

Krah tanks

made from HDPE and PP in diameters up to DN/ID 5000 mm





Safe, huge
and designed according to YOUR requirements

Krah tanks and apparatus

Krah storage and process tanks have been successfully used for decades around the globe, either as vertical or horizontal installations. All Krah tanks are homogenously, helically extruded with KRAH Technology in HDPE or PP, the most cost-efficient method for the manufacturing of large diameter tanks.

Due to the excellent material properties of the HDPE or PP material, the tanks are perfectly suitable to handle aggressive liquids like acids, lyes and also sensitive materials like food. With the KRAH production line "Solid One", helically extruded cylinders can be produced in all diameters up to DN/ID 5000 mm and a length of up to 7000 mm.

The cylinders can be made from different thermoplastic materials like PE 80, PE 100, different PP grades and even composite materials. Also, a profiled wall structure can be produced to increase the stiffness for horizontal tanks or to provide for example a double wall system with leakage control for chemical tanks.

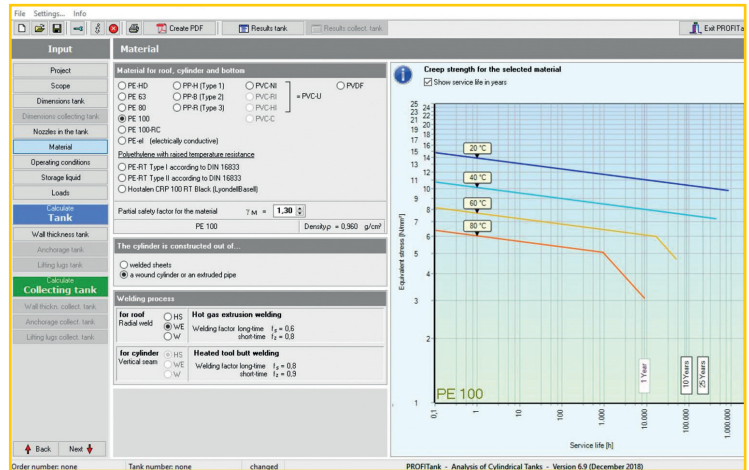
The installation time is very short and the handling is very easy due to the light weight and the robust design. Krah tanks are always a smart solution for all kinds of storing and processing.



General Design

The Kraih tanks are tailormade large-volume tanks with a capacity of 1 m³ to more than 200 m³ and made from thermoplastic material like Polyethylene or Polypropylene. The tanks are designed to withstand hydrostatic pressure, considering all boundary conditions and load-cases. The static design of the tanks is mainly according to the international accepted standards DVS2205 and EN12573 or any other specific application guidelines.

To facilitate the calculation, KRAH can provide a special software program called "PROFITank", where all loadcases and even earthquake proofs can be done. The tank wall thickness is designed according to the static requirements and due to the helical extrusion technology of KRAH, the tanks wall is completely monolithic and homogeneous. Typical dimensions and tank volumes are mentioned in the table below.



