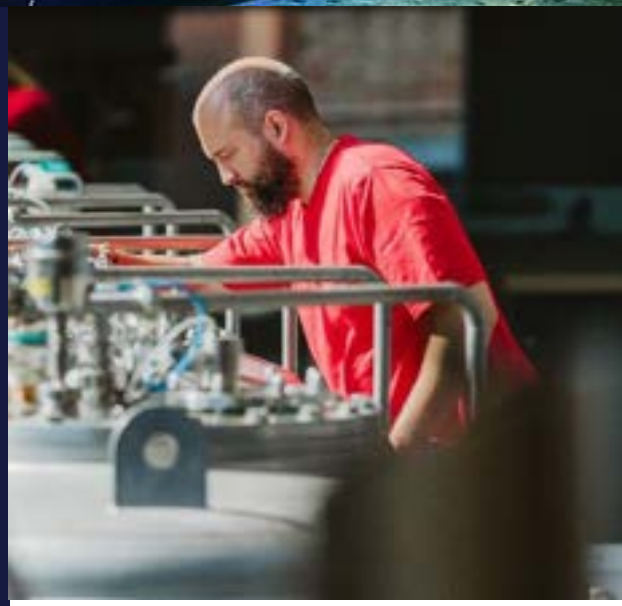
New Food Introduction
Ziemann Holvrieka GmbH



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Agenda

- About Precision Fermentation
- Benefits
- About Ziemann Holvrieka
- Our Solution
- Industries
- Portfolio – Tanks & Components
- References
- Tank Assembly On-Site
- Current project

About Precision Fermentation

Ziemann Holvrieka is a leading manufacturer of state-of-the-art fermenters and bioreactors, supplier and integrator of custom solutions for large-scale fermentation processes of various nutritious new foods.

Our precision fermentation technology includes fermenters that operate under full vacuum, equipped with agitators, gas sparging solutions and heating/cooling capabilities to withstand high alternating stresses.

Our production capabilities allow us to produce even the largest fermenters up to 300m³ in one piece.

With more than 170 years of experience in the fermentation industry and own production of fermenter and bioreactors made in Bürgstadt, Germany, Ziemann Holvrieka is a global supplier of tanks and process technologies for liquid food industries, including beer fermentation and vitamin production.

Benefits

- Know-how / Experienced partner considering local requirements & regulations
- Tank design meets individual requirements - Flexible production processes thanks to customized tank design
- One point of contact - Reduced complexity, increasing simplicity
- High product quality – long lasting tanks & maximum process safety
- Fast reaction to market demands
- One source for expansion - Enhanced production capacity by using large fermenters
- Time and cost savings e.g. less installation time on-site

Features & Benefits

- Our standardized bioreactors and experienced teams take out the complexity for you and make things more simple
- Our standardized bioreactor manufactured in Germany to the highest quality standards generates maximum process safety, low TCO & low CAPEX costs and increase your plants uptime

- Our standardized bioreactors provide the bases for tailored individual bioreactor features that will increase your flexibility in production processes
- We are capable to build large bioreactors up to 300 m3 enhancing your production capacity and cost per product unit

- We can be your reliable single point of contact from inquiry to installation
- Quick lead times result in tremendous time and cost savings during project realization
- Deliveries of bioreactors in one piece lead to less installation time on-site, your plant is in operation more quickly

We are the leading
Tank and Process Solution Provider

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About Ziemann Holvrieka

ZH is one of the largest suppliers of tanks, process technology and engineering services in the world

- ZH provides equipment solutions and project services for beverage, liquid and novel food industries
- Our core focus is on design & manufacturing of turnkey breweries in medium, large and huge sizes, whereas our sister DME focus on craft and smaller sized systems
- Stainless steel process- & storage tanks for any purpose
- Together with our sister company Briggs we provide also turnkey solutions for distilling, food and dairy, as well as for pharmaceutical, health & beauty and biofuels industries

Hard Seltzer/RTD's

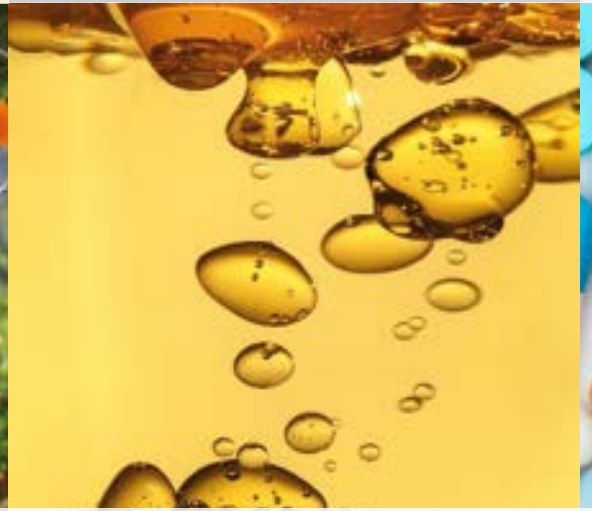
Brewing

Distilling

New Food

Dairy

Juice



Edible Oils

Pharma

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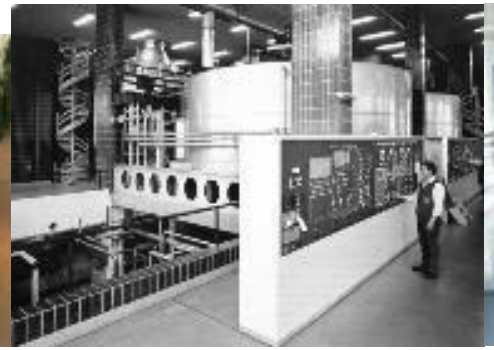

Our most important tradition: Innovation

1852
First copper steam wort kettle in the world

1909
For the first time fermenters and storage tanks are manufactured in aluminum

1955
First brewhouse automation by ZIEMANN

1956
First block brewhouse in the world

1975
First fully automatic mash filter with reversible sparging direction

2005
In our pilot brewery we develop innovative processes and test new brewing methods

2009
World's biggest lauter tun installed; 15m in Ø

2023
First distillery with Nessie and T-Rex equipped

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clpt CIMC Liquid Process Technology

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BRIGGS

DME

KÜNZEL

McMILLAN COPPERSMITHS

1,500
employees (FTEs)

Specialists in
Process systems
& Projects

500+ Euro
Order intake

Our Mission

To design and deliver innovative solutions to perfect the sustainable production of life's liquids.

