

# KLARO

## KLARO *Container.Pro*

Mobile wastewater treatment solution



GERMAN  
DESIGN AND  
ENGINEERING



No mechanical parts  
in the wastewater



No pumps  
in the wastewater



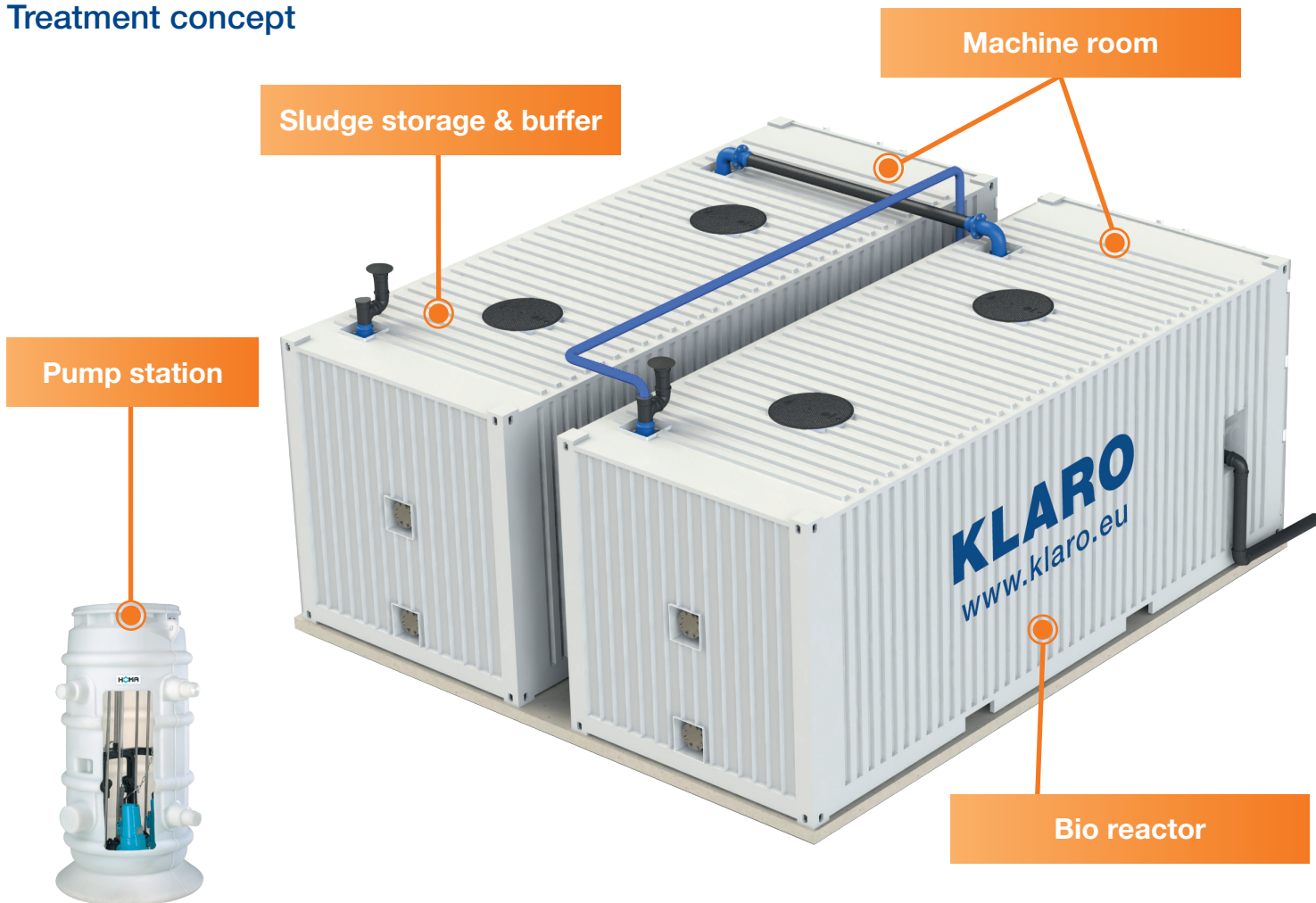
No electrical parts  
in the wastewater

# KLARO Container.Pro

## Product description

KLARO *Container.Pro* systems are using the proven two stage SBR method with upstream sludge storage and buffer. By interconnecting several 10 ft, 20 ft or 40 ft container, a treatment capacity up to 1380 PE (207 m<sup>3</sup>/day) can be reached. Depending on the required effluent values different treatment capacities are possible. The effluent values are classified in standard and premium values.

