

# KLARO

## KLARO *Container.One+*

Mobile wastewater treatment solution



GERMAN  
DESIGN AND  
ENGINEERING



No mechanical parts  
in the wastewater



No pumps  
in the wastewater



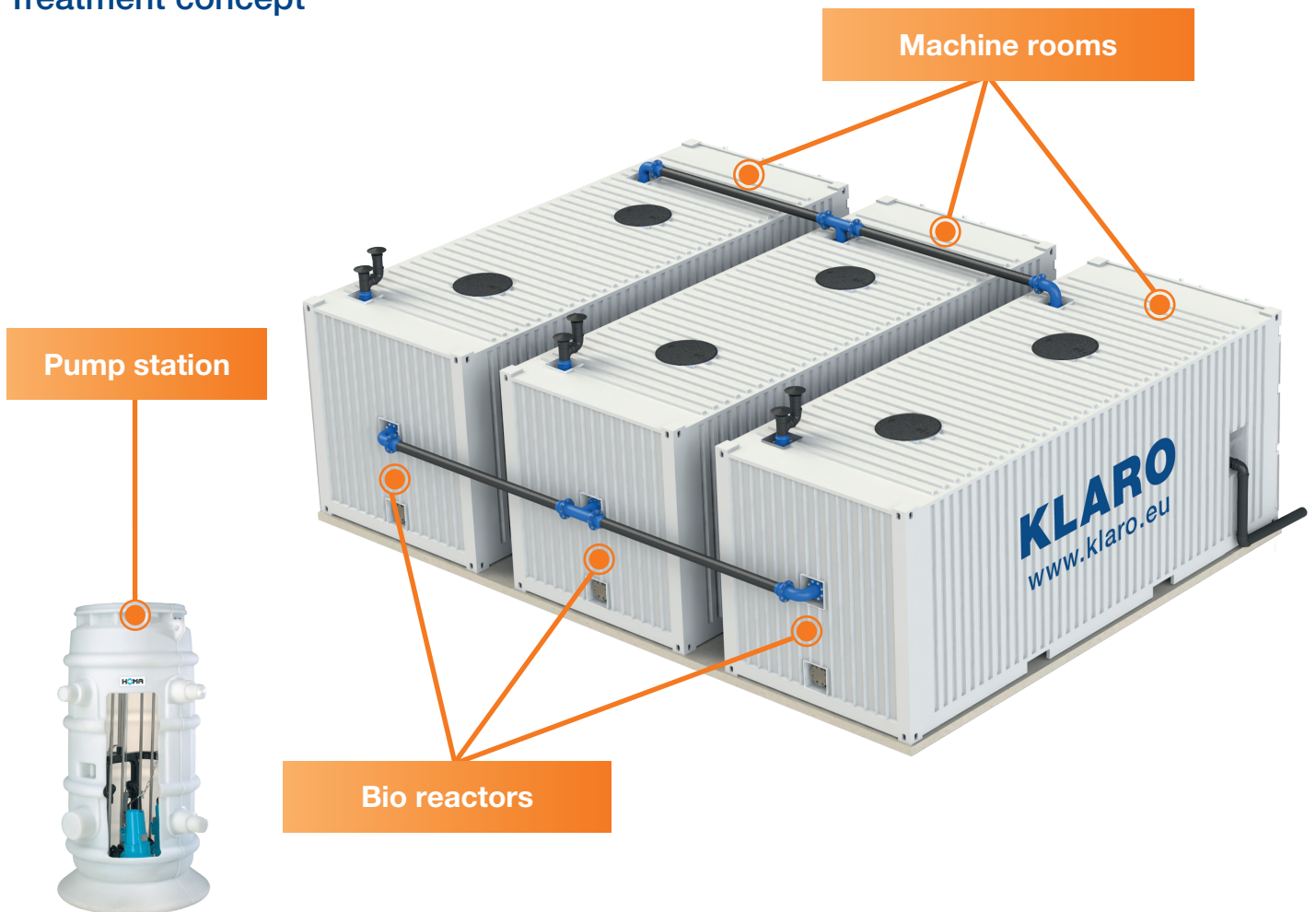
No electrical parts  
in the wastewater

# KLARO Container.One+

## Product description

KLARO Container.One+ is the containerized solution for bigger treatment capacities up to 1150 PE (172,5 m<sup>3</sup>/day). Several 10 ft, 20 ft or 40 ft container are interconnected. The system is using the fully aerated SBR process. Sludge storage and buffer are integrated.