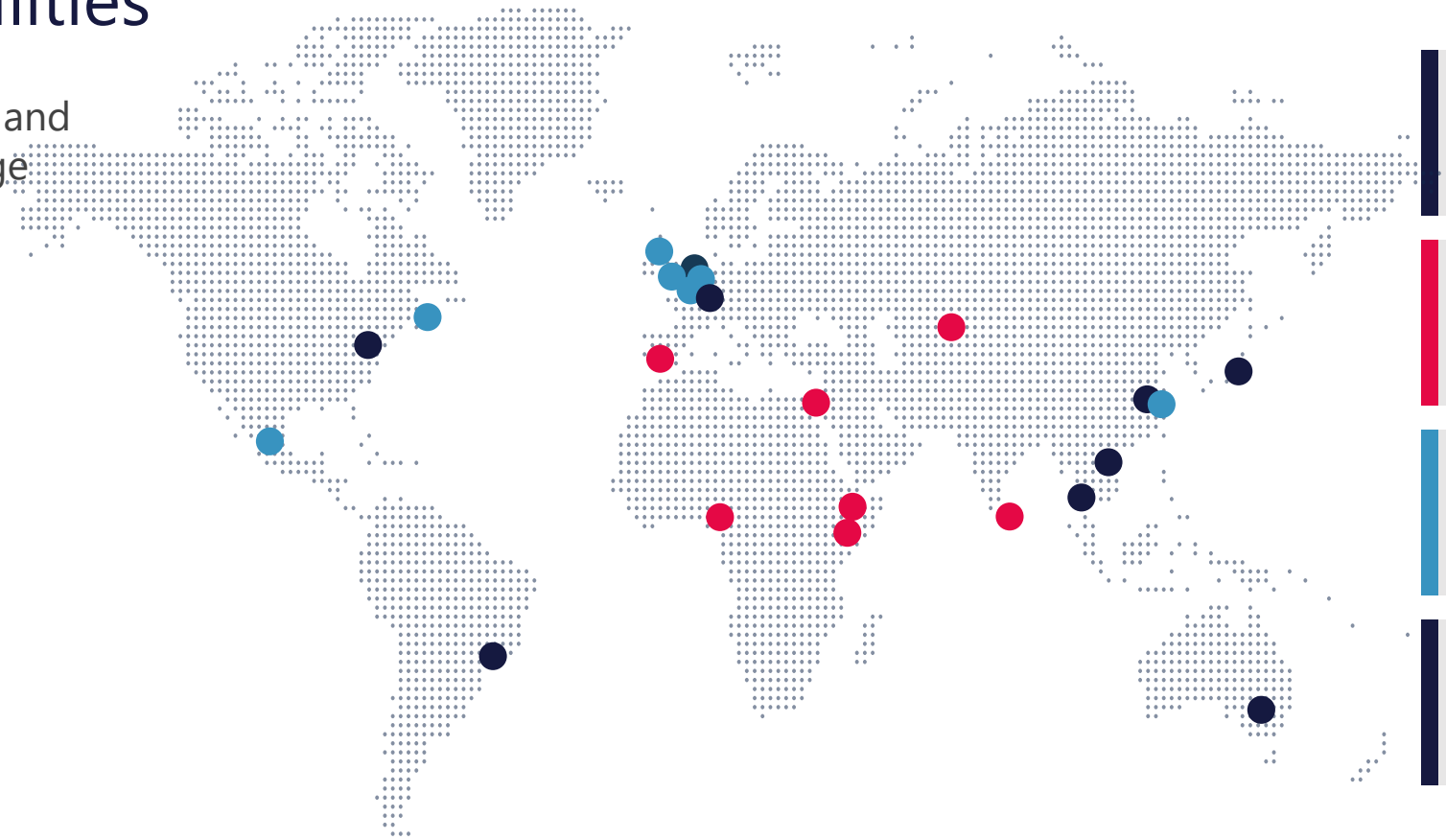
14+%
YoY turnover growth
(2012 – 2023)

Ziemann Holvrieka

Worldwide capabilities

Providing equipment solutions and project services for the beverage and liquid food industries.

Australia, Melbourne
Belgium, Menen
Brazil, São Paulo
Canada, Charlottetown
China, Nantong
China, Shanghai
Ethiopia, Addis Abeba
Germany, Ludwigsburg
Germany, Buergstadt
Germany, Mainleus
Israel, Tel Aviv
Japan, Tokyo
Kenya, Nairobi
Mexico, Satillo (start 2024)
Nigeria, Lagos
Spain, Madrid
Sri Lanka, Colombo
Thailand, Bangkok
The Netherlands, Zwolle
UK, Burton on Trent
UK, Prestonpans
USA, Rochester
Uzbekistan, Tashkent
Vietnam, Hanoi



Thousands of equipped customers

7 Ziemann Holvrieka sales representatives

7 production facilities

9 sales & PM offices

Ludwigsburg
Germany

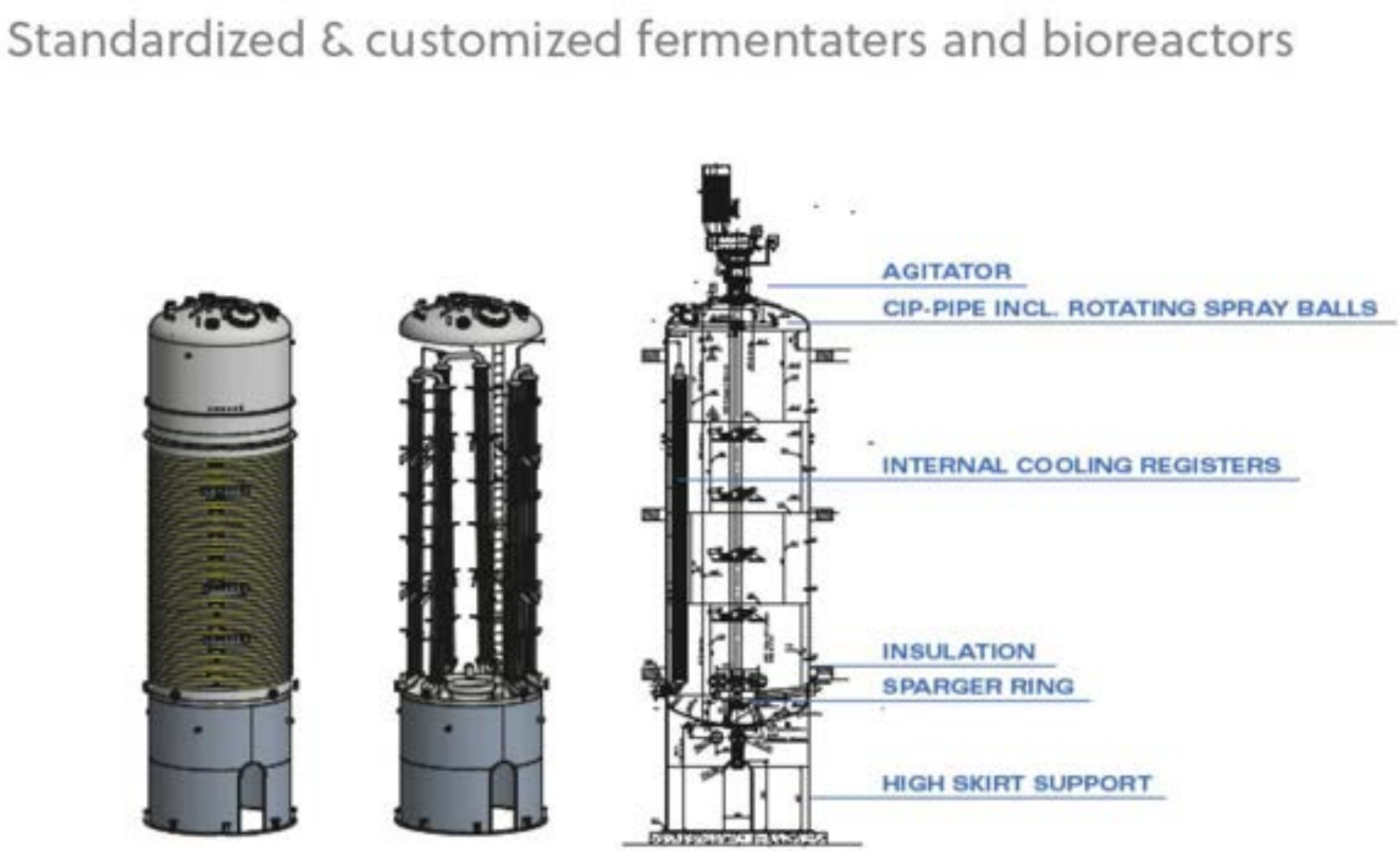
Bürgstadt
Germany

Our Solutions

Ziemann Holvrieka

Our Solutions

- State-of-the-art fermenters and bioreactors for precision fermentation
- Largest fermenters up to 300m³ in one piece
- Fermenters operate under full vacuum, equipped with agitators, gas sparging solutions and heating/cooling capabilities



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Industries

Extract of fermenter projects for various industries

New food (plant based products & vitamins)

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Portfolio Tanks & Components

Our tank portfolio

Brewery Tanks

Water Tanks

Juice Tanks

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Our tank portfolio

Dairy Tanks

Pharma/Chemical Tanks

Vacuum Chamber

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Tank production - Bürgstadt

Facility description	**1 tank in one-piece / working day** **2 prefabricated tanks per week** **Up to 4,500 working hours / week**	**Approx. 220 employees** **Total area 127,800 m²** **Hall space 25,000 m²** **Approx. 10,000 tons of stainless steel per year** **Shipping device next to river Main**
Tank	One piece	On site
Length / Height	Max. 28,000 mm / 7,500 mm	No limit
Weight	Max. 80 to	No limit





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Material

EN: 1.4301 / 1.4306 / 1.4307 – USA: 304 / 304L

EN: 1.4404 / 1.4435 / 1.4571 – USA: 316L / 316Ti

EN: 1.4439 – USA: 317L

EN: 1.4371 – USA: 201L

EN: 1.4162 – USA: LDX – UNS S32101

Different duplex-grades

EN: 1.4462 – USA: UNS S32205 / S31803 / F51

EN: 1.4410 – USA: UNS S32750 / F55

Different nickel base alloys:

EN: 2.4602 – USA: C22 – Hastelloy

EN: 2.46xx … 2.48xx – USA: 6xx … 8xx

Mild steel

S235 and S355 (only for skirts and pipe legs)

Preferred coil dimension 2,000 mm (1,500 mm)

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The American Society of Mechanical Engineers

CERTIFICATE OF AUTHORIZATION

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the certification mark and the authority granted by this Certificate of Authorization are subject to the provisions agreement set forth in the application. Any construction stamped with this certi mark shall have been built strictly in accordance with the provisions of the ASME and Pressure Vessel Code.

