

ZIEMANN
CIMC ENRIC



HOLVRIEKA
CIMC ENRIC

BREWERY TANKS

ENGINEERING PERFECTION



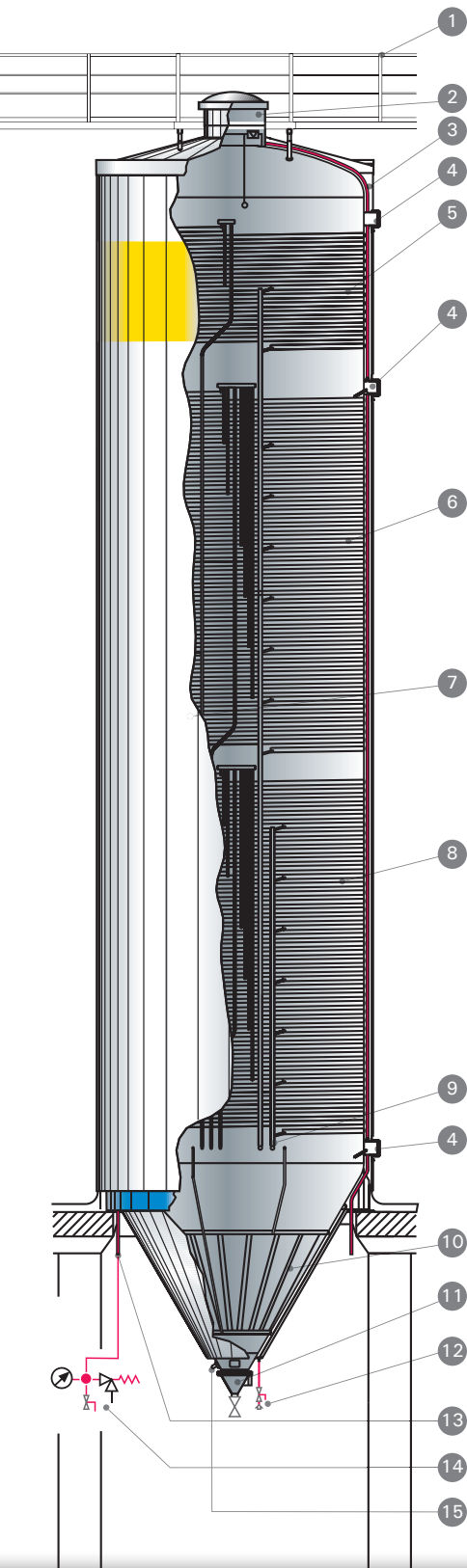
TECHNIQUE IN PERFECTION

For over a century ZIEMANN HOLVRIEKA has been at the peak of technology developments in brewery tanks and cellar plants. Today, ZIEMANN HOLVRIEKA is considered the market leader worldwide for large-volume stainless steel tanks for breweries and complete installations for the cold block.

ZIEMANN HOLVRIEKA's portfolio ranges from the individual tanks to complete turn-key plants. We offer outstanding quality and remain unequalled on the world market. This is built on our manufacturing expertise and the knowhow gained in constructing and commissioning countless number of plants all over the world – all built in close cooperation with our customers.

We are renowned for providing highly flexible solutions to meet our customers' needs. This brochure outlines ZIEMANN HOLVRIEKA's solutions for your production requirements.