## Treatment concept



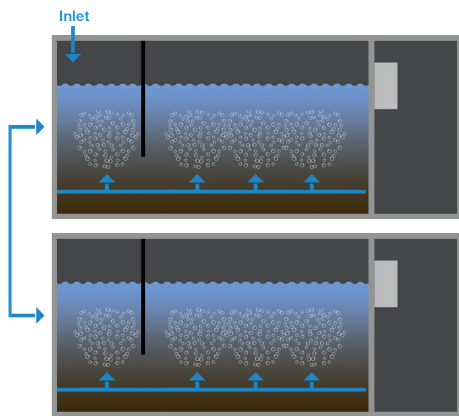
## Additional options

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

# KLARO Container.One+

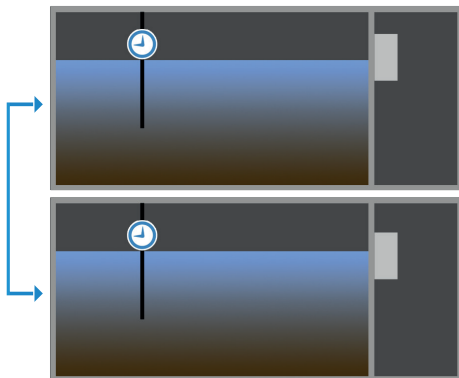
## Treatment process

The KLARO *Container.One+* versions are working according to the fully aerated SBR (= sequencing batch reactor) process and are carrying out two treatment cycles per day as standard. Each treatment cycle is taking twelve hours and is divided into the following treatment steps:



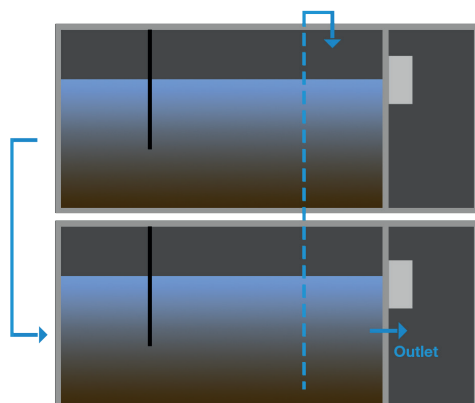
### Aeration phase

The raw wastewater, coming from the up streamed pumping station, enters the primary zone and immediately undergoes aerobic treatment. The microorganisms in the activated sludge are supplied with oxygen and thus pollutants are reduced.