COMPANY:

ZIEMANN HOLVRIEKA GmbH
Factory Buergstadt
Industriestrasse 06
Buergstadt D-63927
Germany

SCOPE:

Manufacture of pressure vessels at the above location and field sites controll the above location (This authorization does not cover impregnated graphi

AUTHORIZED: January 25, 2019
EXPIRES: March 22, 2022
CERTIFICATE NUMBER: 34,440

Board Chair, Conformity Assessment

Managing Director, Conformity Assessment

CERTIFICATE

The Certification Body of
TÜV SÜD Industrie Service GmbH,
a Notified Body of the Pressure Equipment Directive (PED),

certifies that

ZIEMANN HOLVRIEKA GmbH
Factory Buergstadt
Industriestraße 6
63927 Bürgstadt, Germany

implemented, operates and maintains a quality assurance system as described in the Pressure Equipment Directive 2014/68/EU Annex III, Module H/H1

for the scope of

Sales, design and manufacturing of factory-made and built-on-side tanks and vessels made of group 8.1 materials according to standard CR ISO 15608 (austenitic / stainless steel with Cr ≤ 19 %)

The audit with the report number Q-IS-AN5-MUC-PED-324312-001-17 proves that the quality assurance system fulfils the PED requirements.

The manufacturer is authorized to provide the pressure equipment produced within the scope of the assessed quality assurance system with the following Notified Body Number:

CE 0036

Certificate No.: DGR-0036-QS-1026-17

Filderstadt, September 07th, 2017

TÜV SÜD Industry Service · PED-QA-Certification Body · Germany

Permits and certificates

- DIN EN ISO 9001
- DIN EN ISO 14001
- AD-HP0+DIN EN 3834-2
- Manufacturer (KT/KB/KBB) AD-W0/HP0/TRD100
- Authorization DGR 2014/68/EU H1
- Authorization DGR 2014/68/EU H
- Marking Agreement
- BAM-Approval Certificate for portable tanks
- §19/WHG
- Energy audit DIN 16247-1
- Certificate EN1090-1-2
- ASME-Certificate (USA)
- ASME BPE
- National Board-Certificate
- National Board –R-Stamp
- BV-Mode II
- EAV-Declaration (Russia)

Welding procedures

- Submerged arc welding with solid wire electrode
- MAG welding with solid wire electrode
- MAG welding with flux cored electrode
- MAG welding with metal cored electrode
- TIG welding with solid filler material (wire/rod)
- Autogenous TIG welding
- Plasma welding with transferred arc
- Gas laser welding
- Plasma cutting without oxidising gas

Dished head acc. DIN28011 (torospherical head)	
Diameter	Min. 1,800 mm Max. 7,800 mm
Wall thickness	Min. 4.0 mm Max. 40.0 mm

Dished head acc. DIN28013 (semi-elliptical head)	
Diameter	Min. 2,000 mm Max. 6,000 mm
Wall thickness	Min. 6.0 mm Max. 40.0 mm
Guaranteed roughness from Ra 0.4 to 0.8 µm	

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Cone / Knuckle	
Opening Angle	Min. 60° Max. 120°
Diameter	Min. 1,800 mm Max. 8,300 mm
Wall thickness	Min. 5.0 mm Max. 12.0 mm
Guaranteed roughness from Ra 0.4 to 0.8 µm	

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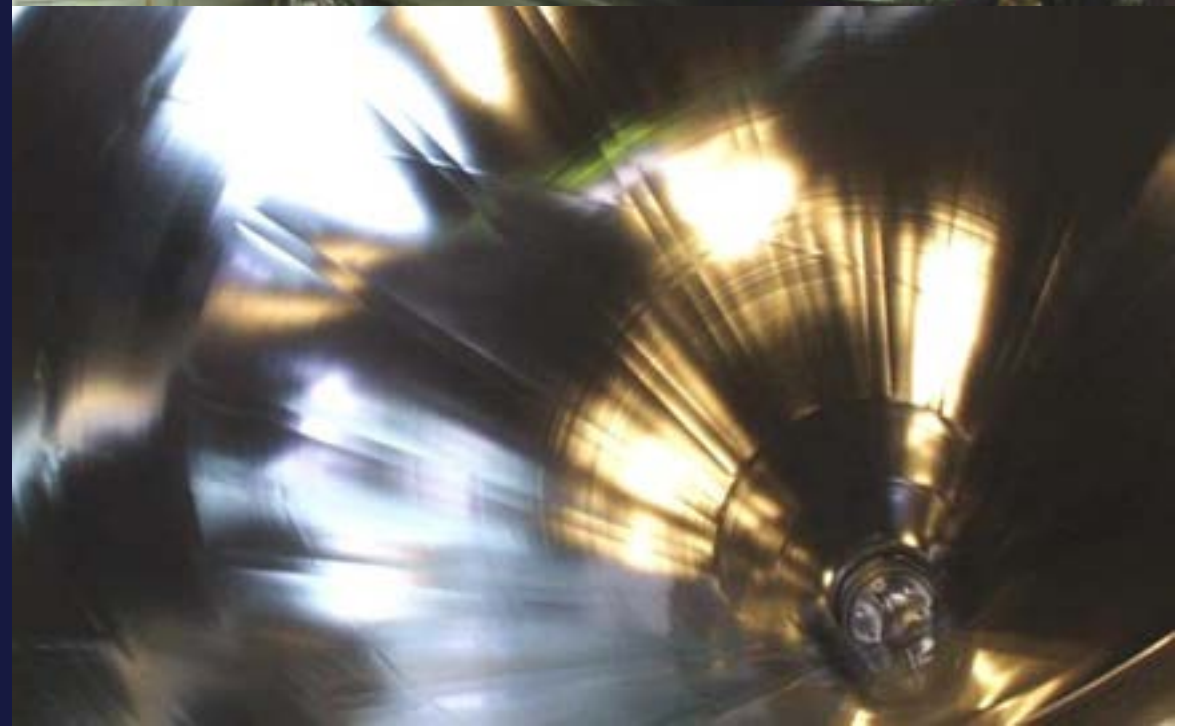