Tank farm with cylindro-conical fermentation and storage tanks



Sectional view of a tank

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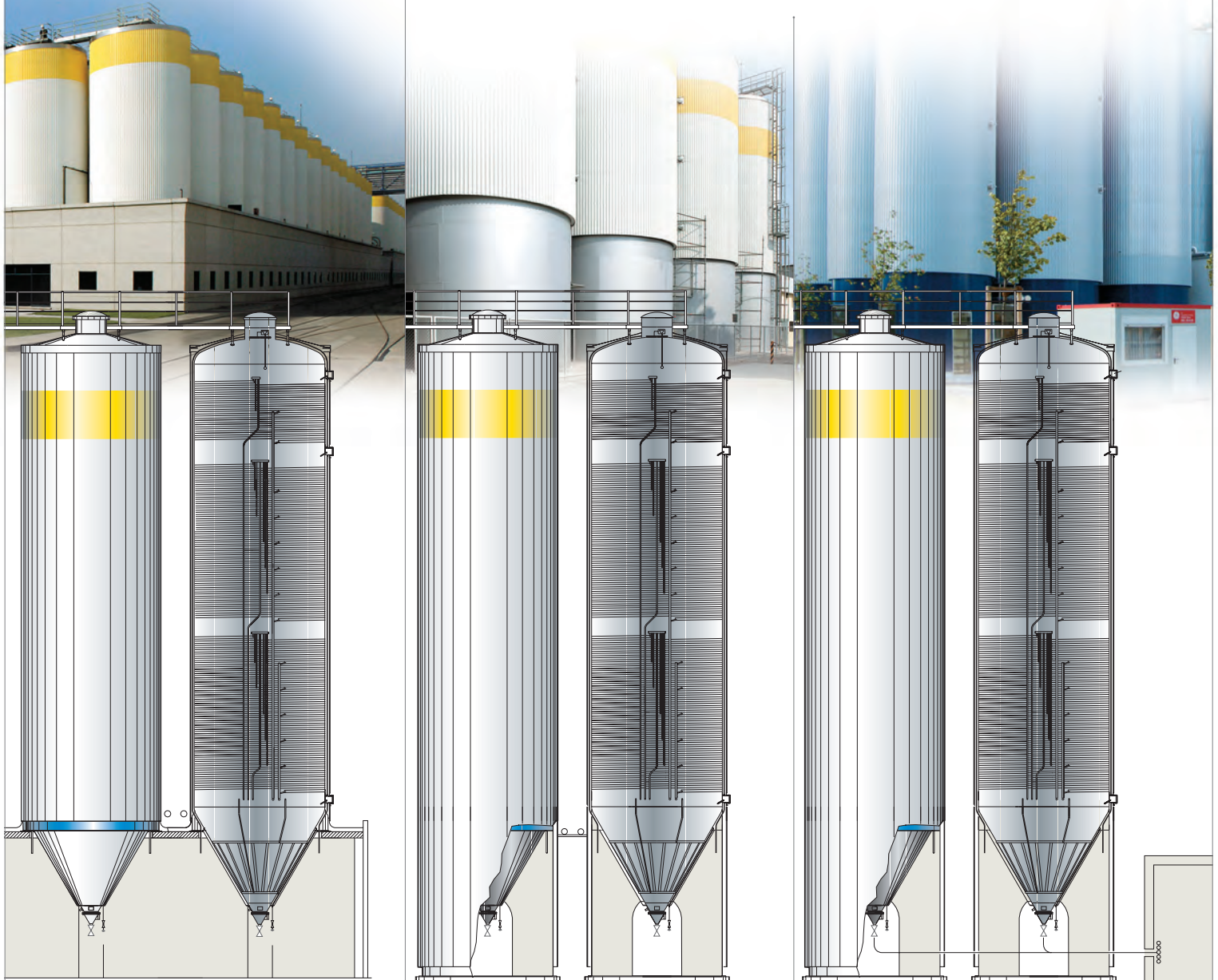
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- 1** Catwalk installation for fittings dome
- 2** Tank fittings dome with CO₂/air connection, vacuum valve, safety valve, full signal probe and cleaning installation
- 3** Cable ducts and drain pipe for fittings dome (running inside the insulation)
- 4** Thermometer connection PT 100
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- 6** Upper cooling zone for fermentation
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- 8** Lower cooling zone for fermentation
- 9** Connections for cooling system
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- 13** CO₂, air and cleaning pipe (running inside the insulation)
- 14** Pressure control
- 15** Contents measurement, empty signal probe

INSTALLATION VARIANTS

The first step when planning a tank installation is to consider the best arrangement for the specific project. Here we show the most common variants in six examples.

Of course, we also offer other individual solutions, tailored to your needs.



