Wastewater Treatment Solutions

WASTEWATER TREATMENT SYSTEMS

SEPTIC TANKS CESSPOOLS INFILTRATION

EN K42
960509

Water is our element

Solutions to your challenges

GRAF offers an extensive range of products for water resource management. GRAF provides local solutions to global challenges, such as protecting water courses or preventing flooding, with typical German quality.

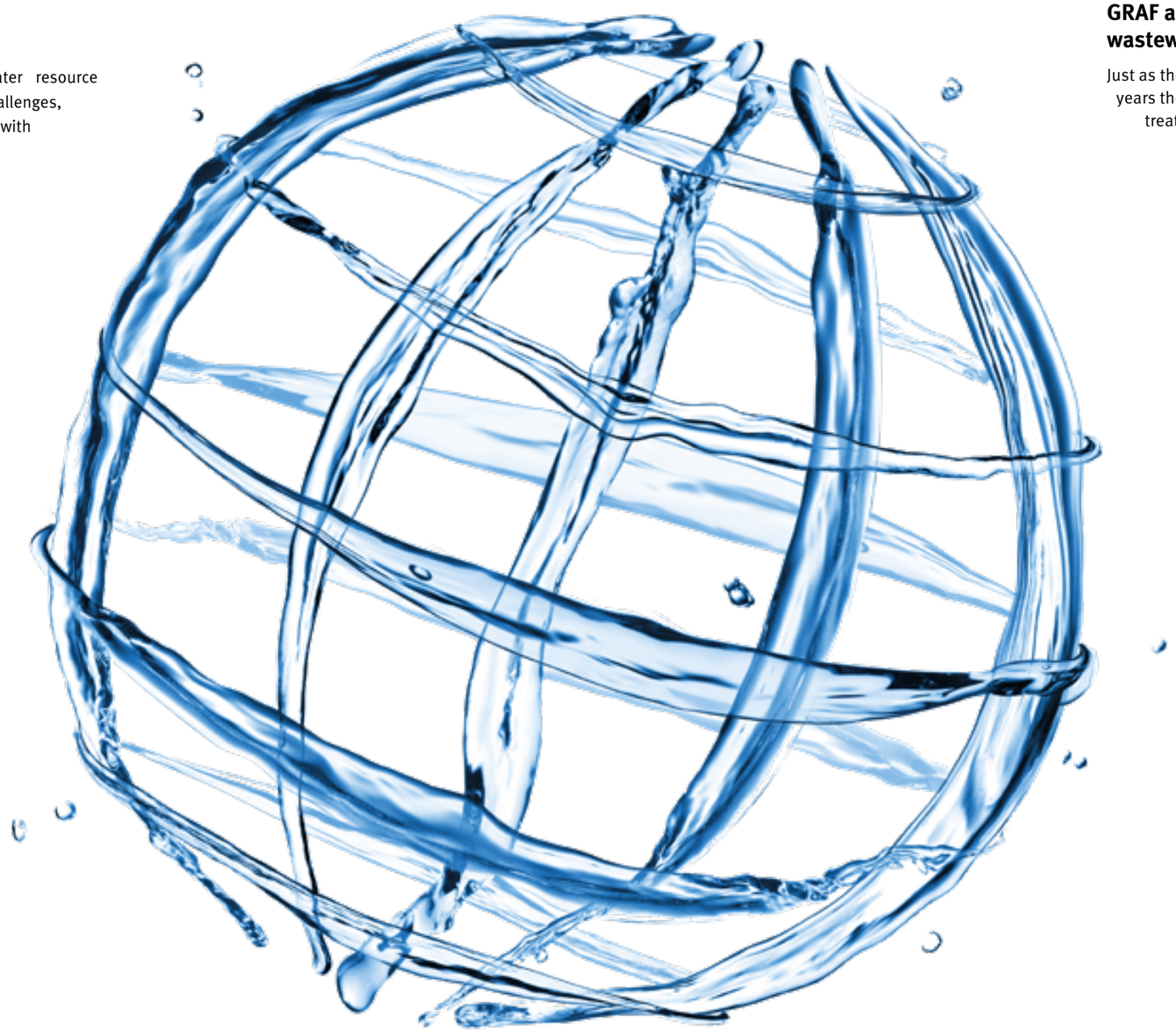
Environmental products from recycled raw materials

Over 70 % of the raw materials used by GRAF are recycled. In-house recycling of raw materials allows us to ensure consistently high raw material quality and to make all the products in our value-added chain highly sustainable. All GRAF products are also 100 % recyclable.

Global network of sales partners and production facilities!

GRAF products are available worldwide. Sales partners in more than 80 countries help us develop solutions suited to local markets and deliver the customer support needed on the ground.

The manufacturing process is essential for a top-quality product. GRAF is proficient in all established procedures for the manufacture of plastic products. Our production facilities feature state-of-the-art equipment.



GRAF and KLARO – two strong wastewater technology brands

Just as the GRAF wastewater tank is a state-of-the-art product, for over 10 years the KLARO brand has been synonymous with reliable wastewater treatment technology.

KLARO, the European market leader in SBR wastewater treatment systems with pneumatic lifting technology, has been a member of the GRAF group since 2014. Every GRAF wastewater product therefore benefits from the experience gained from over half a million satisfied wastewater customers and the quality of two established brands in decentralised wastewater treatment.

Plastic – clear advantages over concrete

Concrete tanks are at risk of corrosion through constant contact with wastewater and may require expensive refurbishment. Plastic tanks, on the other hand, have smooth inner surfaces that will not corrode. Also, because of their low weight, plastic tanks can be installed without heavy equipment. This means that they can be easily transported and installed in locations that are difficult to access.

Fast responses, even when special solutions are needed

GRAF products are exported around the globe. Intelligent logistics and sufficient stock levels ensure first-class availability of standard solutions, as well as for customised wastewater solutions.

GRAF worldwide please visit
www.graf.info

Manufacturing certified according to ISO 9001

Manufacturing certified according to ISO 50001

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Wastewater Range

Domestic Wastewater Treatment Systems

Residential- and Commercial Wastewater Treatment Systems

Special Wastewater Treatment Systems

Municipal- and Industrial Wastewater Treatment Systems

Powerless Wastewater Treatment Systems (e.g. Septic Tanks)

Separator Systems

Enter Webcode in search field

Webcode G5101

The webcode takes you straight to the information you need.

- Installation instructions
- Dimensional drawings
- Accreditations
- Declarations of conformity

Symbols used in this catalogue

Load capacity

Suitable for pedestrian loading

Suitable for vehicle loading

Suitable for lorry loading

Transport Optimised Wastewater Treatment Systems

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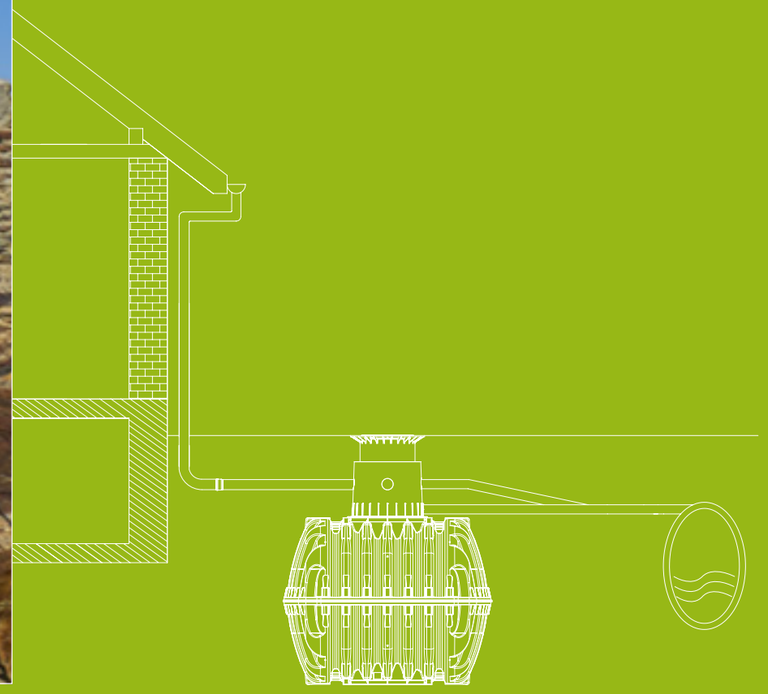