Inner surfaces

Electro-polishing (Option) for cones

Ra 0.3 – 0.4 µm

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Cooling systems

a) Segmental pipes (only for shop- fabricated tanks)

Profile „75“ for Ammonia (NH_3)

Profile „100“ and „130“ for Glycol

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b) Dimple Jackets

Lengths max. 12,000 mm	
Width:	723 mm
	927 mm
	1,250 mm
	1,500 mm
	1,900 mm

c) Internal cooling systems

- Cooling registers
- Spiral coils

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Skirts	
Types	Short/high skirt
Diameter	Max. 8,300 mm
Material	Carbon steel Stainless steel

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Pipe legs

Mild steel painted
Mild steel hot galvanized
Stainless steel

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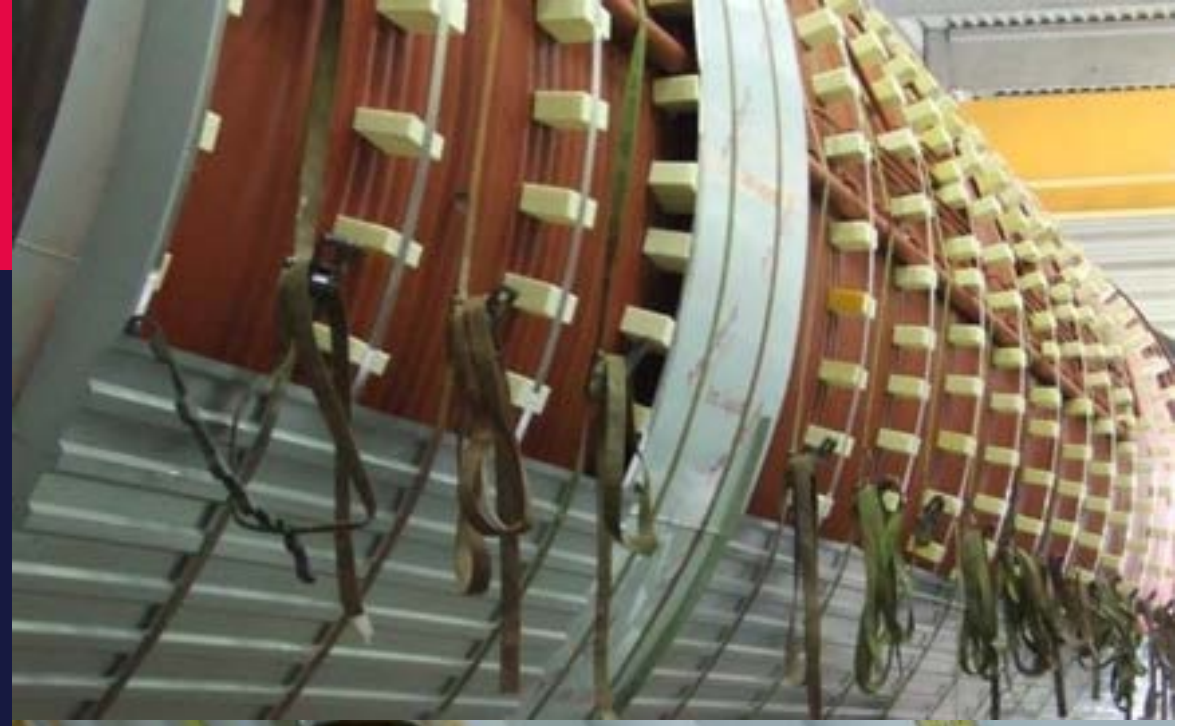

Insulation
PU-foam
PIR-foam
Mineral wool
Cladding materials
Aluminium cladding
Stainless steel cladding