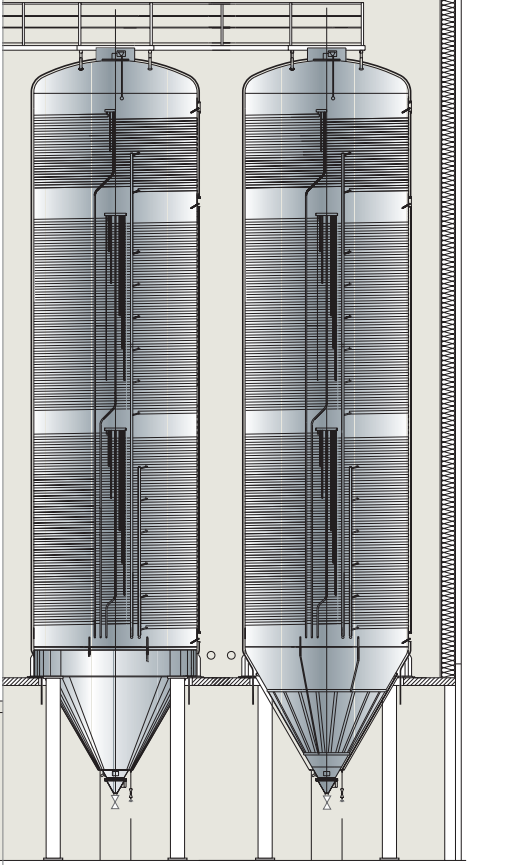
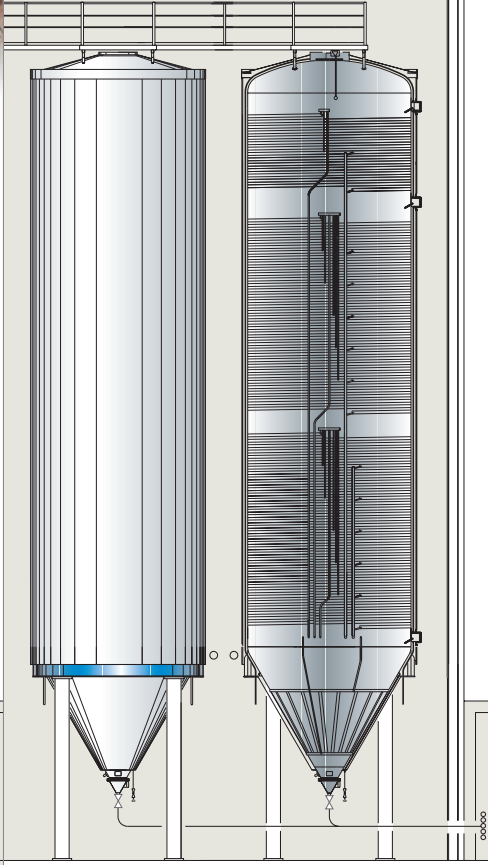
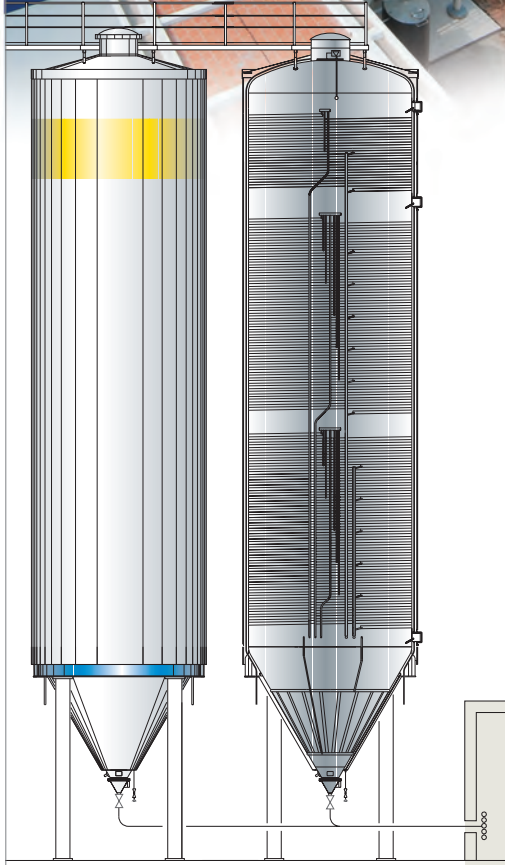
Outdoor installation

Insulated tank with closed operator control room

Insulated tank with high skirt/service walkway

Outdoor installation with operator aisle

Insulated tank with high skirt, connected to operator aisle in the building



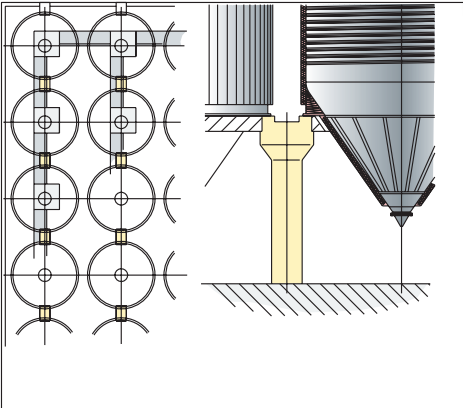
Insulated tank on pipe columns, connected to operator aisle in the building