Screenshot PROFITank Software

Capacity of cylindric tanks in m³

| DN / ID [mm] | Height / Length [mm] | | | | | | | | | |
|--------------|----------------------|------|-------|-------|-------|-------|-------|-------|-------|--|
| | 4000 | 5000 | 6000 | 7000 | 8000 | 9000 | 10000 | 11000 | 12000 | |
| 1000 | 3,1 | 3,9 | 4,7 | 5,5 | 6,3 | 7,1 | 7,9 | 8,6 | 9,4 | |
| 1200 | 4,5 | 5,7 | 6,8 | 7,9 | 9,0 | 10,2 | 11,3 | 12,4 | 13,6 | |
| 1400 | 6,2 | 7,7 | 9,2 | 10,8 | 12,3 | 13,9 | 15,4 | 16,9 | 18,5 | |
| 1600 | 8,0 | 10,1 | 12,1 | 14,1 | 16,1 | 18,1 | 20,1 | 22,1 | 24,1 | |
| 1800 | 10,2 | 12,7 | 15,3 | 17,8 | 20,4 | 22,9 | 25,4 | 28,0 | 30,5 | |
| 2000 | 12,6 | 15,7 | 18,8 | 22,0 | 25,1 | 28,3 | 31,4 | 34,6 | 37,7 | |
| 2300 | 16,6 | 20,8 | 24,9 | 29,1 | 33,2 | 37,4 | 41,5 | 45,7 | 49,9 | |
| 2400 | 18,1 | 22,6 | 27,1 | 31,7 | 36,2 | 40,7 | 45,2 | 49,8 | 54,3 | |
| 2600 | 21,2 | 26,5 | 31,9 | 37,2 | 42,5 | 47,8 | 53,1 | 58,4 | 63,7 | |
| 2800 | 24,6 | 30,8 | 36,9 | 43,1 | 49,3 | 55,4 | 61,6 | 67,7 | 73,9 | |
| 3000 | 28,3 | 35,3 | 42,4 | 49,5 | 56,5 | 63,6 | 70,7 | 77,8 | 84,8 | |
| 3200 | 32,1 | 40,2 | 48,3 | 56,3 | 64,3 | 72,4 | 80,4 | 88,5 | 96,5 | |
| 3400 | 36,3 | 45,4 | 54,5 | 63,6 | 72,6 | 81,7 | 90,8 | 99,9 | 109,0 | |
| 3600 | 40,7 | 50,9 | 61,1 | 71,3 | 81,4 | 91,6 | 101,8 | 112,0 | 122,1 | |
| 3800 | 45,4 | 56,7 | 68,0 | 79,4 | 90,7 | 102,1 | 113,4 | 124,8 | 136,1 | |
| 4000 | 50,3 | 62,8 | 75,4 | 88,0 | 100,5 | 113,1 | 125,7 | 138,2 | 150,8 | |
| 4500 | 63,6 | 79,5 | 95,4 | 111,3 | 127,2 | 143,1 | 159,0 | 174,9 | 190,9 | |
| 5000 | 78,5 | 98,2 | 117,8 | 137,4 | 157,1 | 176,7 | 196,3 | 216,0 | 235,6 | |

The main sizes in the range of 1000mm up to 5000mm are mentioned above. The range of wall thicknesses can vary from minimum 5mm to maximum 250mm.



Application

Tanks for storage or treatment of liquids are required in all areas of public life and no industrial plant or chemical process can work without it. Typical applications for Krah storage and process tanks are:

- ✓ Chemical storage and process tanks
- ✓ Process tanks
- ✓ Scrubber
- ✓ CO₂ Stripper
- ✓ Tanks for water treatment
- ✓ Silos for agriculture
- ✓ Silos for food industry
- ✓ Biogas plants / composting plants
- ✓ Fodder storage
- ✓ Storage tanks for textile industry
- ✓ Drinking water tanks / reservoirs
- ✓ Overflow tanks



Production Technology

The KRAH production line "Solid One", is designed to manufacture large diameter cylindric tanks with the helical extrusion technology.

The KRAH line can be supplied with two single screw extruders, each with 250 kg/hr one of those to produce the inner layer in another colour or with another characteristic.

The needed space for installation of the production line is approx 20 m x 20 m with a height of 7 - 8 m, depending on requested tank dimension. As an option, it is also possible to add other materials in the layers like e.g. a glass fibre mesh for reinforcement or a metallic foil as diffusion barrier.

If required, the production line can be equipped with an upgrade to produce a pro-filed wall structure for special double wall constructions with leakage control or just to increase the stiffness for horizontal tanks.

By the way: The complete machine can be assembled and disassembled in a very short time so in special cases, like for big projects, the machine can be moved easily as no special fundament is needed.



The KRAH “Solid One” at a glance:

- extrusion output 300 - 500 kg/h (depending on selected extruder)
- Diameter range from DN/ID 1000 mm up to DN/ID 5000 mm
- Production length up to 7 m
- Solid wall thickness from 5 up to 250 mm
- Stepped wall thickness acc. to hydrostatic load
- Profiled wall available optionally with a machine upgrade





Helically wound cylinders or welded sheets?

Let's assume that a storage tank for chemicals is needed, with the volume of 20m³ (20.000liters). So the dimensions will have an inner diameter of 2,3m and a height of 5m. The conventional construction would be a sheet-weld tank or a helically wound tank. In both constructions we will use different wall thicknesses for the shaft.