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Walkways and staircases

Mild steel hot galvanized
Stainless steel
Aluminium

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References


Asahi


LDC.
Louis Dreyfus Company


HEINEKEN


MITSUBISHI


ABInBev


FrieslandCampina


Tetra Pak®


DIAGEO


1834
RÜGENWALDER MÜHLE
Familienunternehmen seit 1834


FLUOR®


citrosuco


DUPONT


Cargill™


novo nordisk®

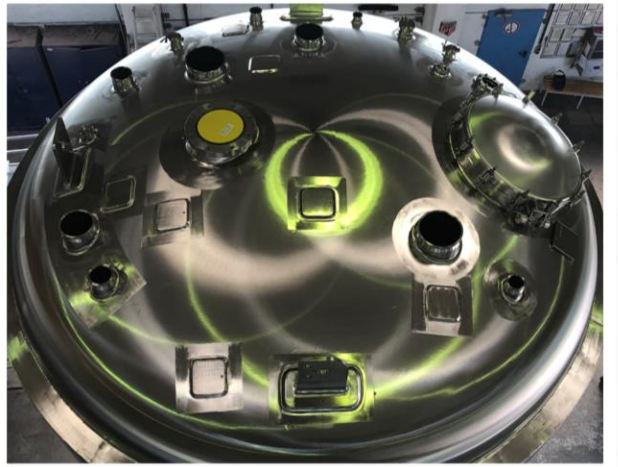

DSM

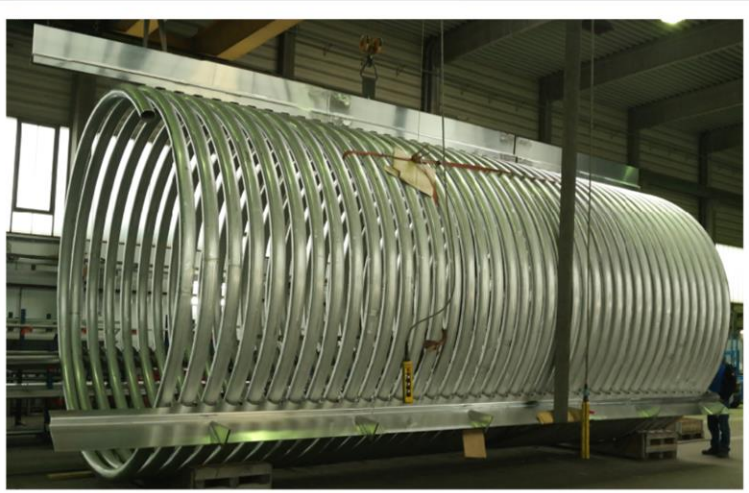

CUTRALE


Carlsberg


Ziemann
Holvrieka

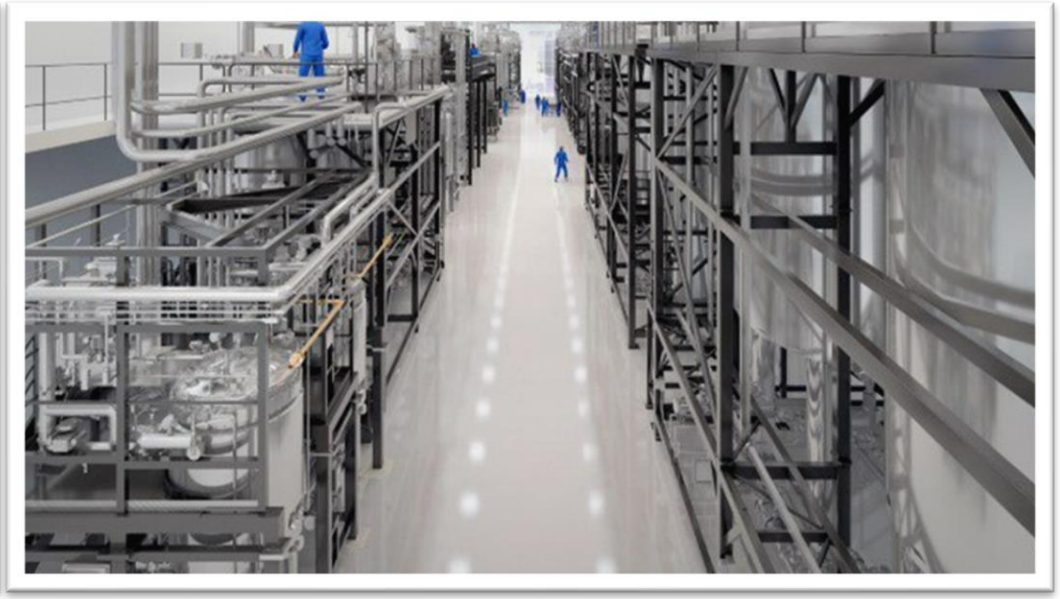
References