Indoor installation
 Insulated tank in building

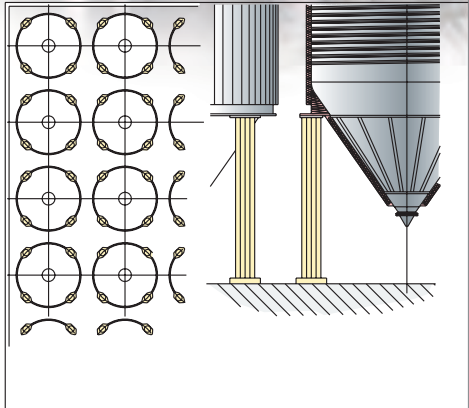
Non-insulated tank within an insulated building

BEARING VARIANTS

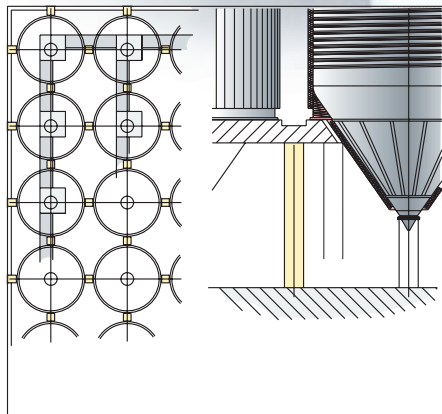
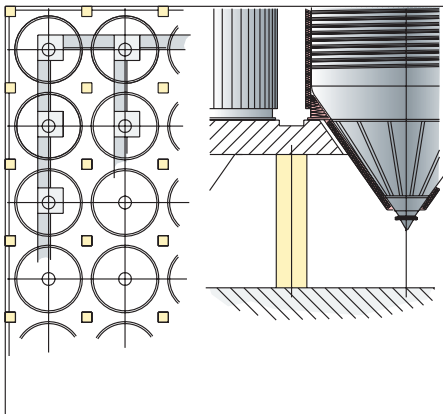
The choice of the correct tank bearing variant is decisive for cost-effectiveness and for the ergonomic aspects of the installation. Therefore, it is important to compare the pros and cons of possible options in advance. The solutions shown here are the most commonly used and ones which we can develop as the best solution for you.



Standard solutions
2-point bearing with hammerhead columns of steel or reinforced concrete



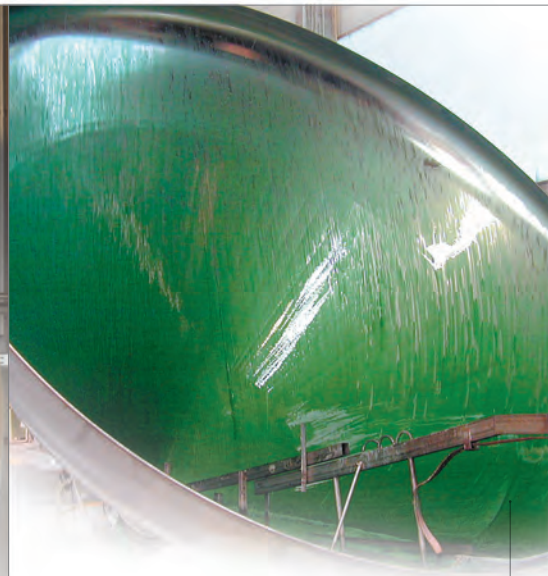
Support via 4 steel pipe columns; design is possible with or without an intermediate floor



Other alternatives

Load-bearing floor with building columns of reinforced concrete

Floor with building columns of reinforced concrete; 4 supports for each tank; particularly suitable for very large tanks



INNER SURFACES

The quality of the inner surfaces of process and storage tanks is of highest importance. This is especially so for the brewery cold block where surface quality contributes greatly to the effectiveness of cleaning and biological safety.

Process 2B cold-rolled stainless steel sheets meet high demands only if they are handled with care to avoid damage during

manufacture. Bottoms and cones require additional treatment since most are made from hot-rolled sheets which can damage easily during the forming process.

The surfaces of the cones must allow proper cleaning and complete removal of the yeast and sediments. Our electropolished equipment produce a surface roughness of less than $0.3 \mu\text{m}$.