System Comparison

Find your wastewater solution
www.graf.info/wastewater-advisor

Domestic

9 inhabitants | 1,350 l/d up to
18 inhabitants | 2,700 l/d

Commercial

180 inhabitants | 7,500 l/d

KLcontrol.M

System	one*2clean*	one*2clean* plus
Example applications	single houses, small communities	
Page	10	10
System conformity	EN 12566-3	EN 12566-3
Purifying technology	fully biological SBR lifting technology	fully biological SBR lifting technology
One-tank systems available up to	9 inhabitants | 1,350 l/d	9 inhabitants | 1,350 l/d
Multitank systems available up to	18 inhabitants | 2,700 l/d	18 inhabitants | 2,700 l/d
Maintenance interval	1 – 2 per year	1 – 2 per year
Warranty for underground tank	10 years	10 years
Warranty for purifying technology	2 years	2 years

Control		
Holiday / economy mode (underload detection)	—	●
+R Remote transmission controlled by GSM or LAN	—	○
+P Phosphate removal	—	○
+C Carbon infeed	—	○
+H Hygiene package (Disinfection)	—	○
+D Removal of nitrogen	●	●
+B Buffer pump for short-term peak loads	—	—
+O Outlet with clear water pump	—	○
Control power failure recognition	—	●
Temperature sensor to protect against overheating	—	●
Logbook function	●	●
USB-Slot for display size an logging	—	●
External control cabinet for installing control unit outdoors	○	○
Annual power consumption	188 kWh (5 inhabitants | 750 l/d)	358 kWh (5 inhabitants | 750 l/d)

System	Klaro E Professional / Klaro L
Example applications	communities and commercial projects
Page	16
System conformity	EN 12566-3
Purifying technology	fully biological SBR lifting technology
One-tank systems available up to	on request
Multitank systems available up to	180 inhabitants | 7,500 l/d
Maintenance interval	1 – 2 per year
Warranty for underground tank	10 years
Warranty for purifying technology	2 years

Control	
Holiday / economy mode (underload detection)	●
+R Remote transmission controlled by GSM or LAN	○
+P Phosphate removal	○
+C Carbon infeed	○
+H Hygiene package (Disinfection)	○
+D Removal of nitrogen	○
+B Buffer pump for short-term peak loads	○
+O Outlet with clear water pump	○
Control power failure recognition	●
Temperature sensor to protect against overheating	●
Logbook function	●
USB-Slot for display size an logging	●
External control cabinet for installing control unit outdoors	○
Annual power consumption	349 kWh (8 inhabitants | 1,200 l/h)

● Standard equipment ○ Available as options — not available

Parameter	Cleaning performance for one*2clean*	Cleaning performance for one*2clean* plus	Cleaning performance for Klaro E Professional	
COD (chemical oxygen demand)	94.2 %	94.2 %	93.1 %	47 mg/l
BOD_5 (biochemical oxygen demand)	98.0 %	98.0 %	96.9 %	10 mg/l
SS (suspended solids)	96.3 %	96.3 %	96.9 %	11 mg/l
NH_4-N	98.3 %	98.3 %	74.7 %	11 mg/l
N_{total}	87.0 %	87.0 %	69.9 %	21 mg/l
P_{total} (mit +P Modul)	–	95.1 %	94.5 %	0.4 mg/l
$eColi_{+H}$ (mit +H Modul)	–	99.9 %	99.9 %	–

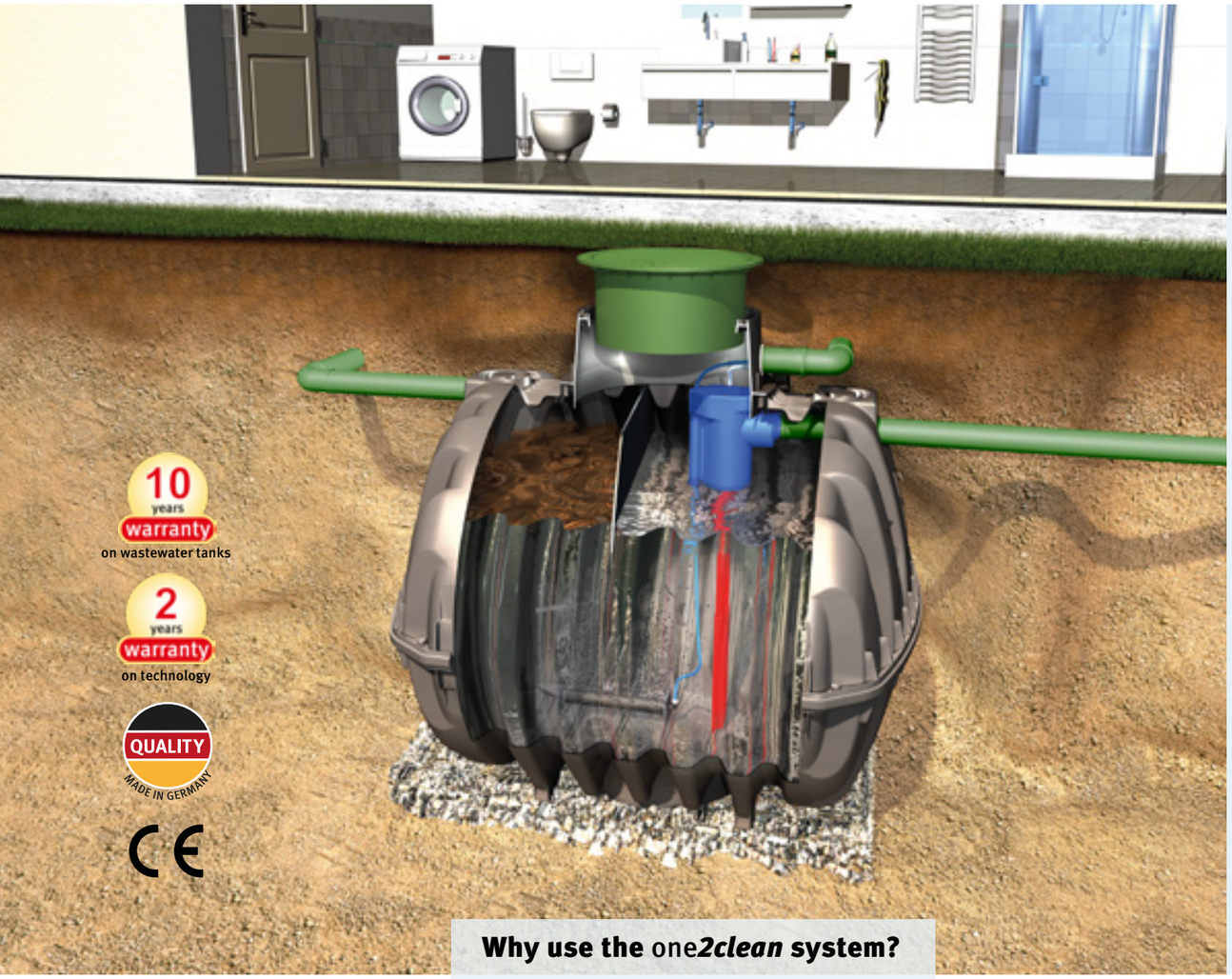
Results of practical testing undertaken by the Prüfinstitut für Abwassertechnik (Testing Institute for Wastewater Technology), Aachen

PP-cabinet for small wastewater treatment system

GRAF TV
www.graf.info/v223

one*2clean* / one*2clean* plus – Facts

3 – 18 PE (450 – 2,700 l/day)



Why use the one*2clean* system?

