have added holding vessel and maximized output

We need a new brewhouse again

There are many more options available to us in 2012

We can take a macro view

We can look at overall energy efficiency

We don't need to focus on just using less, not just boiling

We can look at total energy recovery

Capital costs-More available

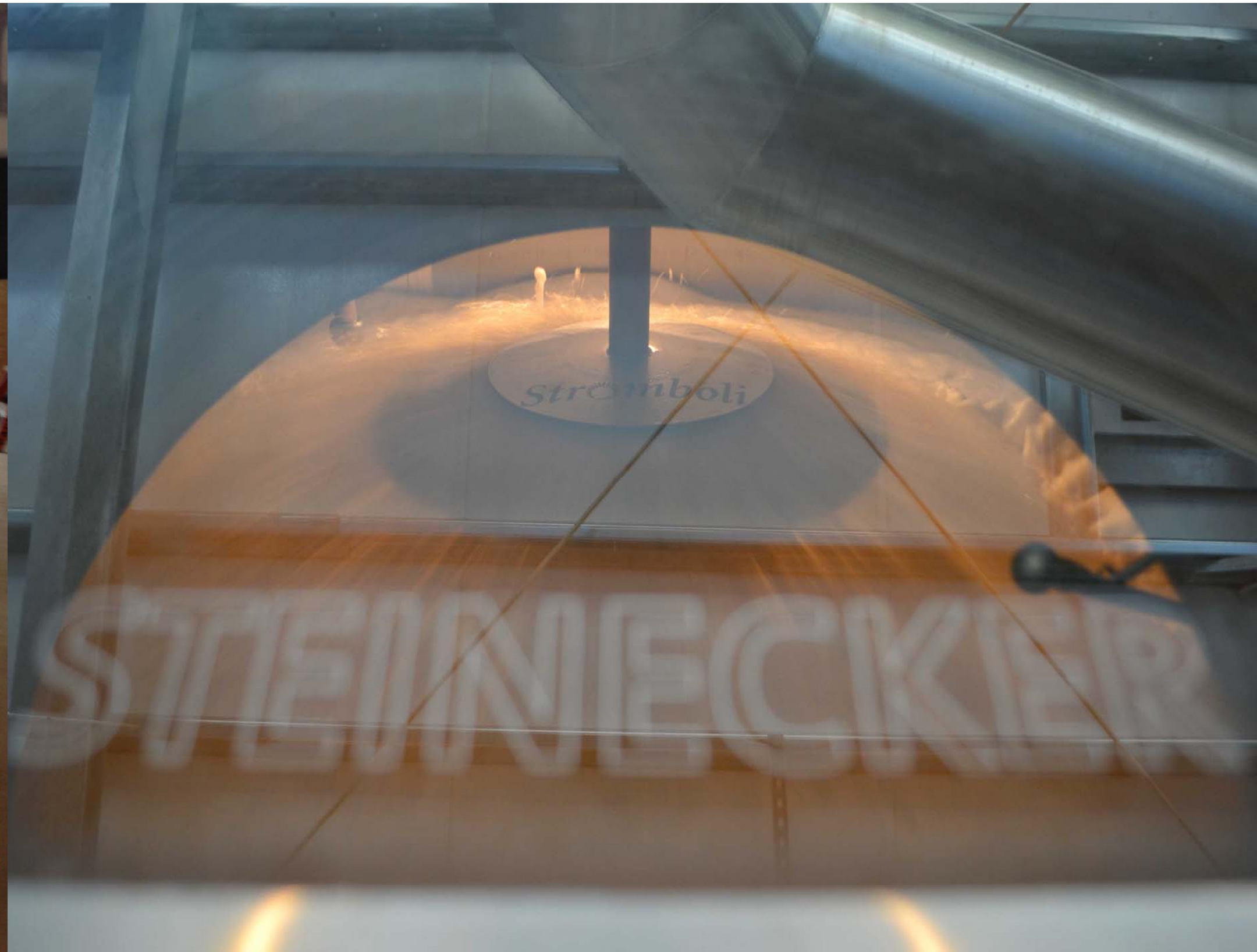
Build for the future

200 BBL Steinecker/Krones Brewhouse including items similar to our current brewhouse

Stromboli wort boiling with 4.5 % evaporation

Steam condensate return

Vapor condenser-Optimized





New features include

Weak wort tank-recovered extract as well as recovered energy that would go to drain-10% reduction

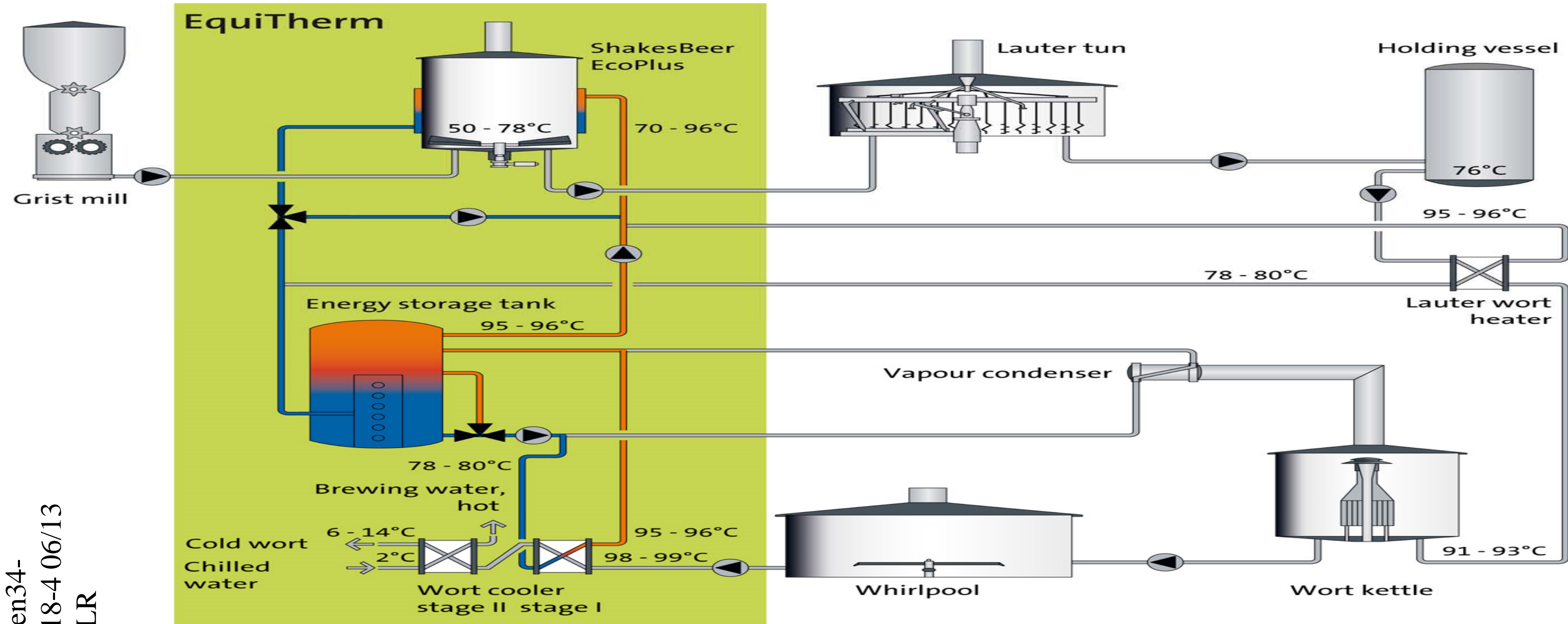
Energy recovery tank-stores energy to heat wort from holding vessel to kettle-66% reduction

Equitherm energy recovery system-Optimizes energy recovery tank and uses recovered hot water to heat mash tun