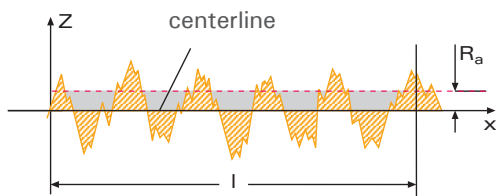
Grinding plant for tank cones and bottoms

Electropolishing plant

Average peak-to-valley height R_a :

Arithmetic roughness average of all roughness values of the roughness profile:

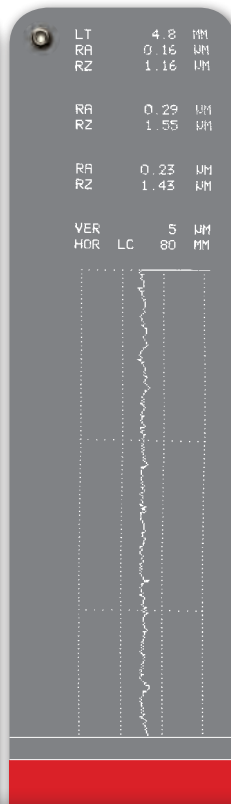
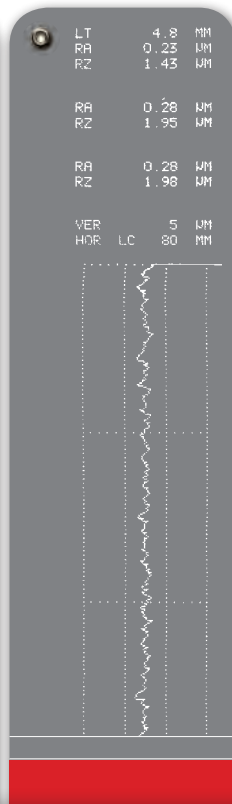
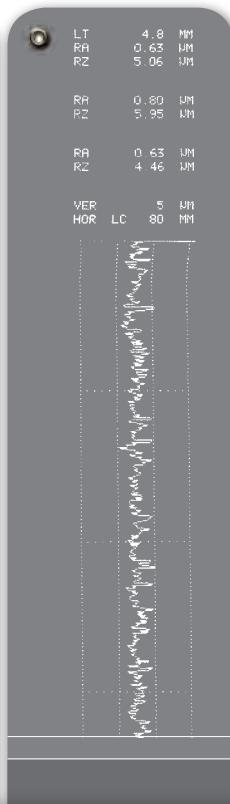
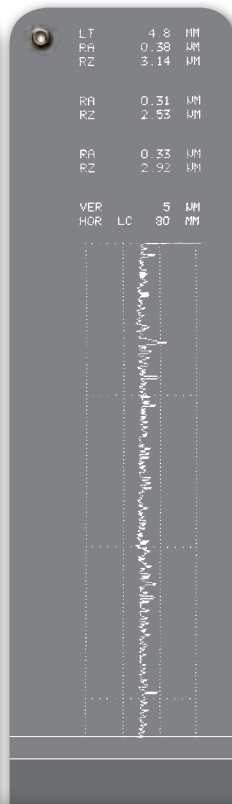
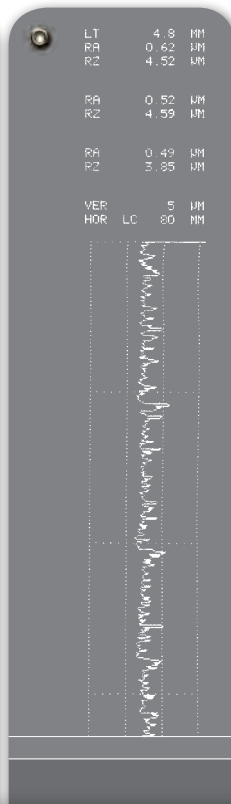
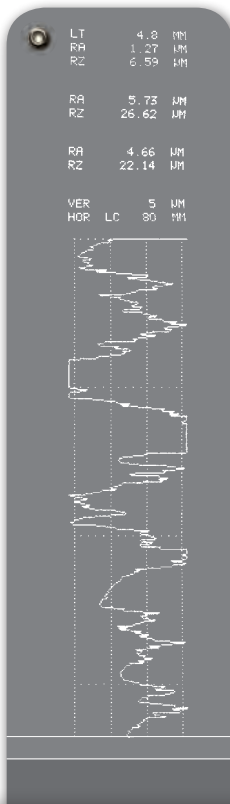
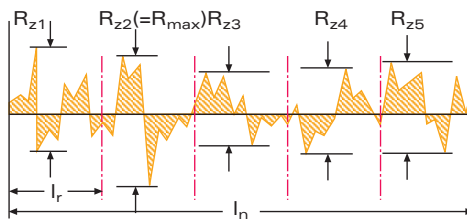
$$R_a = \frac{1}{l} \int_0^l |Z(x)| dx$$