- **Excellent cleaning performance**
  Even during load fluctuations and underload
- **Great value for money**
- **Double sludge storage volume**
- **Low sludge removal**

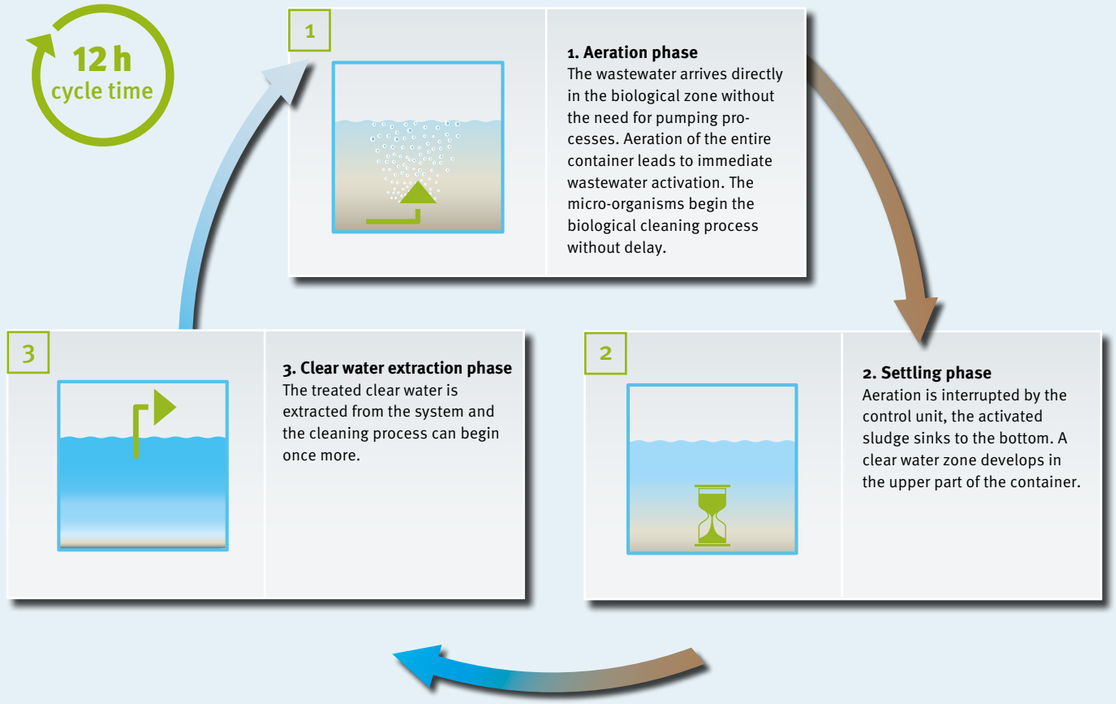
Wastewater treatment system one2clean – smart and simple!

GRAF TV
www.graf.info/v224

As much technology as necessary, as little technology as possible.

Over the past few years, wastewater treatment systems have experienced impressive technological developments. Today, they are high-tech products equipped with sophisticated controls and various pumps, sensors and valves. Yet this is often to the detriment of the product's reliability. A reliable wastewater disposal system no longer needs to be complicated.
one2clean is an advanced development of the proven SBR wastewater treatment technology, with considerable advantages in terms of operating costs and safety.

one*2clean* is a clean solution

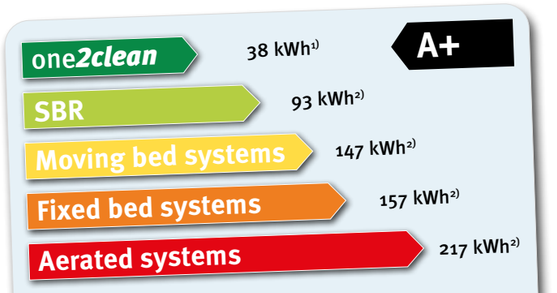


one*2clean* only needs 3 steps to produce clear water
The wastewater treatment is carried out in one chamber in just one tank. This eliminates unnecessary pumping processes and sludge return.

one*2clean* is odourless
The entire volume of wastewater is immediately activated with oxygen using the unique one2clean technology. The final process of the one2clean produces an odourless, clear treated water for extraction to soakaway or waterway *

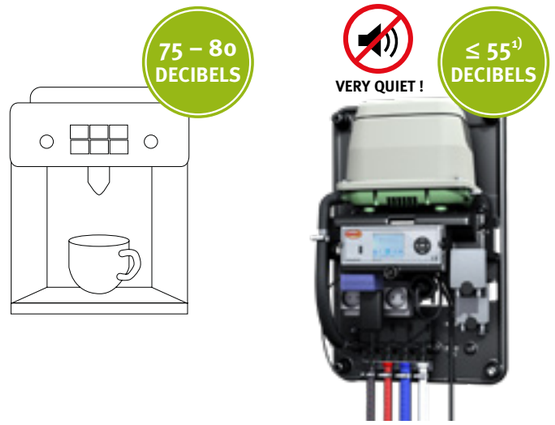
one*2clean* already meets the needs of tomorrow
The one2clean wastewater treatment system can achieve sustainable discharge values with an efficiency factor of up to 99 %! This offers high investment security – even if legal requirements become stricter.

* Manufacturer's operating and installation instructions must be adhered to.



1) Calculated value for a 7 inhabitant system at 100%. Capacity utilisation per 1 inhabitant/year
2) Annual electricity consumption of various wastewater treatment systems per inhabitant equivalent. Source: Magazine "wwt", issue 6/2007 "Die Kleinkläranlage als Dauerlösung" (The small wastewater treatment plant as a permanent solution), page 15, Table 3 Practical data.