Welded sheet version:

Used material:

1xPE-Sheet with 2mx4m with a thickness of 30 mm

2xPE-Sheet with 2mx4m with a thickness of 20mm

2xPE-Sheet with 2mx4m with a thickness of 10mm

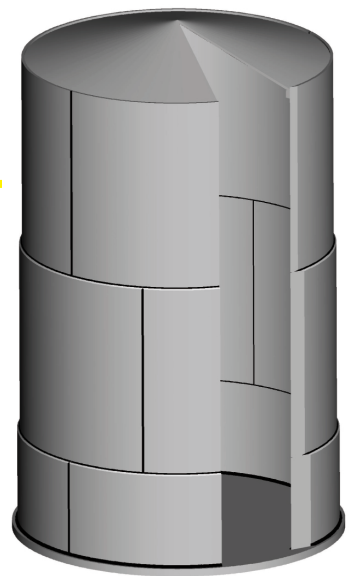
Work to be done for cylinder shell only:

1xcut 4m long

6xbutt-welding

15m Extrusion welding

Welding factor $f_s=0,8$ and $f_c=0,9$, according to DVS2205



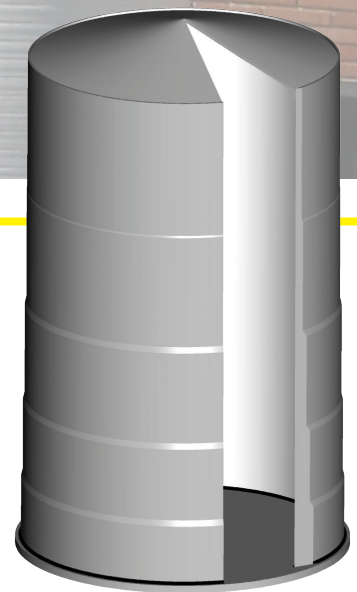


KRAH version:

Used material:

One helically wound tank, with 500x27, 1000x18,
2000x14, 1500x8

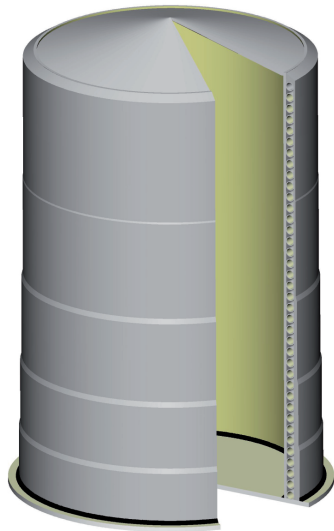
Welding factor $f_s=1$ and $f_c=1$, according to DVS2205



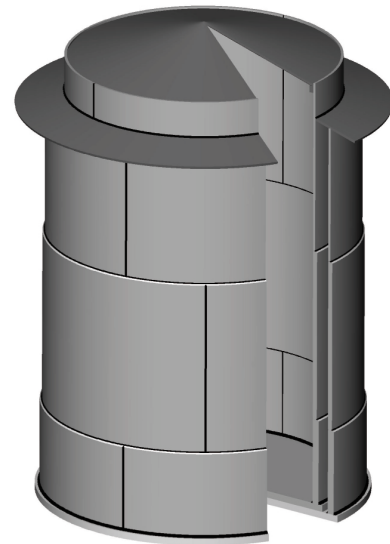
35% heavier than the KRAH solution.

Double wall tanks

The advantage of Krah tanks becomes even bigger if double wall tanks with leakage control are requested. This means, that you can use the special leakage control wall design from KRAH instead of building an old fashioned tank in tank system made from sheets.



Krah double wall tank



Tank in tank system





KRAH Equipment

KRAH is offering all kinds of necessary equipment to set up an efficient production process. Even the costly outsourced welding rod can be produced on the KRAH W35 machine. The welding rod can be manufactured in the same material like the tank and all needed diameter/shape are available.

Furthermore, we provide hand welding extruders up to 6 kg/h (for welding rod), mobile welding extruders up to 12 kg/h (for using granules) and many other accessories and workshop tools.



Get more information from your local Krah Pipe producer:

