GEA CRAFT-STAR®
Craft Brewhouse M

GEA's fully automated, high-performance
20 hl brewhouse

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GEA‘s Craft brewing solutions

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CRAFT-STAR® M
20 hl (17 bbl)

Annual beer production range:
3,000 – 40,000 hl/a

CRAFT-STAR® XL
40 hl (35 bbl)

Annual beer production range:
20,000 – 80,000 hl/a

COMPACT-STAR®
40 hl (35 bbl) to
115 hl (100 bbl)

Annual beer production range:
40,000 – 300,000 hl/a

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GEA CRAFT-STAR® Craft Brewhouse M

- Pre-assembled brewhouse skid with a cast out wort volume of **20 hl**
- Pre-engineered, off-the-shelf system with selected GEA brewhouse technologies for high efficiency, optimized raw material use and excellent plant performance
- Engineered to meet the needs of craft brewers; oversized vessels can handle high-gravity recipes and the **fully automatic** control system ensures batch repeatability
- Three-vessel configuration means that a **4 brews/20 hour** production can be extended to five-vessel execution with a throughput of up to 12 brews per day

Standard configuration

Item	Description	
Milling type	Dry milling	
Filling charge		320 – 510 kg malt
Original gravity		11 – 18 °Plato
Cast-out quantity		20hl cold wort
Numbers of brews	3-vessel-Brewhouse	4 brews / 20 h
Numbers of brews	5-vessel-Brewhouse	11-12 brews / 24 h
Possible mashing procedurs	Infusion and decoction	
High of Platform		2 m
Heating vessel and boiler	Saturated steam	3 bar g
Current	Three-phase current	3 x 380 V / 50 cps
Control and wort aeration air	Oil-free, dry	6 bar g

Standard configuration

Item	Description	
Malt in accordance with		DIN 8777
Mashing in ratio	malt/water	1:2,5 to 1:3,8
Mashing in liquor		9 – 15 hl
Mashing in temperature		35 – 65 °C
Total mash volume		11 – 19 hl
Heating rate of total mash		1,0 K/min
Residual extract in spent grains	Soluble / convertible	< 0,8 / < 0,8
Max. evaporation rate		8 %/h
Max. evaporation		< 5 %
Boiling time		< 60 min
Wort cooling time		45 min

CRAFT-STAR® M

Cold Process Equipment

Complete set of customized cellar equipment: from yeast management, fermentation and beer clarification to finishing and CIP cleaning

Mobile CIP unit

Carbonization unit

Equipped with GEA Automation

A flexible, multipurpose and open access automation framework for a real time overview during all stages of a production process.

CRAFT-STAR® M

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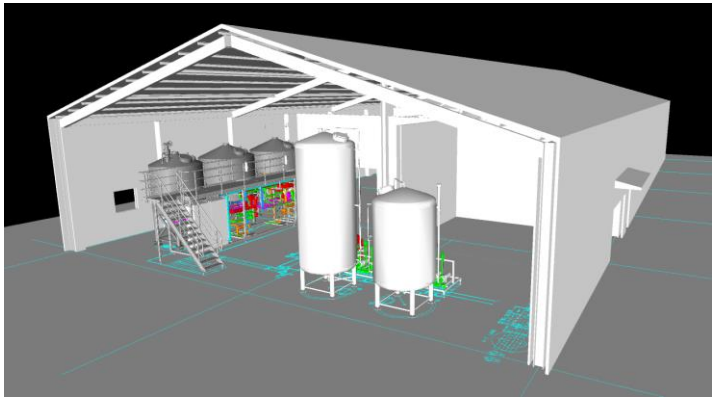
Turnkey Projects

Brewhouses

Complete brewery plant including malt handling, utilities, cellar area and filling lines, plus upgrades for existing breweries



After Sales Service

Individual service modules to ensure high plant availability, plant efficiency, cost control and optimized OPEX

Key Benefits

- Pre-engineered brewhouse concept for **cost reduction** and **short lead times**
- **Versatility** in beer styles, with oversized vessels to handle **high-gravity beer recipes**
- Pre-skidded (frame) concept for **fast installation** and **smooth start-up**
- External wort boiling allows for **maximum** batch size **flexibility**
- Basic equipment for 4 brews/day with fully automated processing

Core Features

- **Pre-masher** and gentle **mash agitator** in proven GEA design
- GEA lauter technologies based on **differential pressure measuring**
- Kettle/whirlpool equipped with modern external boiler for best wort quality and **trub dam** for higher hop loads
- No separate CIP plant necessary owing to integrated CIP functionality (fully automatic CIP brew)
- **Automation** for great batch repeatability includes process visualization, recipe database, monitoring and remote support

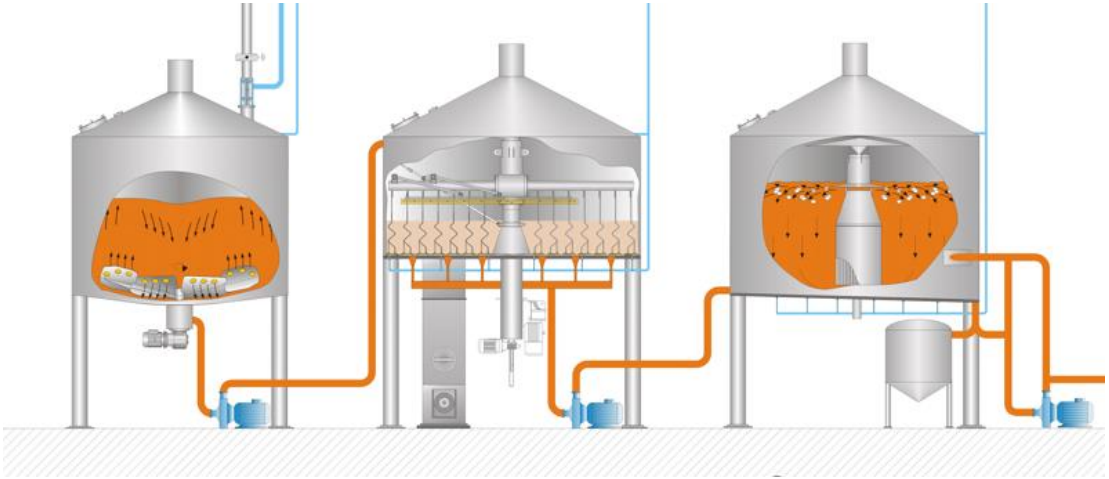
Three-vessel configuration – extendable

This system is equipped with a **separate mash tun kettle** with a pre-masher plus

- a **separate lauter tun**
- a **combined kettle/whirlpool** with an external boiler

All infusion/decoction mashing regimes are possible

Up to **4 brews per 20 h**



Five-vessel configuration

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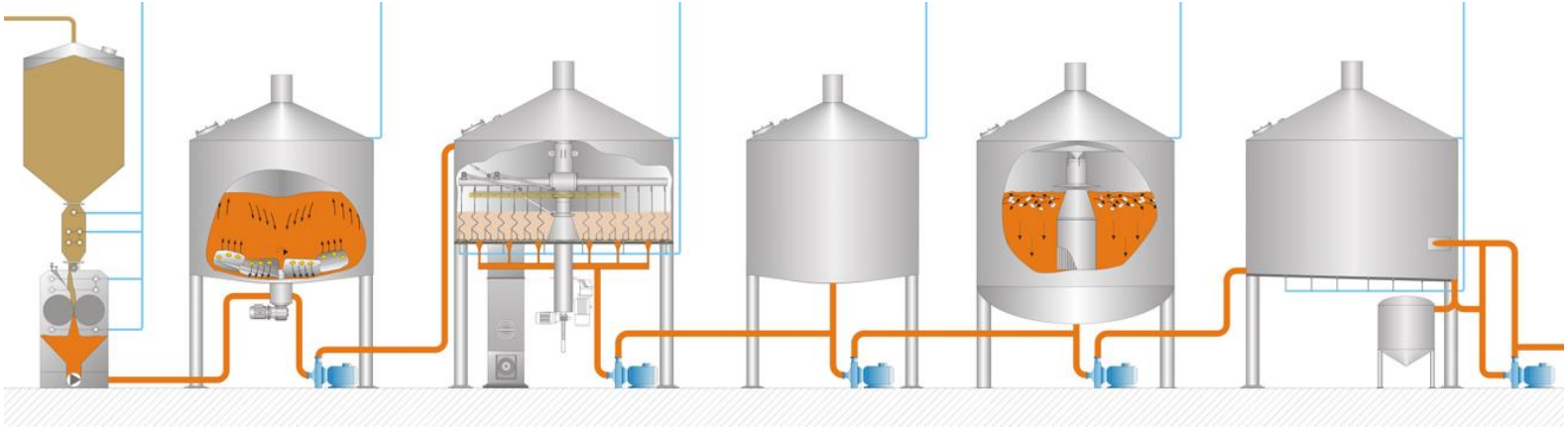
This system is equipped with a separate mash tun kettle with **a MILLSTAR®** plus separate lauter tun plus

- a combined kettle/whirlpool with an external boiler
- **a separate pre-run vessel and whirlpool**

Up to **12 brews** per 24 h



Beer output calculation

Three-vessel configuration (standard): example calculation

Example: Starting with low production

4 brews a day = 4 x 20 hl = **80 hl** per brewing day

2 brewing days a week = 2 x 80 hl = **160 hl** per week

45 production weeks = 45 x 160 hl = **7,200 hl** per year

Example: Maximum capacity with a standard three-vessel brewhouse

4 brews a day = 4 x 20 hl = **80 hl** per brewing day

4 brewing days a week = 4 x 80 hl = **320 hl** per week

50 production weeks = 50 x 320 hl = **16,000 hl** per year

Standard three-vessel brewhouse

Beer output calculation

Five-vessel configuration: example calculation *(standard version + prerun tank + separate whirlpool)*

Example: Starting capacity with five-vessel brewhouse

8 brews a day = 8 x 20 hl = **160 hl** per brewing day

4 brewing days a week = 4 x 160 hl = **640 hl** per week

45 production weeks = 45 x 640 hl = **28,800 hl** per year

Example: Maximum capacity five-vessel brewhouse

12 brews a day = 12 x 20 hl = **240 hl** per brewing day

5 brewing days a week = 5 x 240 hl = **1,200 hl** per week

50 production weeks = 50 x 1200 hl = **60,000 hl** per year

With one standard brewhouse

+

Pre-run tank

+

Separate Whirlpool

+

Wet Mill

Timeline

Manufacturing in Germany = **approx. 5 – 6 months**

Shipment

Brewhouse installation = **5 – 7 days**

Pipework to utilities (steam/chiller) = **5 – 6 days**

Ready to brew = **approx. 3 – 4 weeks after delivery**

Design Concept

All vessels are manufactured at the GEA workshop in Kitzingen, Germany

The **CRAFT-STAR® M vessels** are made of stainless steel, including the insulation, and benefit from neatly welded cladding with a polished or matt surface finish

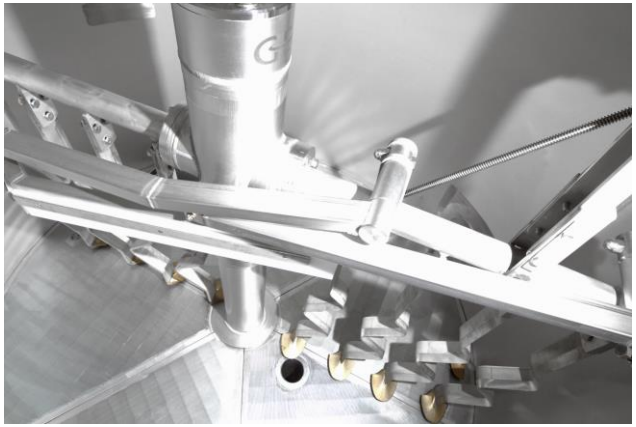
The flange/counterflange concept for mechanical connections and the socket/plug concept for electric connections between brewing vessels and the base frame enables **easy** and **extra-fast installation**

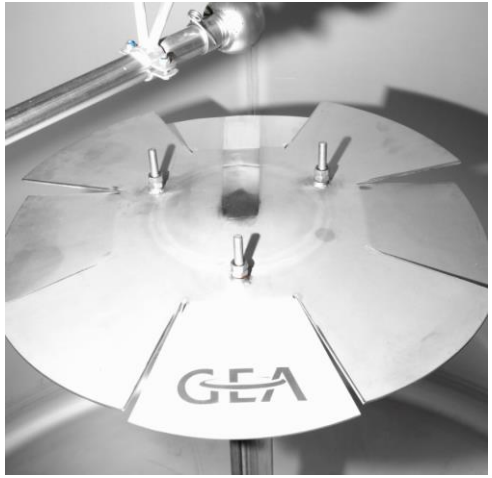
Great beer style versatility; oversized vessels for **high grist loads** and the trub dam improves whirlpool performance at **high hop loads**

Vessels meet the **highest safety standards** and are suitable for use in **all seismic zone locations**

Gallery

Gallery





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