Silent performance guaranteed



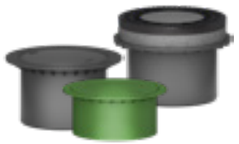
1) Based on internal tests

Components and Benefits

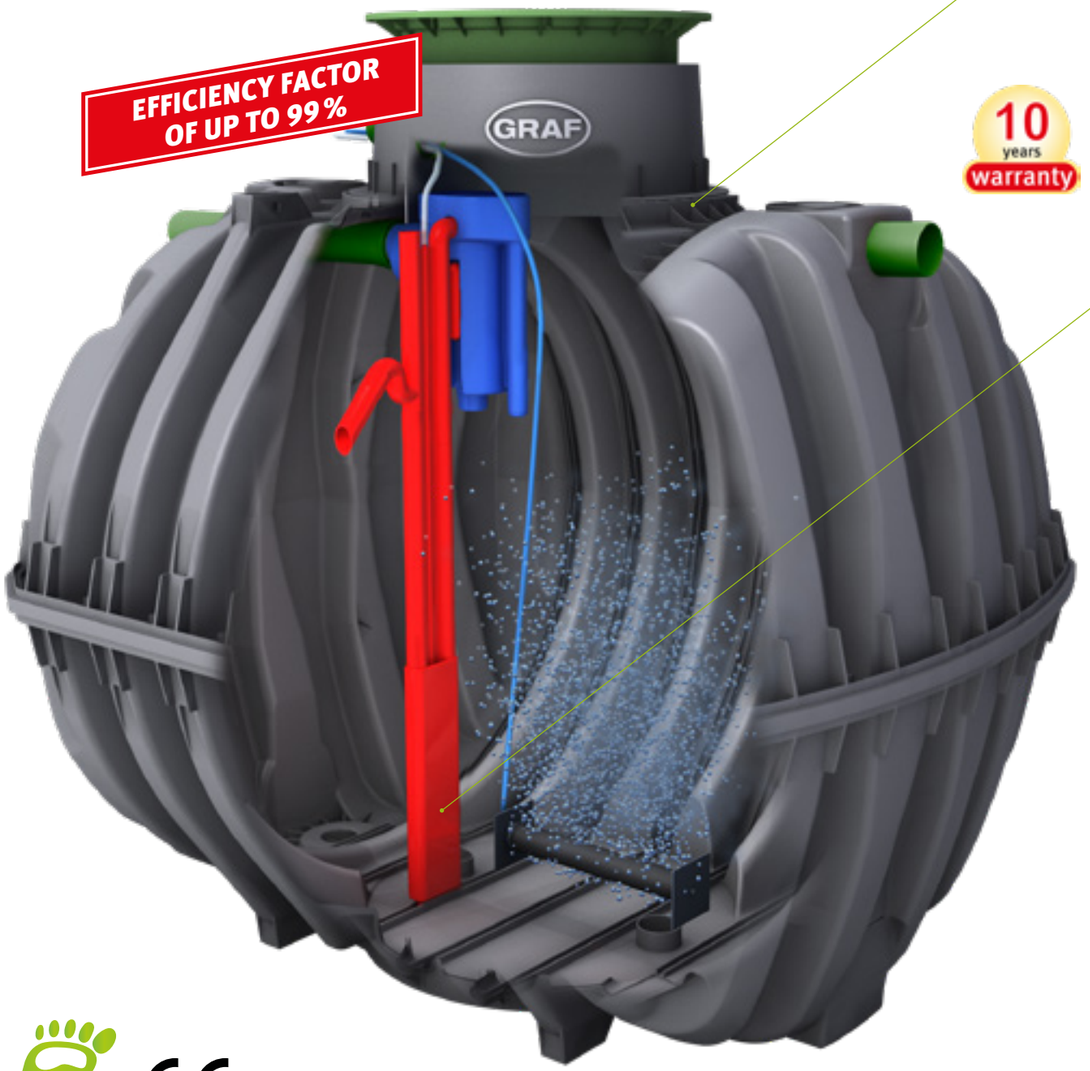
Covers

- Suitable for pedestrian or vehicle loading
- Adjustible in height
- Inclinable up to 5°

›› page 76/77

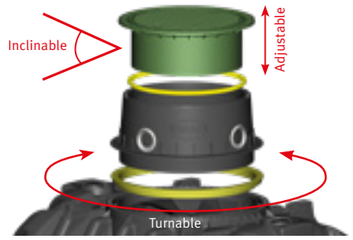


- ✓ Enables flush ground installation
- ✓ Nice looking cover
- ✓ Allows small corrections of height on-site
- ✓ Reduction of installation cost



Wastewater tank

- State-of-the-art manufacturing for maximum stability
- 100 % watertight and corrosionresistant
- Can be mounted in groundwater
- Unique fit accuarcy of the componance



- ✓ Self-anchoring saves installation costs
- ✓ Up to 12 to loading, enables installation under car park (flexible choice of location)
- ✓ Tank made of 100 % recycling material, enviromentally friendly invest

Installation kit

- Only one clear water lifter
- Rugged clear water lifter manufactured in one seamless piece
- Simple maintenance via an integrated, self-cleaning sampling container
- No electrical part in the tank

- ✓ Fast installation
- ✓ Saves installation costs
- ✓ Keeps service costs to a minimum
- ✓ Easy access for service company

one2clean / one2clean plus control cabinets

- Simple handling thanks to micro-processor control
- Energy-saving
- Extremely quiet

Premium one2clean plus

Topseller one2clean

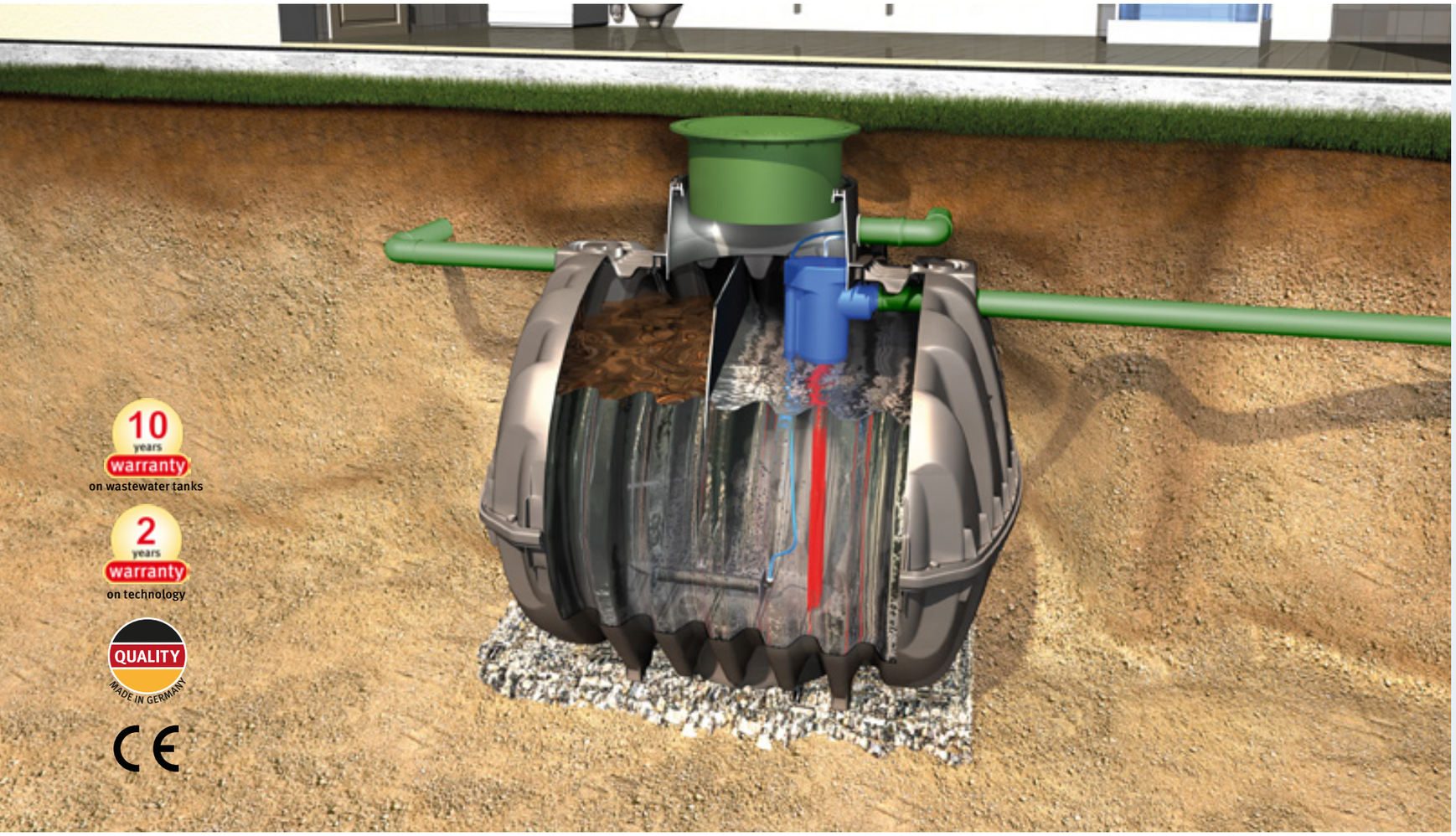
- ✓ Incredible cost saving due to very low power consumption
- ✓ System can be easily adjusted if required which will reduce costs for technician

Conventional Wastewater Treatment Systems | one2clean / one2clean plus

- ✓ Incredibly little sewage sludge
  - Reduces running costs
  - Keeps environment clean
- ✓ Flexible selection of the control cabinet's position

one*2clean* / one*2clean* plus

One-tank and two-tank systems



Technical data

System	one*2clean*	one*2clean* plus
System conformity	EN 12566-3	EN 12566-3
Purifying technology	fully biological SBR lifting technology	fully biological SBR lifting technology
One-tank systems available up to	9 inhabitants | 1,350 l/d	9 inhabitants | 1,350 l/d
Two-tank systems available up to	18 inhabitants | 2,700 l/d	18 inhabitants | 2,700 l/d
Maintenance interval	1 – 2 per year	1 – 2 per year
Warranty for underground tank	10 years	10 years
Warranty for purifying technology	2 years	2 years

Parameter				
COD (chemical oxygen demand)	94.2 %	43 mg/l	94.2 %	43 mg/l
BOD_5 (biochemical oxygen demand)	98.0 %	7 mg/l	98.0 %	7 mg/l
SS (suspended solids)	96.3 %	14 mg/l	96.3 %	14 mg/l
NH_4-N	98.3 %	0.5 mg/l	98.3 %	0.5 mg/l
N_{total}	87.0 %	7.9 mg/l	87.0 %	7.9 mg/l
P_{total} (mit +P Modul)	–	–	–	0.4 mg/l
$eColi_{+H}$ (mit +H Modul)	–	–	–	–

Results of practical testing undertaken by the Prüfinstitut für Abwassertechnik (Testing Institute for Wastewater Technology), Aachen

Accessories:

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Separators
For more information about our separators, ask for our catalogue.