### Sedimentation phase

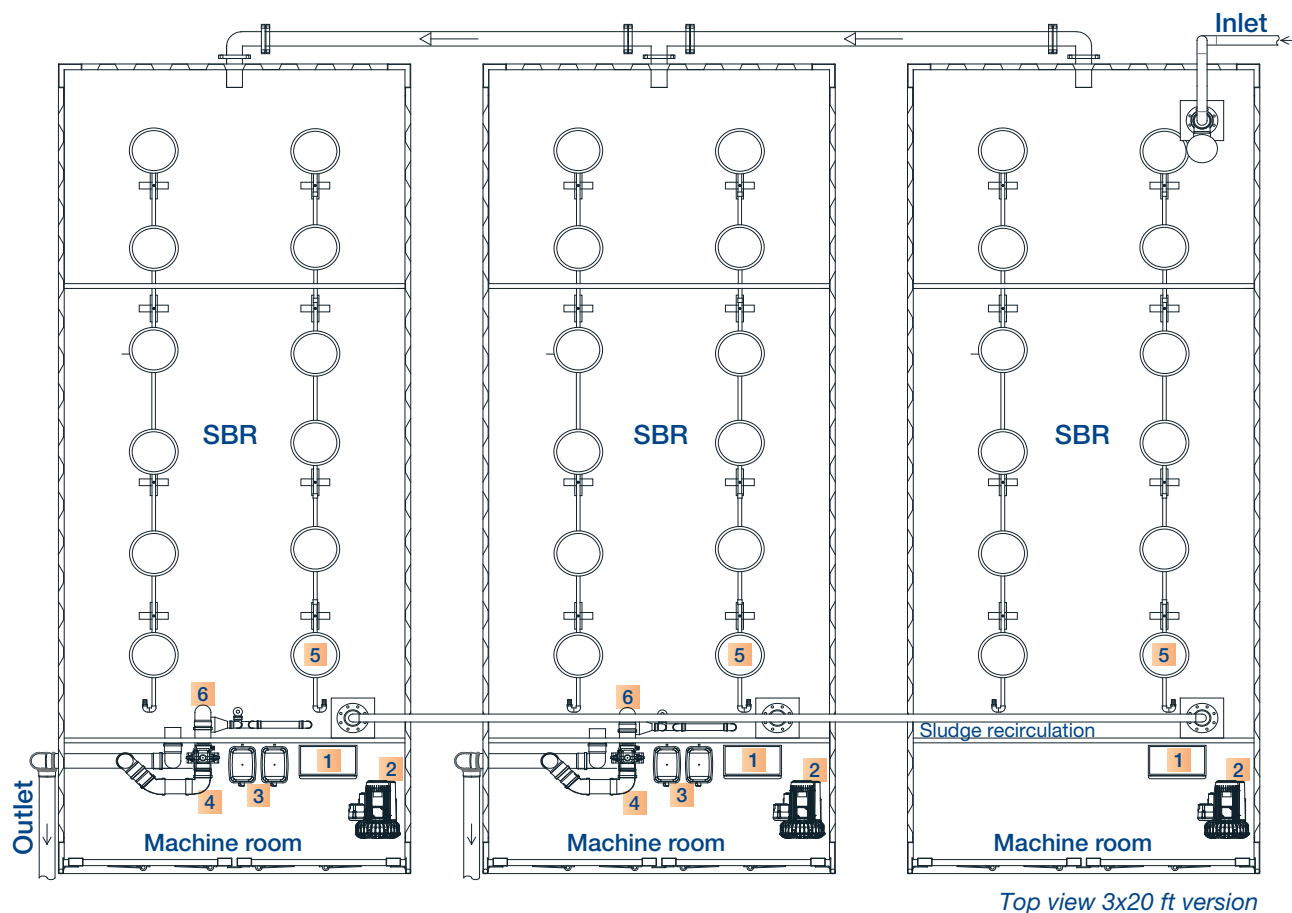
When aeration is stopped, the activated sludge settles to the bottom. A clear water zone forms in the upper part of the container. If any raw wastewater enters the system, it is retained by the half baffle wall in the first container.



### Clear water extraction & excess sludge return

The clarified wastewater is extracted by a discharge device in the last container(s). Each discharge device is briefly backwashed to prevent any sludge from coming out. In the final step excess sludge from the last container(s) is returned to the first container via an integrated air lifter.

## Schematic view



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

## Type program

PE	max. hydraulic load	max. organic load	Container					
			[no.]	[type]	[no.]	[type]	[no.]	[type]
90	13,50	5,40	2	10 ft	-	-	-	-
145	21,75	8,70	1	10 ft	1	20 ft	-	-
200	30,00	12,00	-	-	2	20 ft	-	-
245	36,75	14,70	1	10 ft	-	-	1	40 ft HC
300	45,00	18,00	-	-	1	20 ft	1	40 ft HC
460	69,00	27,60	-	-	-	-	2	40 ft HC
500	75,00	30,00	-	-	1	20 ft	2	40 ft HC
690	103,50	41,40	-	-	-	-	3	40 ft HC
920	138,00	55,20	-	-	-	-	4	40 ft HC
1150	172,00	69,00	-	-	-	-	5	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.

### 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:

BOD <sub>5</sub>	< 20 mg/l
COD	< 90 mg/l
TSS	< 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 10 ft container	for each 20 ft container	for each 40 ft HC container
Dimensions (external)	Length	2989 mm	6058 mm	12192 mm
	Width	2438 mm		
	Height	2591 mm	2591 mm	2896 mm
Capacity		13,4 m <sup>3</sup>	30,4 m <sup>3</sup>	71,1 m <sup>3</sup>
Weight incl. mounting parts		2050 kg	3150 kg	5700 kg
Inlet pipe	Connection	DN 110		
	External height	2591 mm	2591 mm	2896 mm
Outlet/charging pipe	Connection	DN 110		DN 160
	External height	945 mm	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 = 13 kWh/d	avg = 16,7 kWh/d	avg = 33,9 kWh/d
Operating temperature range		-10°C ... +35°C		
Standard calculated sludge removal intervall		3 months		

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