We are first in US to use this technology



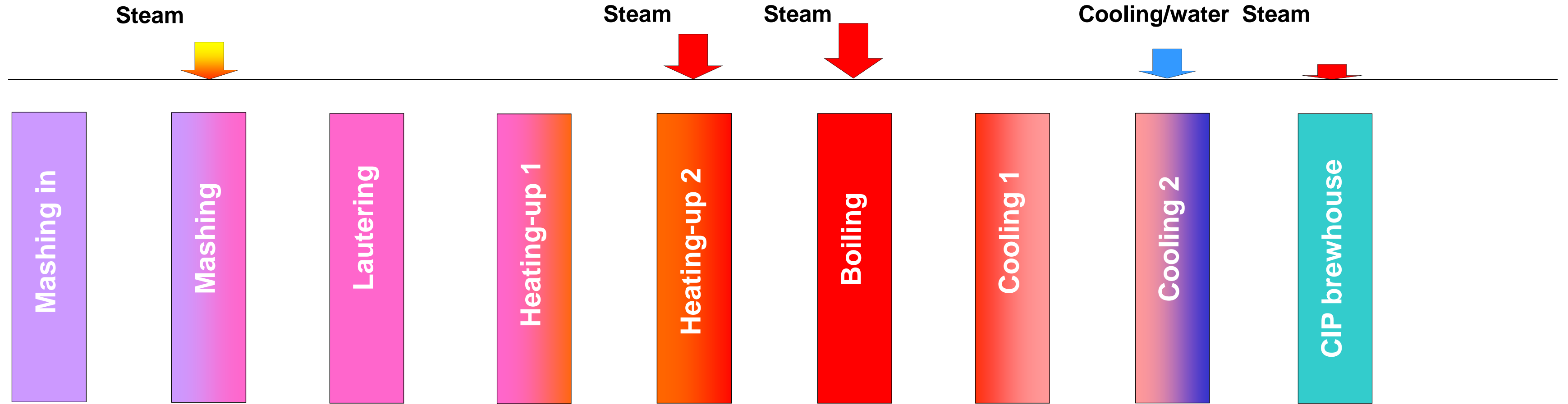
Equipment and technology of EquiTherm



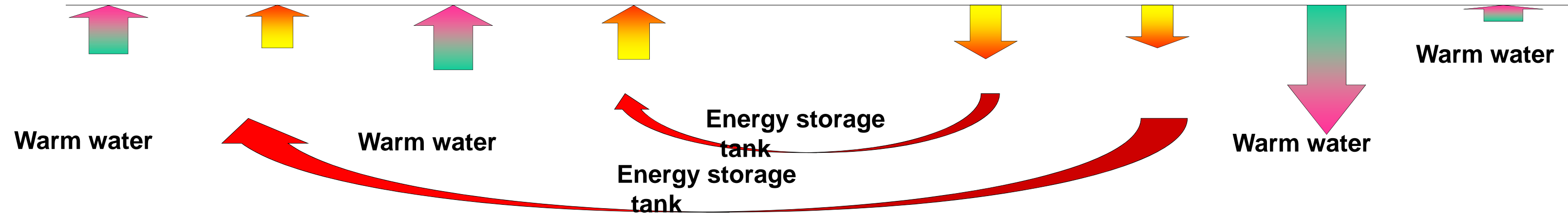
Energy flow in the brew house

EquiTherm

Primary



Secondary



CC-en34-
p0018-4 06/13
CC LR

Benefits of Equitherm

Steam reduction

Reduction of boiler peak loads

Reduction of hot water usage

Reduction of electrical energy for chiller

Energy Savings

Thermal Energy (Steam) 32%

Electrical Energy (Cooling) 23 %

Peak load (Thermal) 46 %

*All totals calculated-Not enough information yet to verify

Differences between 2002 and 2012

Focus on total energy usage and recovery, not just reduction

Many more options available because of

Brewery size-We are 4 time larger

Suppliers-Many more/much more responsive

Technology-Many advances

Capital-Much more available to our industry

Continued

Information-Sharing, easily available

Understanding of the US Craft Brewing Industry

Industrywide emphasis on energy efficiency-Everyone knows we
must do better

- Other observations

More = Less

Larger energy storage = smaller boiler/chiller

Holding vessel = smaller boiler/less energy

Weak wort tank = less malt/less energy

Scaling up larger = less time doing again in the future

Contributing authors

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Thank you for your kind attention