Surface roughness R_z :

Arithmetic average height of the individual roughness values R_{z1} of successive individual measuring sections:

$$R_z = \frac{1}{n} (R_{z1} + R_{z2} + \dots + R_{zn})$$



Material surface **1D**, untreated

Material surface **2B**, wall thickness 6.0 mm, untreated

Material surface **2B**, wall thickness 4.0 mm, untreated

Material surface **1D** ground with 240 grit

Inner head surface, **ZIEMANN HOLVRIEKA-standard**

Inner cone surface, **ZIEMANN HOLVRIEKA-standard, electropolished**

INSULATION OF TANKS

Cylindro-conical fermentation and storage tanks can be installed in non-insulated buildings, or they can be individually insulated for both outdoor or indoor installations. The majority of plants from ZIEMANN HOLVRIEKA are individually insulated tanks, which offer a range of advantages including complete flexibility of temperature and process control. The tank insulation can be carried out during manufacture or after installation of the tanks on site.

ZIEMANN HOLVRIEKA approved specialists are commissioned for this work and operate in strict compliance with our specifications.

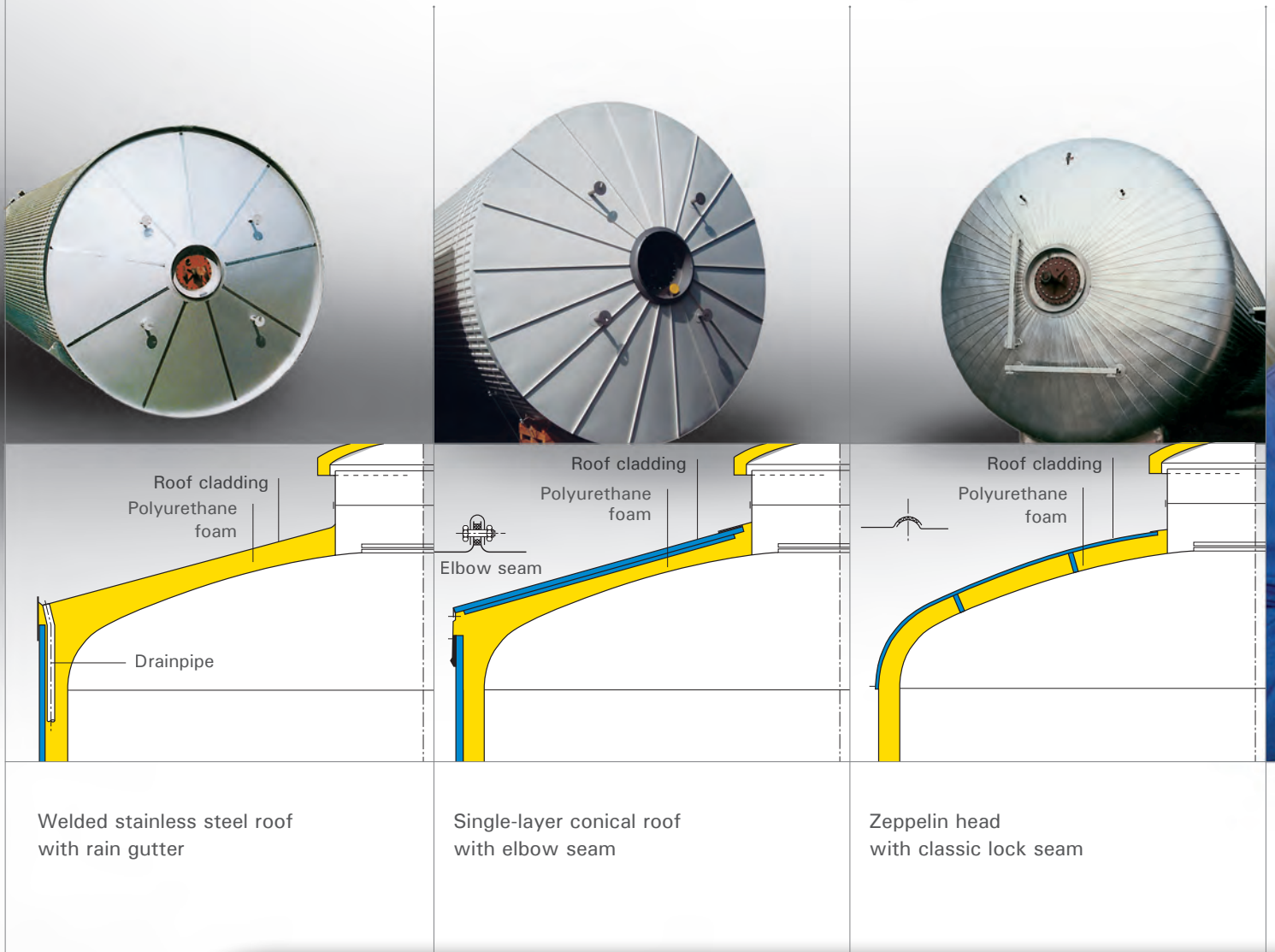
A specially equipped hall measuring 1,400 m² provides ideal working conditions.