One-tank system one*2clean* / one*2clean* plus

Webcode G5104 | Webcode G5113

Inhabitants [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Total volume [l]	Volume [l]	Length* [mm]	Width* [mm]	Height [mm]	Weight [kg]
1 – 3	450	0.18	2,700	2,700	2080	1556	1690	120
4 – 5	750	0.3	3,750	3,750	2280	1755	1880	150
6 – 7	1,050	0.42	4,800	4,800	2280	1985	2110	185
8 – 9	1,350	0.54	6,500	6,500	2390	2190	2390	220

Scope of supply: Carat S underground tank, tank dome, telescopic dome shaft 600, one2clean system pack for one-tank system (›› page 74 – the GRAF modular system). Please order the air hoses separately (›› page 29). * Total measurement

Two-tank system one*2clean* / one*2clean* plus

Webcode G5105 | Webcode G5114

Inhabitants [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Total volume [l]	Volume [l]	Length* [mm]	Width* [mm]	Height [mm]	Weight [kg]
2 – 7	1,050	0.42	5,400	2 x 2,700	4760	1556	1690	240
8 – 10	1,500	0.6	7,500	2 x 3,750	5160	1755	1880	300
11 – 14	2,100	0.84	9,600	2 x 4,800	5160	1985	2110	370
15 – 18	2,700	1.08	13,000	2 x 6,500	5380	2190	2390	440

Scope of supply: Carat S underground tanks, tank domes, telescopic dome shafts 600, one2clean system pack for two-tank system (›› page 74 – the GRAF modular system). Please order the air hoses separately (›› page 29). * Total measurement

Additional modules

+D modules included

- +H Hygiene modules
- +P Phosphate removal module
- +C Carbon infeed module
- +R Remote transmission modules
- +O Pump-operated outlet module

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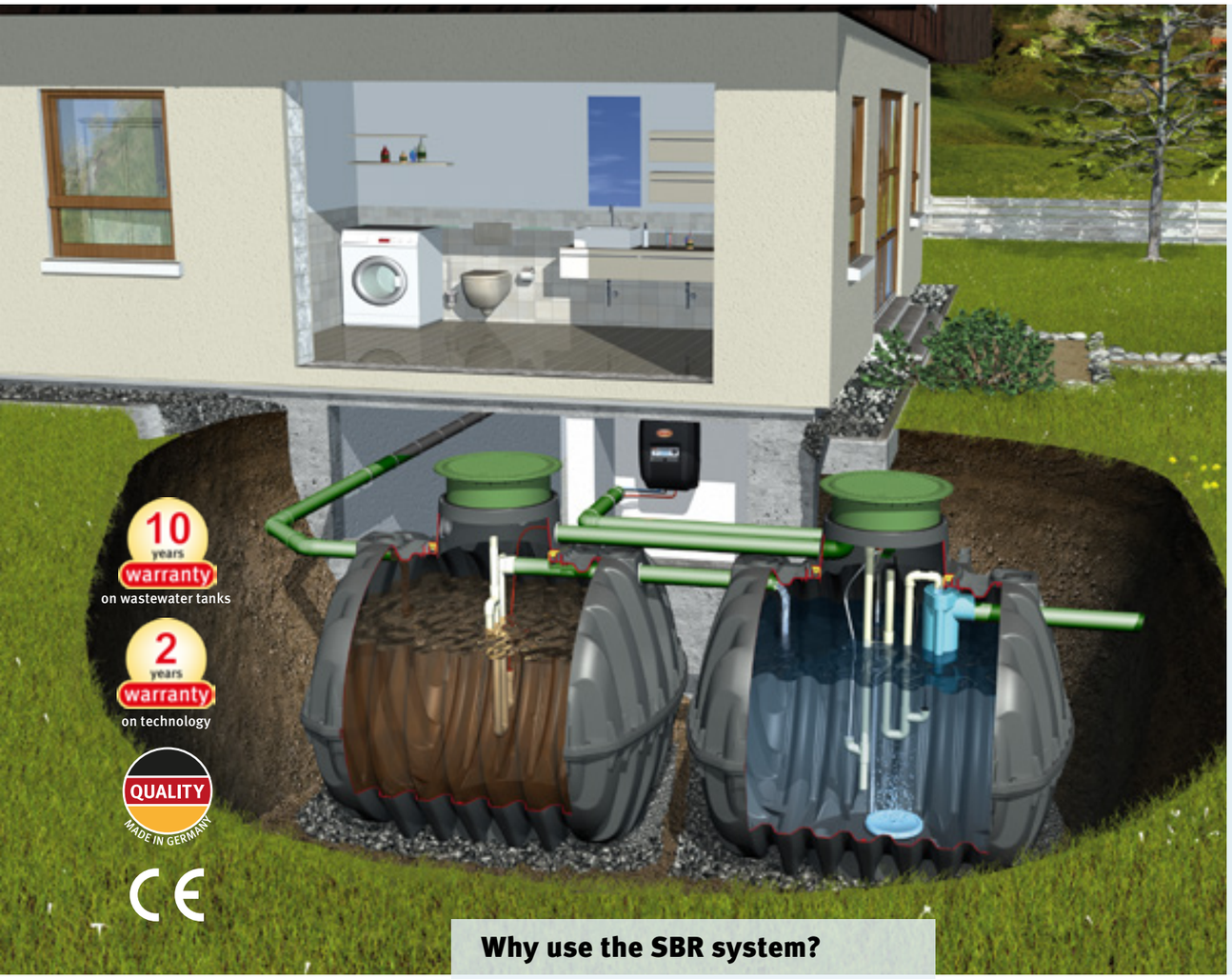
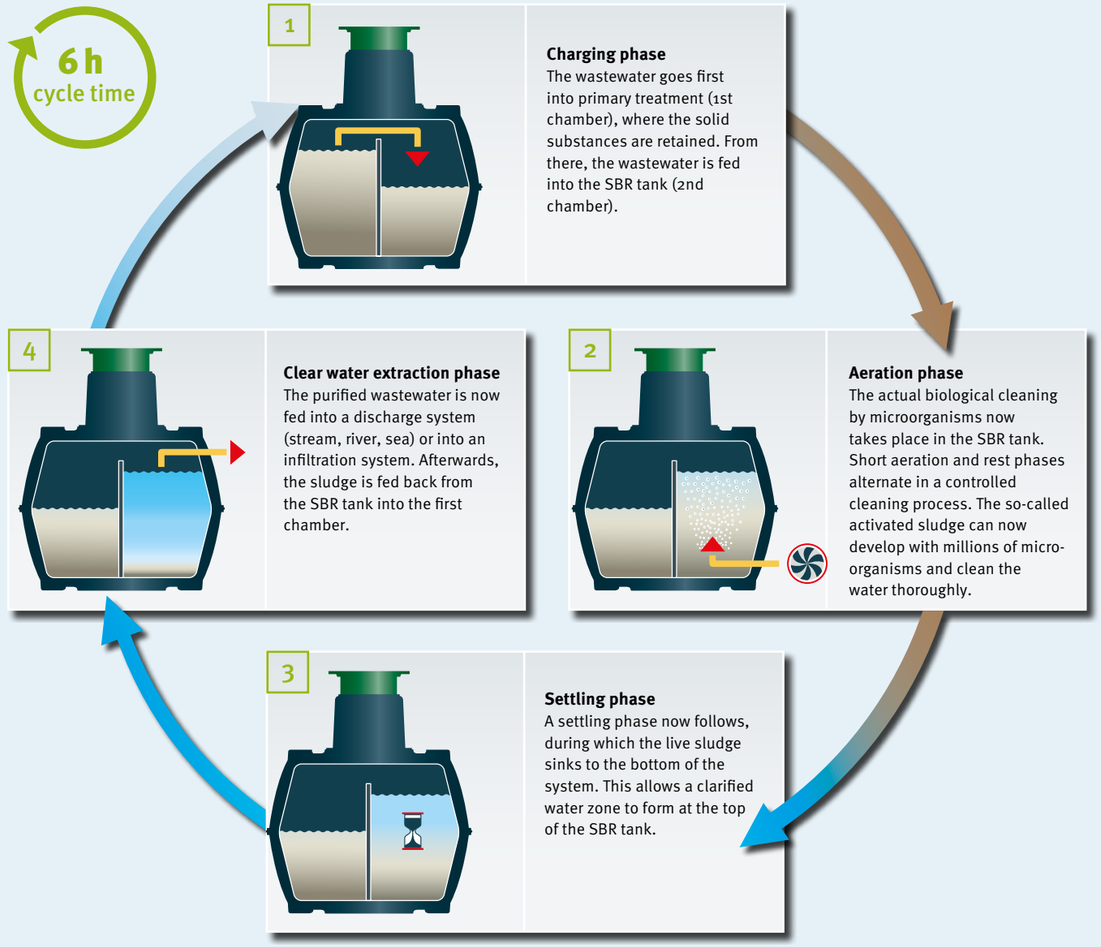
Klaro E Professional – Facts