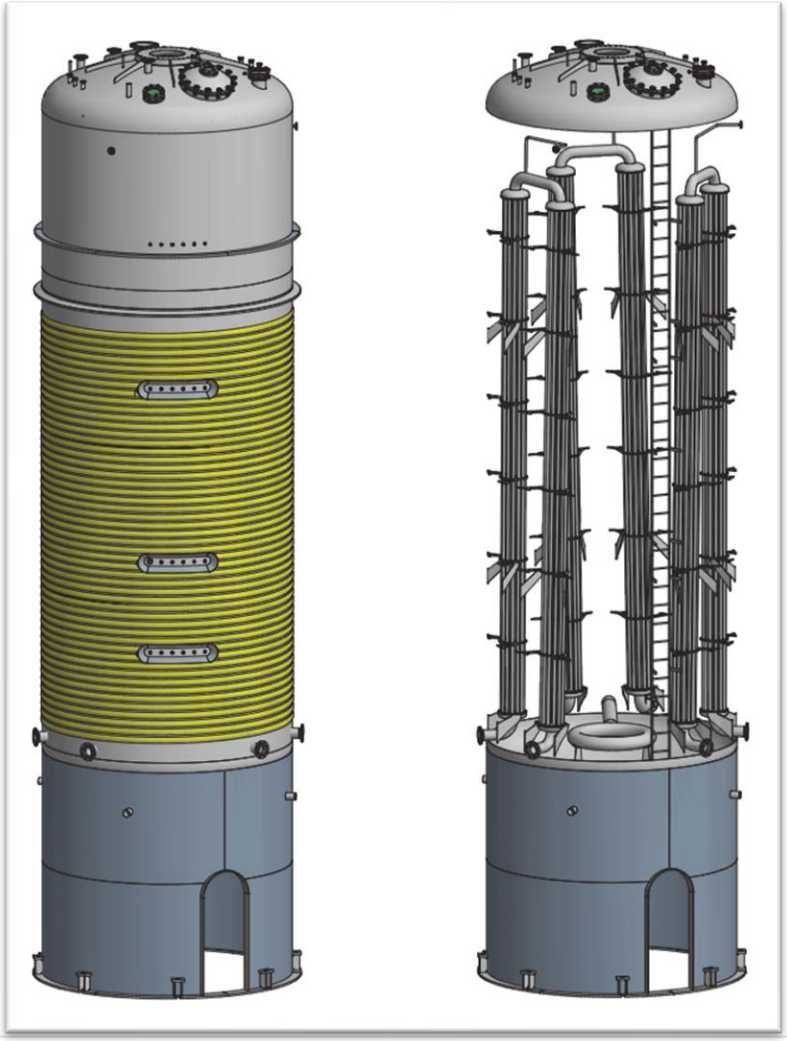


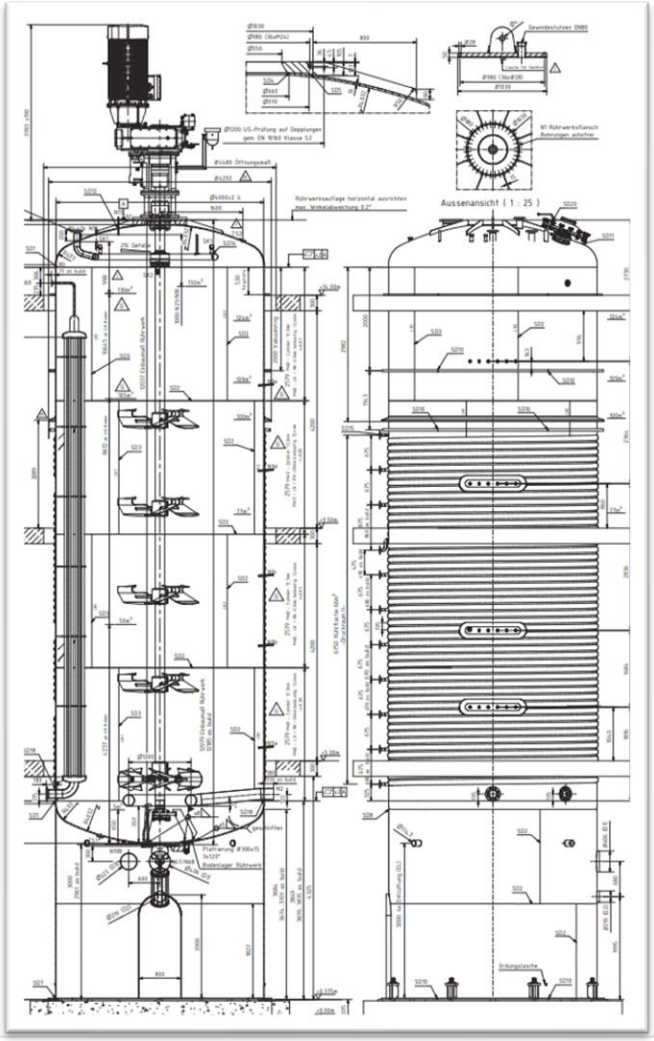
References

Large US Insulin
Production Plant



References





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Tank Assembly On-Site

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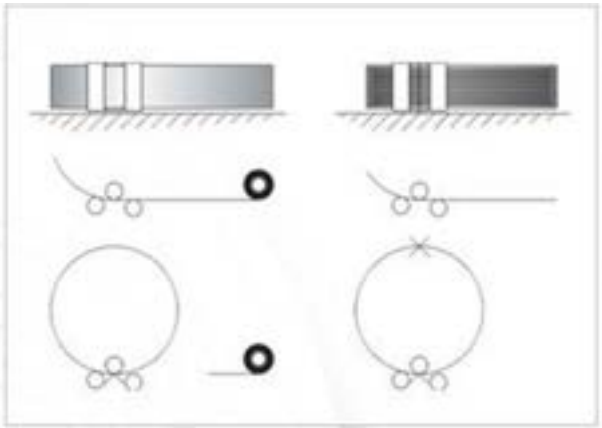
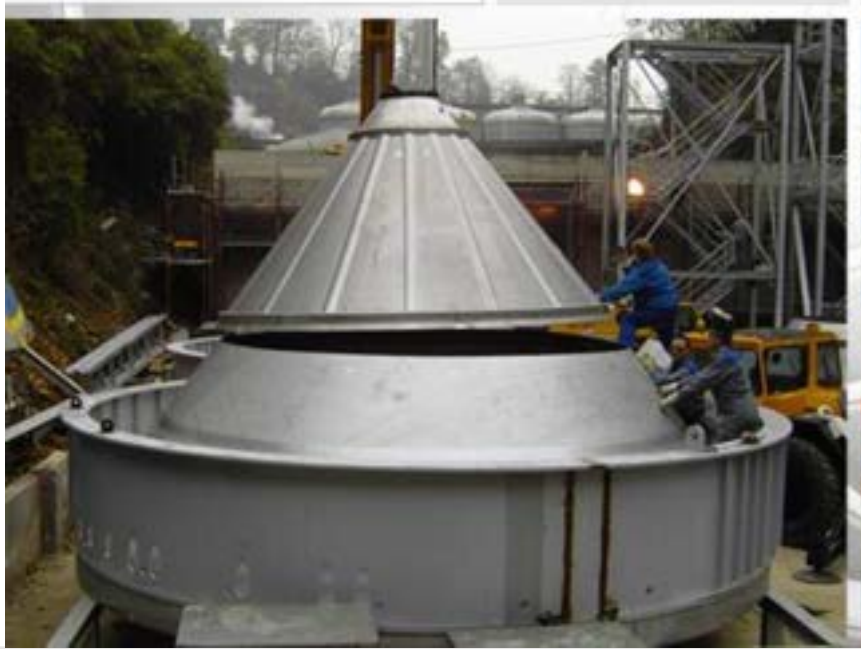
Tank assembly on-site

Assembly of heads and cones (which had been disassembled for transportation)



Cylindrical shell without cooling jackets are manufactured directly off the coil

Cylindrical shell with cooling jackets are delivered as flat sheets and are shaped/rolled on site