Highest standard insulation procedures are offered to all our customers: CFC-free polyurethane foam directly sprayed in between the tank surface and the metal insulation cladding is the standard design; the thickness of the insulation depends on the purpose and the location of the tanks and varies from 100 to 200 mm.

If required, the tank surface can be treated with an anti-corrosive coating prior to application of the foam. The cladding in the area

of the cone is a seal-welded double-jacket made of stainless steel. For the cylindrical part we recommend coated aluminium sheets with trapezoidal corrugation.

The cladding of the tank heads is of primary importance, as this area represents the most critical point of the insulation affecting the plants' service life. In addition to conventional solutions such as the Zeppelin roof (for indoor tanks only) and simple conical roof with elbow seam, we offer welded stainless steel roof with integrated rain gutter and drainpipe also made of stainless steel.



FIRE PROTECTION

Fire protection is very important. Property insurers insist on best fire protection classifications of all new plants. For this purpose, PIR foams, a subgroup of the PUR foams, were developed. These polyisocyanurate foams qualify for the best fire protection classes.

With the advanced processing methods for PIR foams a direct and flexible processing as in-situ foam is possible, similar to the processing of PUR foams. The combinations of these materials, along with system advantages, make this new solution viable for the insulation of brewery tanks with maximum fire protection.



PUR



PIR

The **PIR foam** does not inflame until much higher temperatures are reached resulting in lower insurance contributions.

Insulating a tank in the workshop

COOLING SYSTEM

Properly designed and sized cooling equipment is required for the dissipation of the heat generated by fermentation, for cooling the tank contents and maintaining the specified temperatures. Our program includes **two different basic designs** for the cooling equipment:

- **Pipe segments** for NH_3 or glycol cooling. These are mainly used for tanks that are to be delivered in one piece. The pipe segments are welded on fully automatically.
- **Laser-welded horizontal jackets** for NH_3 cooling or glycol cooling. These are mainly used for tanks that are manufactured on site.

In both cases the ZIEMANN HOLVRIEKA NH_3 distribution system ensures full admission to the cooling surfaces, low pressure losses and a low NH_3 volume.

The design, quantity, arrangement and distribution of the cooling surfaces are adapted individually for each tank.

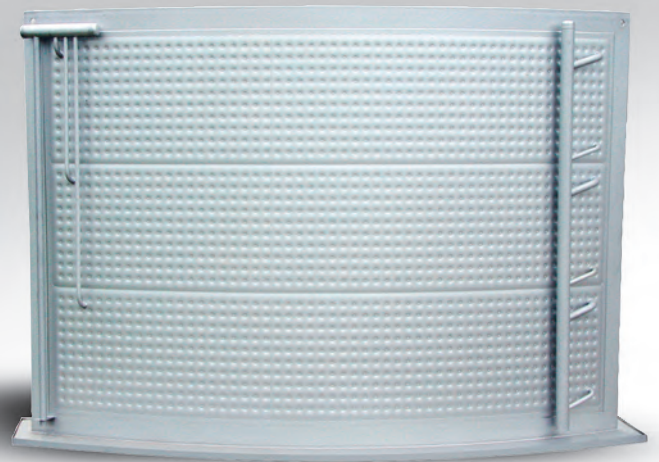
The standard version has one cone cooling zone, two cooling zones in the fermentation area and, as an option, one cooling zone in the upper storage area (topping-up area). The refrigerating pipes are laid inside the insulation and vent into the skirt area.