## Treatment concept

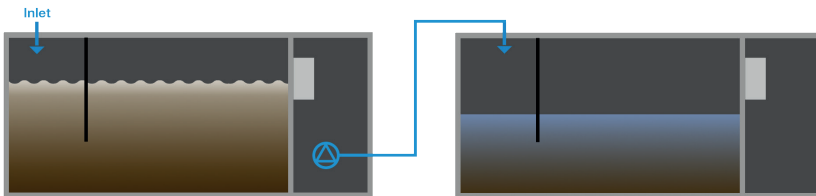


## Additional options

- ✓ Railing
- ✓ Pump station
- ✓ Sieve screw
- ✓ KLARO WebMonitor
- ✓ UV disinfection
- ✓ Chlorine disinfection
- ✓ Phosphate reduction

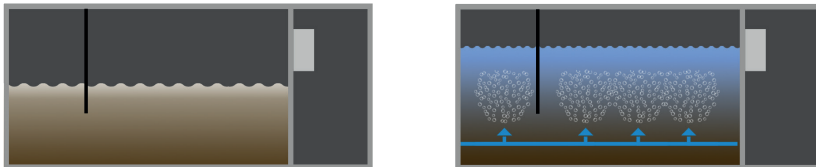
## Treatment process

The KLARO Container.Pro versions are working according to the two stage SBR (= sequencing batch reactor) process and are carrying out four treatment cycles per day as standard. Each treatment cycle is taking six hours and is divided into the following treatment steps:



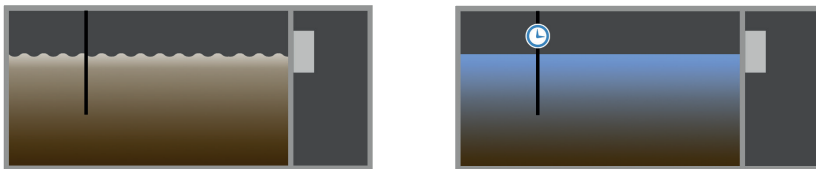
### Charging

The raw wastewater temporarily stored in the sludge storage & buffer is supplied to the SBR by a centrifugal pump that is placed in the machine room. The point of extraction is positioned so that only solid-free water is charged.



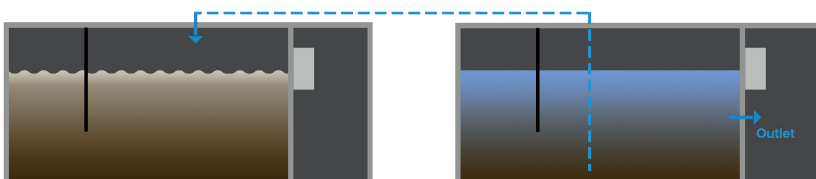
### Aeration

The raw wastewater, coming from the sludge storage & buffer, enters the SBR reactor and undergoes aerobic treatment. The microorganisms in the activated sludge are supplied with oxygen and thus pollutants are reduced.



### Sedimentation

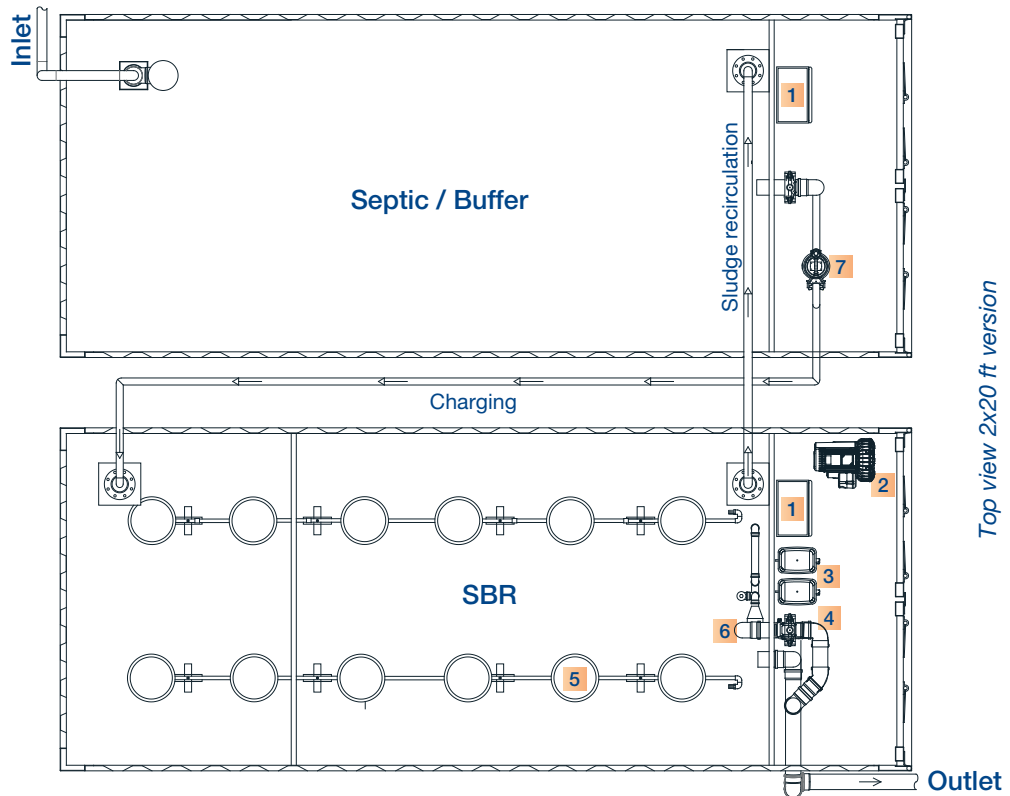
When aeration is stopped, the activated sludge settles to the bottom. A clear water zone forms in the upper part of the SBR reactor. If any raw wastewater enters the system, it is buffered and pre-treated in the first container.