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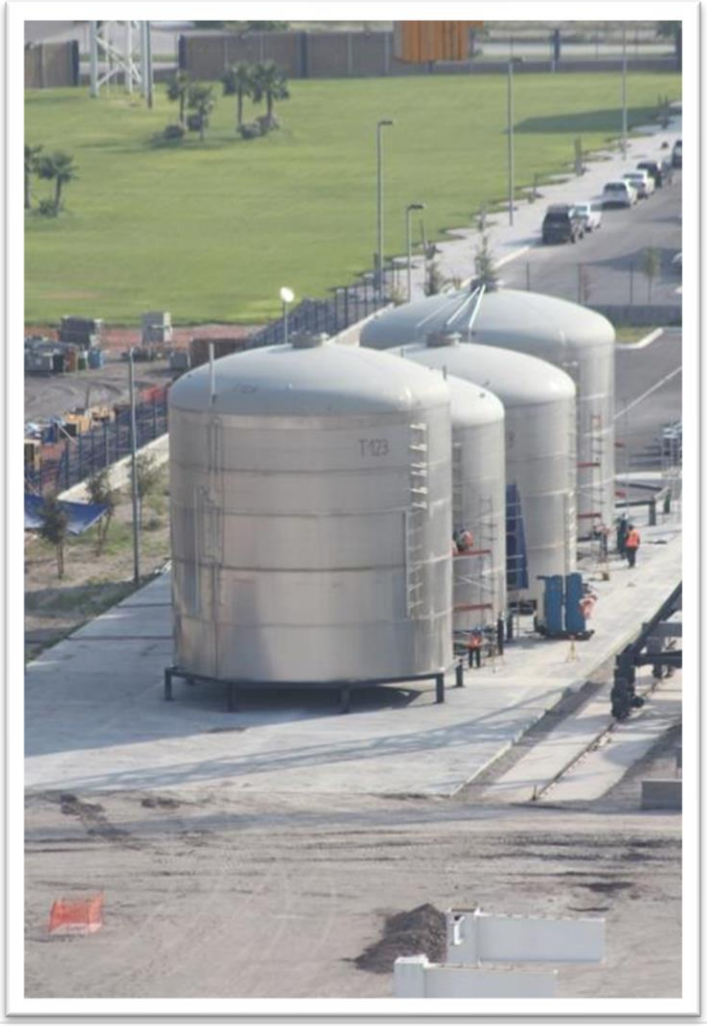
Tank assembly on-site

Tank assembly on-site

Tank assembly on-site



Tank assembly on-site

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Large site-build tank farm

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Current Project

Current Project

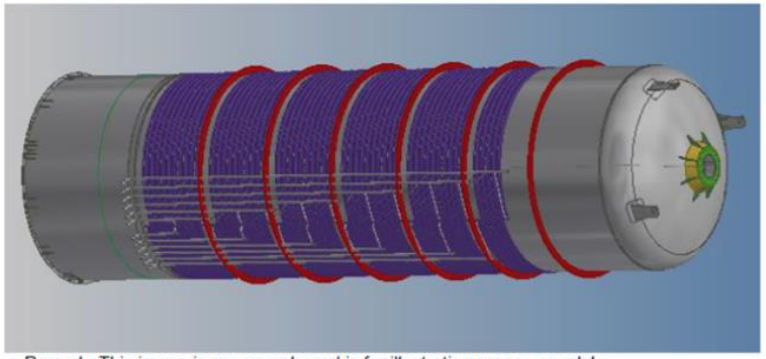
01.00 FERMENTER 200 M³

01.01 1 Fermenter

Total content:	approx. 200	m³
Net. capacity:	approx. 150	m³
Diameter inside:	4.350	mm
Cyl. height:	12.000	mm
Tank height: (from middle of the bottom to the top)	14.300	mm
Total tank height:	approx. 16.300	mm
Tank weight with insulation (excl. agitator)	approx. 25.200	kg
Outlet height:	1.500	mm

Operation conditions

Design temperature:	+5/+80	°C
Cleaning temperature:	max. 20	°C
Working overpressure:	4,5	bar
Design overpressure:	5,0	bar
Test overpressure:	7,15	bar
Density:	997	kg/m³
Vacuum resistance:	-0,02	bar
Viscosity:	max. 1	cP
Earthquake load (horizontal):	NA	
Earthquake load (vertical):	NA	
Wind load:	considered	



Remark: This image is an example and is for illustration purposes only!

Considered Agitator loads:

Axial force:	max. xxx	N
Shearing force:	max. xxx	N
Nominal power:	400-500	kW
Bending moment:	max. xxx	Nm
Torsional moment:	max. xxx	Nm
Agitator weight:	approx. 26.000	kg
Agitator flange:	DN700	

Please note:

ZH Cannot check vibration situation of complete system fermenter / agitator these evaluation must be performed by customer / 3. Party and is not part of ZH quotation. No maximum deflection of agitator / fermenter can be guaranteed.

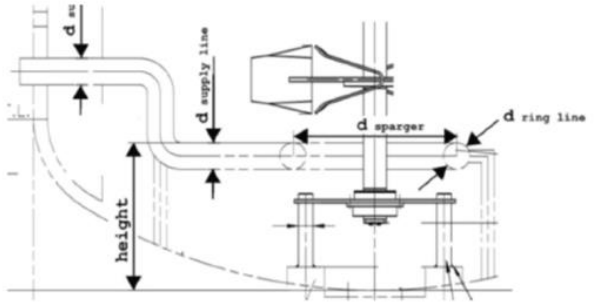
All below mentioned deflection- and stress-limits from agitator specification are considered for design:

- Max. flange deflection for agitator mounting: <0,05°
- Max. deformation at design bending moment: 1mm/m

If the above agitator data's deviate, a re-calculation must be made and this could affect tank design as well as the price.

Option 01: Sparger ring

Inner diameter supply line:	220 mm
Inner diameter ring line:	220 mm
Diameter sparger:	1.500 mm
Number of holes:	550



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Thank you

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