16 – 50 PE (2,400 – 7,500 l/day)





How does SBR technology work?

Sequencing batch reactors or SBRs use a separate pre-treatment section to mechanically hold back solids and a biological aeration and settling tank. Small SBR wastewater treatment systems clean incoming wastewater over a number of cycles. GRAF products achieve a cleaning performance of up to 98 %. In this respect the GRAF Klaro E Professional far surpasses legal minimum requirements.

Why use the SBR system?

- **Outstanding cleaning performance**
  Even during load fluctuations and underload
- **Excellent value for money**
- **Only 2 chambers required**
- **Only a small tank volume required**
- **Can be retrofitted in existing tanks**

Klaro E Prof.	34 kWh[1]	A+
SBR	93 kWh[2]	
Moving bed systems	147 kWh[2]	
Fixed bed systems	157 kWh[2]	
Aerated systems	217 kWh[2]	

1) Calculated value for a 10 inhabitant system at 100%. Capacity utilisation per 1 inhabitant/year
2) Annual electricity consumption of various wastewater treatment systems per inhabitant equivalent. Source: Magazine "wwt", issue 6/2007 "Die Kleinkläranlage als Dauerlösung" (The small wastewater treatment plant as a permanent solution), page 15, Table 3 Practical data.

Function of the SBR wastewater treatment system Klaro

GRAF TV
www.graf.info/v212

Klaro E Professional

The classic wastewater treatment technology

Covers

- Suitable for pedestrian or vehicle loading
- Adjustible in height
- Inclinable up to 5°

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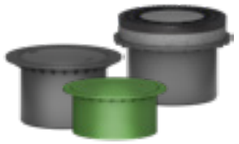
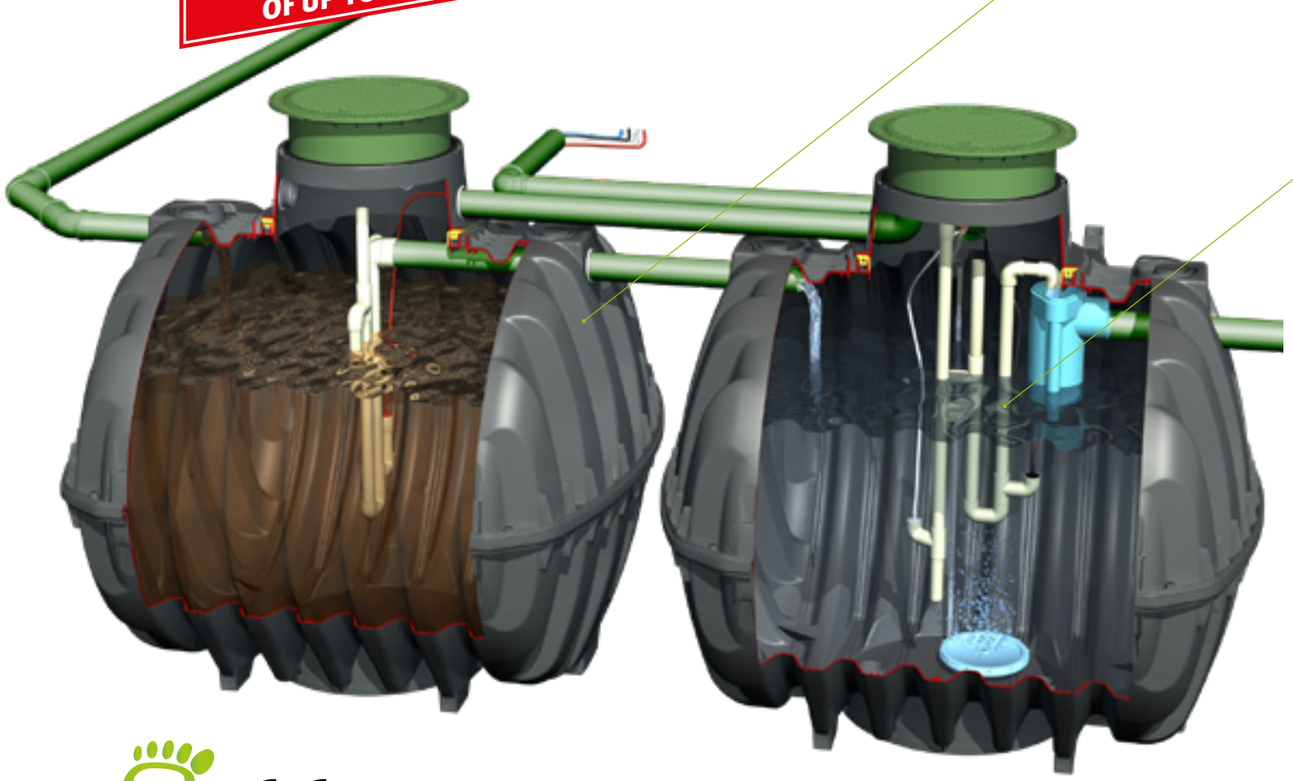


- ✓ Enables flush ground installation
- ✓ Nice looking cover
- ✓ Allows small corrections of height on-site
- ✓ Reduction of installation cost

EFFICIENCY FACTOR OF UP TO 98 %

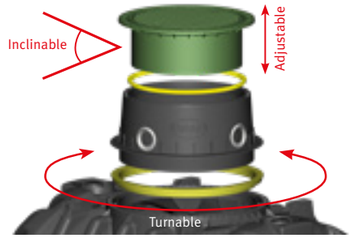


CO_2 CE

Components and Benefits

Wastewater tank

- State-of-the-art manufacturing for maximum stability
- 100 % watertight and corrosionresistant
- Can be mounted in groundwater
- Unique fit accuarcy of the componance



- ✓ Self-anchoring saves installation costs
- ✓ Up to 12 to loading, enables installation under car park (flexible choice of location)
- ✓ Tank made of 100 % recycling material, enviromentally friendly invest