NH_3 is used in most plants, since it offers significant **advantages**:

- Energy cost reduction of up to 40 %
- Reduced supply pipe diameter
- Reduced apparatus and pump expenditure
- Reduced insulation expenditure
- Individual temperature control possible with changing temperatures.



for NH_3 cooling
or glycol cooling



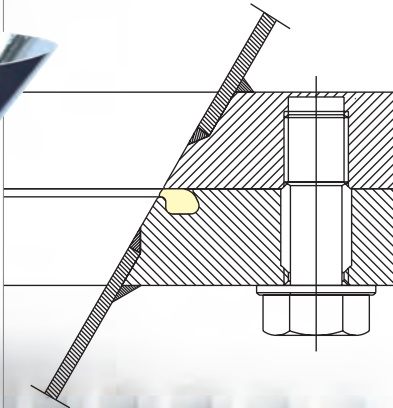
Horizontal jackets for NH_3 cooling
or glycol cooling

DETAILS MAKE THE DIFFERENCE

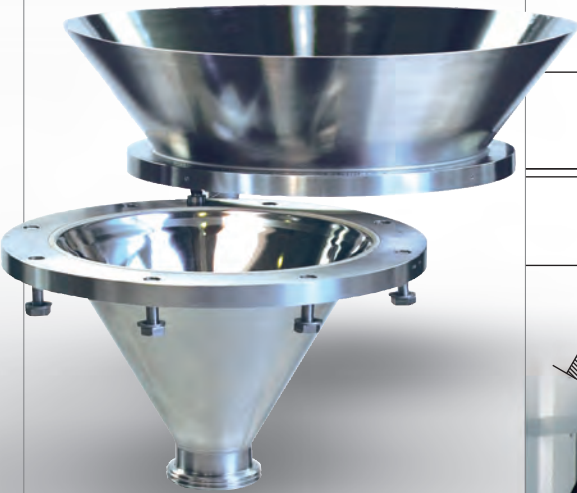
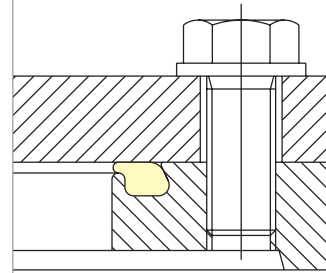
HACCP specifications and recommendations of the European Hygienic Engineering & Design Group (EHEDG) are already observed consistently and explicitly during the planning and design of our plants.

This gives our customers the advantage of maximum biological safety. It also enables extremely easy cleaning of our installations.

Swivel cone



Dome cover



Hygienic design of the swivel cone



Temperature sensing device in the casing



Dome with insulated cover



Catwalk fabrication



Catwalk supports

CATWALK SYSTEMS & STAIR TOWERS

Catwalk systems and stair towers form an integral part of tank farms. It greatly simplifies the project, if these components are ordered together with the tanks. The synergies between engineering, purchasing, transport and installation, result in significant cost advantages.

ZIEMANN HOLVRIEKA designs, supplies and installs the complete range of steel structures: catwalk systems, vertical ladders, spiral staircases and stair towers, made of aluminium and both stainless and galvanised steel.



Stair tower



Catwalk system

PACKAGING & TRANSPORT

Shipping is another important issue. Our tanks are equipped with special lugs and covers for transport; and the packaging is compliant with all relevant specifications, e.g. for carriage by sea.



Tank installation



Tank transport



Transport on the River Main

ZIEMANN HOLVRIEKA tank systems are top-of-the-range products that allow our customers to produce beers of the highest quality. Operational reliability and serviceability of our installations are a matter of course.

We offer our customers complete installations or individual components. They are designed and built using our expertise and experience in all fields of activity – from **consultancy to the delivery of turnkey systems and aftersales service**.

Does the diameter of the tanks exceed 7.5 m, or can tanks of the required size not be transported to the site in one piece for other reasons, such as narrow roads through towns, or low bridges?

If so, we have systems and machinery available for the **assembly of the tanks on site**. This is accomplished in a very short time, to immaculate quality and on favourable terms.

Ask for our brochure on **'On-site manufacturing of brewery tanks'**.