### Clear water extraction & excess sludge return

The clarified wastewater is extracted by a discharge device. The discharge device is briefly backwashed to prevent any sludge from coming out. In the final step excess sludge is returned to the sludge storage & buffer via an integrated air lifter.

## Schematic view



- 1 Switch cabinet 2 Compressor 3 Blower 4 Butterfly valve 5 Diffusor 6 Decanter 7 Pump

## Type program for standard effluent values

PE	max. hydraulic load	max. organic load	Container			
[PE]	[m <sup>3</sup> /d]	[kg BOD/d]	[no.]	[type]	[no.]	[type]
200	30,00	12,00	2	20 ft	–	–
460	69,00	27,60	–	–	2	40 ft HC
600	90,00	36,00	2	20 ft	2	40 ft HC
920	138,00	55,20	–	–	4	40 ft HC
1000	150,00	60,00	2	20 ft	3	40 ft HC
1380	207,00	82,80	–	–	6	40 ft HC

## Type program for premium effluent values

PE	max. hydraulic load	max. organic load	Container			
[PE]	[m <sup>3</sup> /d]	[kg BOD/d]	[no.]	[type]	[no.]	[type]
150	22,50	9,00	2	20 ft	–	–
360	54,00	21,60	–	–	2	40 ft HC
480	72,00	28,80	2	20 ft	2	40 ft HC
720	108,00	43,20	–	–	4	40 ft HC
800	120,00	48,00	2	20 ft	4	40 ft HC
1080	162,00	64,80	–	–	6	40 ft HC

## Design criteria

The containerized treatment plant is designed based on German regulations and standards for wastewater treatment. The design factors in both hydraulic and organic loads as well as the required treatment efficiency. Depending on the treatment capacity different effluent values are possible. The possible effluent values are classified in standard and premium values.

### Raw wastewater

KLARO containerized treatment plants are designed with the following wastewater values:

pH	7,5 - 8,5
BOD <sub>5</sub>	150 - 400 mg/l
COD	300 - 800 mg/l
TSS	150 - 450 mg/l
TN	20 - 80 mg/l
TP	6 - 25 mg/l

*Special inflow values on request!*

### Effluent values

The quality of the treated wastewater is normally within or below the following ranges:

	Standard values	Premium values
BOD <sub>5</sub>	< 40 mg/l	< 20 mg/l
COD	< 150 mg/l	< 90 mg/l
TSS	< 30 mg/l	< 20 mg/l
NH <sub>4</sub> N	-	< 10 mg/l
TN	-	< 25 mg/l

*Different effluent values on request!*

## Systems specifications

Container		for each 20 ft container	for each 40 ft HC container
Dimensions (external)	Length	6058 mm	12192 mm
	Width	2439 mm	
	Height	2591 mm	2896 mm
Capacity		30,4 m <sup>3</sup>	71,1 m <sup>3</sup>
Weight incl. mounting parts		3150 kg	5700 kg
Inlet pipe	Connection	DN 110	
	External height	2591 mm	2896 mm
Outlet	Connection	DN 110	DN 160
	External height	945 mm	900 mm
Connection pipe	Connection	DN 110	
	External height	1200 mm	
Excess sludge return		DN 70	
Recommended operating voltage		400 V, 50/60 Hz	
Recommended current load		63 A	
Power consumption		avg = 14 kWh/d	avg = 22 kWh/d
Operating temperature range		-10°C ... + 35°C	
Standard calculated sludge removal intervall		3 - 6 months	



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