Installation kit

- Simple maintenance set-up kit can be easily installed and removed
- No electrical part in the tank
- Integrated air-lock-barrier prevent untreated water to enter the clearwater airlift
- Higher outflow through the tankdome can be realiced

- ✓ Fast installation
- ✓ Saves installation costs
- ✓ Keeps service costs to a minimum
- ✓ Easy access for service company

Klaro E Professional control cabinets

- Simple handling thanks to micro-processor control
- Energy-saving
- Extremely quiet
- Battery-free power failure detection

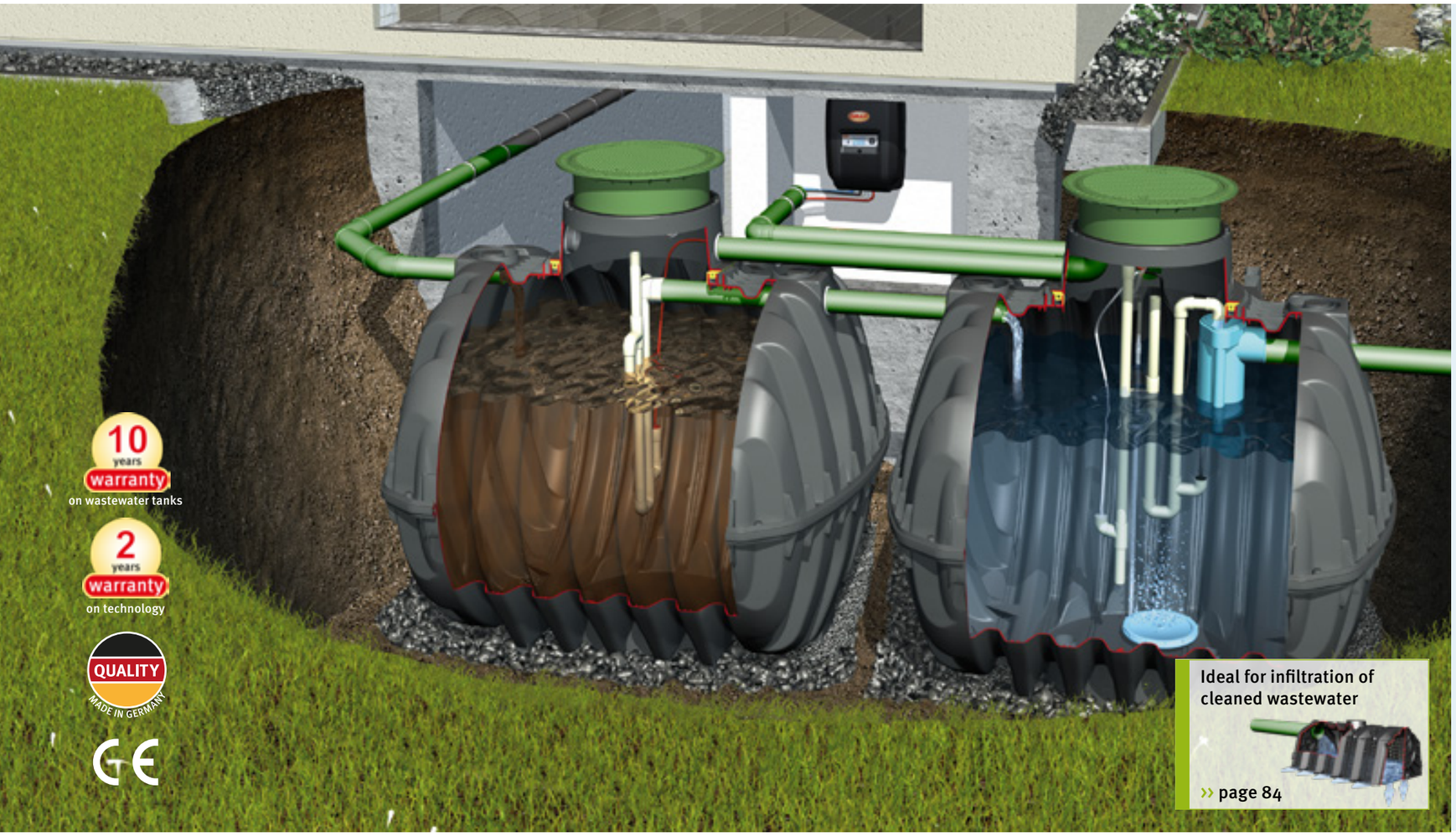
KLcontrol.M

2 years warranty

- ✓ Incredible cost saving due to very low power consumption
- ✓ System can be easily adjusted if required which will reduce costs for technician
- ✓ More comfortibility at home (with the controller KLcontrol.M)
  - Automatic holiday mode
  - System adjust itself by changing life situation

Klaro E Professional

Multitank system



Ideal for infiltration of cleaned wastewater

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Technical data

System Klaro E Professional	
System conformity	EN 12566-3
Purifying technology	fully biological SBR lifting technology
Multitank systems available up to	50 inhabitants | 7,500 l/d
Maintenance interval	1 – 2 per year
Warranty for underground tank	10 years
Warranty for purifying technology	2 years

Parameter		
COD (chemical oxygen demand)	91.9 %	51 mg/l
BOD_5 (biochemical oxygen demand)	95.9 %	12 mg/l
SS (suspended solids)	94.4 %	20 mg/l
NH_4-N	65.6 %	12 mg/l
N_{total}	57.1 %	24 mg/l
P_{total} (mit +P Modul)	–	–
$eColi_{+H}$ (mit +H Modul)	–	–

Results of practical testing undertaken by the Prüfinstitut für Abwassertechnik (Testing Institute for Wastewater Technology), Aachen

Accessories

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Separators
For more information about our separators, ask for our catalogue.

Klaro E Professional multitank system

Webcode G5103

Inhabitants [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Total volume [l]	Volume [l]	Length* [mm]	Width* [mm]	Height [mm]	Weight [kg]
16 – 22	3,300	1.32	9600	2 x 4,800	5160	1985	2430	185
20 – 28	4,200	1.68	13,000	2 x 6,500	5380	2190	2710	220
25 – 32	4,800	1.92	15,000	4 x 3,750	10700	2000	2200	300
32 – 44	6,600	2.64	19,200	4 x 4,800	11100	2200	2430	370
42 – 50	7,500	3.00	26,000	4 x 6,500	11100	2200	2710	440

Scope of supply: Carat S underground tanks, tank domes, telescopic dome shafts 600, Klaro E Professional system pack for multitank system (›› page 74 – the GRAF modular system). Please order the air hoses separately (›› page 31).
* Total measurement

Additional modules

- +C Carbon infeed module
- +O Pump-operated outlet module
- +B Module buffer pump for short-term peak loads
- +D Denitrification module
- +H Hygiene modules
- +P Phosphate removal module
- +R Remote transmission modules

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Klaro L

60 – 180 PE (9,000 – 27,000 l/day)

Ideal for infiltration of cleaned wastewater

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10 years warranty on wastewater tanks

2 years warranty on technology

QUALITY MADE IN GERMANY

Technical data

System	Klaro L
System conformity	ATV A-122
Purifying technology	fully biological SBR lifting technology
Multi-tank systems available up to	180 inhabitants | 27,000 l/d
Maintenance interval	3 – 4 per year
Warranty for underground tank	10 years
Warranty for purifying technology	2 years

Separators
For more information about our separators, ask for our catalogue.

