

# GEA INLINE FORMULA® SOL High Shear Vacuum Mixer

The unique and extremely versatile  
INLINE FORMULA® Mixer can be used to  
improve an existing production line or  
replace existing equipment.





**GEA INLINE FORMULA® SOL High Shear Vacuum Mixer**

More than just a tank with a bottom-mounted mixer, the customizable, multirotor, GEA INLINE FORMULA® Mixer comprises a high shear mixing device for effective homogenization and a centrifugal pump that feeds the downstream process.

Typical applications include beverages, such as juice and carbonated water for the production of soft drinks, liquid food and recombined milk.

Available in two different versions, the GEA INLINE FORMULA® SOL High Shear Vacuum Mixer can be supplied with a heating/cooling jacket, vacuum-induced powder introduction and/or vacuum-based product deaeration.

The advantages of using the GEA INLINE FORMULA® SOL High Shear Vacuum Mixer are among others:

- A continuous process that can run in-line with the downstream process
- Just-in-time production – preparation of the batch at the time needed
- No or only short product storage time of the mixed product before further processing



## Internal and external recirculation...

### Computational Fluid Dynamics

Wishing to optimize the design and functionality of the GEA INLINE FORMULA® SOL High Shear Vacuum Mixer, GEA scientists looked to Computational Fluid Dynamics (CFD) to create a virtual prototype of the machine. By running simulations of the flow of ingredients within the GEA INLINE FORMULA® SOL High Shear Vacuum Mixer, it was possible to develop a more detailed understanding of the process and analyze certain key parameters required to achieve a product with the desired structure.

Using this information, GEA was able to both increase the performance of the GEA INLINE FORMULA® SOL High Shear Vacuum Mixer — by up to 70% — and reduce its power consumption, making it even more effective and cost-efficient.

# GEA INLINE FORMULA® SOL High Shear Vacuum Mixer

Inline Unit 750L, 1000L, 1500L, 2000L, 3000L

Affecting both batch cycle times and total cost of ownership, selecting the most appropriate mixing technology is crucial for your process. The multifunctional GEA INLINE FORMULA® SOL High Shear Vacuum Mixer uniquely introduces powder under vacuum below the liquid surface. The high shear mixing device produces small oil droplets to support a stable emulsion.

This vacuum mixer can be used for a variety of applications within the beverage, dairy and to some extent food industry. The customizable multirotor integrated in this vacuum mixer comprises a high shear mixing device for effective wetting/dispurging and a centrifugal pump in order to feed the downstream process.

## Key benefits

- One-pot-process for efficient cooking and mixing processes
- A continuous process that can run inline with the downstream process
- Just-in-time production – preparation of the batch at the time needed
- No or only short storage time of the mixed product before further processing
- Rapid dissolution of powders into liquids without fish eyes or agglomerates
- Hygienic standard, flexibility and efficiency
- Closed vacuum system and powder suction enables highest level of working environment and utilization of ingredients



**Main components**

- Vacuum tank
- High shear mixing device (HSMD)
- Stator ring,  $\varnothing$  4 mm (available in other sizes)
- Vacuum pump

**Materials**

All parts in contact with the product are made from stainless steel EN 1.4404 (AISI 316L). Other parts are made from EN 1.4301 (AISI 304).

**Options**

- Insulation
- Load Cells
- Internal recirculation loop

GEA INLINE FORMULA® SOL High Shear Vacuum Mixer	750L	1000L	1500L	2000L	3000L
<b>Processing parameters</b>					
Typical recirculation capacity, L/h	15000	20000	30000	40000	60000
HSMD output at 2 barg**, L/h	60000	60000	60000	60000	60000
Max. dry matter, %	≤ 60	≤ 60	≤ 60	≤ 60	≤ 60
Max. viscosity final product, cP	≤ 700	≤ 700	≤ 700	≤ 700	≤ 700
Powder, kg/min	≤ 100	≤ 150	≤ 200	≤ 200	≤ 200
<b>Consumption data</b>					
Installed power, kW	43	51	63	63	63
Power supply, IE3, IP66, 50/60 Hz, V	380-480	380-480	380-480	380-480	380-480
Mixing temperature (no vacuum), °C	≤ 100	≤ 100	≤ 100	≤ 100	≤ 100
Mixing temperature (vacuum), °C	≤ 70	≤ 70	≤ 70	≤ 70	≤ 70
Service water, L/h at max 20 °C	≤ 400	≤ 400	≤ 400	≤ 600	≤ 600
Instrument air, NL/min	100	100	100	100	100
<b>Connections* (for all sizes)</b>					
Steam	Flange DN50, DIN 11850 type 11B				
Powder/liquid inlet	DN50 - DN65 / ISO 2" - ISO 2½"				
Product outlet	DN65 - DN100 / ISO 2½" - ISO 4"				
Service water, ball valve	Female, BSP½"				
Air	6 mm tube				
<b>Estimated dimensions</b>					
Length, mm	2800	3000	3000	3100	3600
Width, mm	1600	1800	1800	1900	2100
Height, mm	3000	3200	3400	3500	3900

\* All connections are DIN 11851, unless stated otherwise  
Above process parameters are guidelines and can vary depending on powder ingredients.



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Working with GEA Service means partnering with a dedicated team of service experts.

Our focus is to build, maintain, and improve customer performance throughout the entire life cycle of the plant and its equipment.

**Beginning of Life Services**

Getting you started with seamless support for instant productivity and performance.

**Lifetime Services**

Keeping it running with the cost-efficient

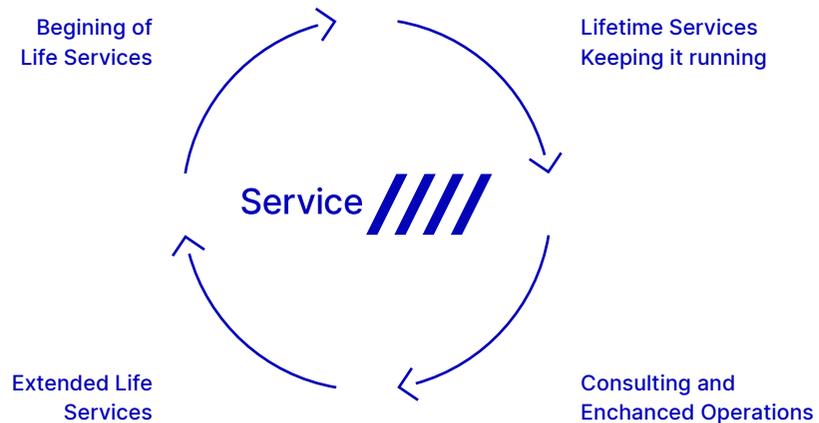
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**Extended Life Services**

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**GEA Liquid Technologies A/S**

Noerskovvej 1B,  
8660 Skanderborg  
Denmark  
Tel: +45 7015 2200

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