Klaro L system for the Carat S underground tank

Webcode G5106

Inhab. [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Total number of tanks	Primary treatment [capacity in l]	SBR tank [capacity in l]	Required air hoses [quantity x Ø mm]	Length* [m]	Width* [m]
60	9,000	3.60	4	2 x 6,500	2 x 6,500	6 x 19	11.10	2.20
90	13,500	5.40	5	2 x 6,500	3 x 6,500	9 x 19	11.10	4.90
120	18,000	7.20	7	3 x 6,500	4 x 6,500	12 x 19	11.10	4.90
150	22,500	9.00	9	4 x 6,500	5 x 6,500	14 x 19	14.00	4.90
180	27,000	10.80	10	4 x 6,500	6 x 6,500	16 x 19	11.10	7.60

Scope of supply: Carat S underground tanks tank domes maxi, telescopic dome shafts 600, system pack Klaro L and control cabinet for internal fitting. The air hoses from the underground tanks to the control panel are not included.
*Total measurements (›› page 74 – the GRAF modular system)

External steel cabinet XL
For 60 – 150 inhabitants
›› page 42

External steel cabinet XXL
For 160 – 200 inhabitants
›› page 43

Sampling point External DN 400 / For systems

Order no. 107321 pedestrian

Order no. 107561 vehicle load

Sampling point, internal
For two- and multitank systems ≤ 60 PE

Order no. 107170

Covers

- Suitable for pedestrian or car loading

›› page 76/77

Extention 300 mm

Order no. 371003

Additional modules

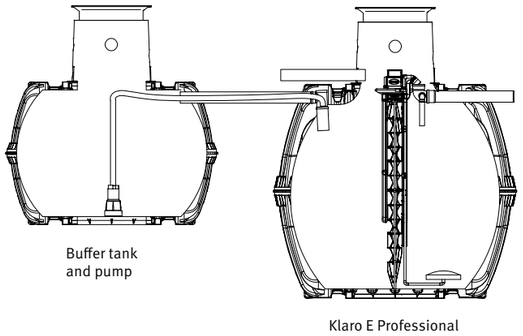
- +D Denitrification module
- +H Hygiene modules
- +P Phosphate removal module
- +R Remote transmission modules
- +C Carbon infeed module

›› page 24/25

Additional modules

+B Module buffer pump for short-term peak loads

Only suitable for Klaro E Professional



On request

+D Denitrification module

The +D module for denitrification (removal of nitrogen) results in the clarified water quality satisfying very strict requirements. The GRAF systems thereby attain a N_{total} value (total parameters of inorganic nitrogen compounds) of less than 25 mg/l.

On request

+O Pump-operated outlet module

Lift the clear water when the outlet pipe is lower than the water course.

On request

+C Carbon infeed module

Solution for weekend homes
The addition of carbon as a nutrient allows the purification process to continue and prevents the biology from dying off.

Suitable from 60 – 1000 PE
Order no. 105941

For systems up to 50 PE
Order no. 105946

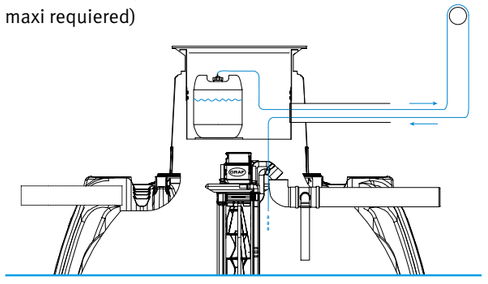
Fixing plate for canister (+P / +C)
Convenient positioning of the precipitant canister inside the tank dome (tank dome maxi requiered)

+P Phosphate removal module

Phosphate in water results in a massive build-up of algae. The GRAF +P module ensures the safe removal of phosphate and therefore great water quality

Suitable from 60 – 1000 PE
Order no. 105962

For systems up to 50 PE
Order no. 105958



On request

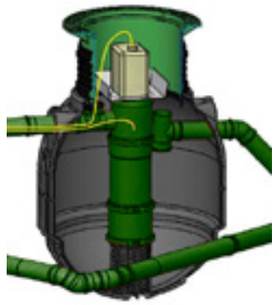
+R Remote transmission modules

Remote monitoring allows error messages to be transmitted to mobile phones and operating data to be queried by text message. Convenient remote wastewater treatment system controled by GSM (CSD, GRPS as option) or LAN is also possible.

- Greater efficiency
- Greater operating reliability
- Optimised service intervals
- Greater customer benefit thanks to monitoring service
- Low-cost remote diagnosis in the event of a fault without the service fitter having to come on site

On request

UV module



Chlor module

+H Hygiene module – Disinfection

Disinfection using the +H module (by chlor or UV) satisfies even the most stringent of purity requirements for a GRAF wastewater treatment system. It reliably kills off germs and microorganisms. The clarified water therefore complies with the EU Bathing Water Directive.

On request

- Easy to operate
- Maintenance-friendly thanks to easy-to-remove module
- Fitted in downstream shaft

+H Hygiene module – Sand filtration

In case of strict effluent quality requirements or high influent load variations, the GRAF sand filtration module is recommended to enhance and stabilize the purification performance of your sewage treatment system. The self cleaning dual media filtration system reduces suspended solids, COD and BOD of the secondary clarified effluent and may also serve to prevent debris in downstream installed storage or collection tanks for the re-use of wastewater.

On request

- Patented, simple and valve-free setup with automatic gravitationally driven backwash for minimal maintenance requirements
- Certified performance according to EN 12566-7
- Prefabricated plug and play system guarantees minimal work for piping and installation onsite
- Robust UV- and waterproof housing with lock for outside installation

Re-use of wastewater
bluecycle (Chlorination & Sand Filter)

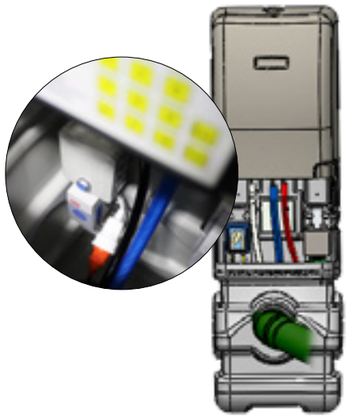
Wastewater re-use

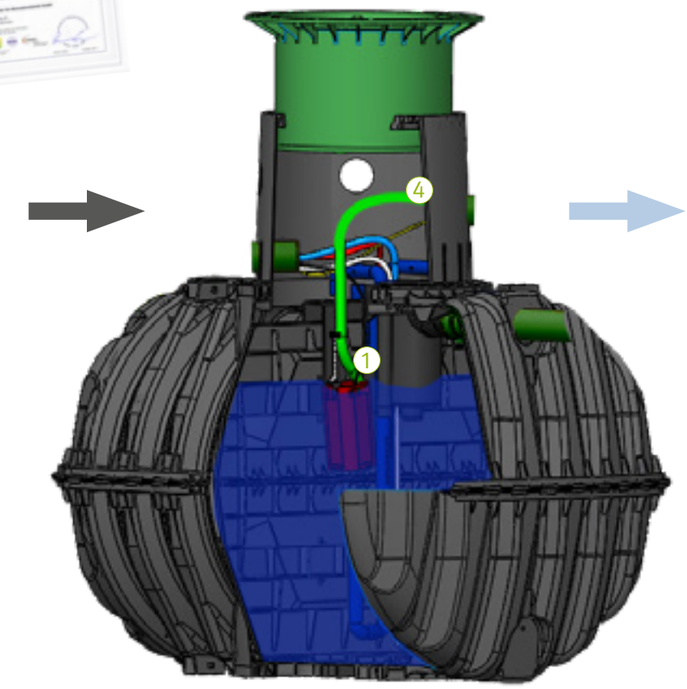
Avoid the wastage of precious fresh water resources through the re-use of highly treated wastewater for outdoor purposes like gardening. We recommend you combine the advantages of GRAF sand filtration and GRAF chlorination subsequent to your GRAF biological sewage treatment plant for the safe re-use and storage of your treated wastewater.

- Reduction of suspended solids, COD and BOD followed by chemical disinfection
- Prevention of pathogen regrowth and fouling in water hoses and irrigation systems through the long-term effect of chlorine
- Filtration upstream of the disinfection stage reduces the chlorine demand effectively and prevents debris in the chlorine contact basin
- Certified performance according to EN 12566-7

External plastic cabinet M

With auxiliary control and dosing pump for chlorine module



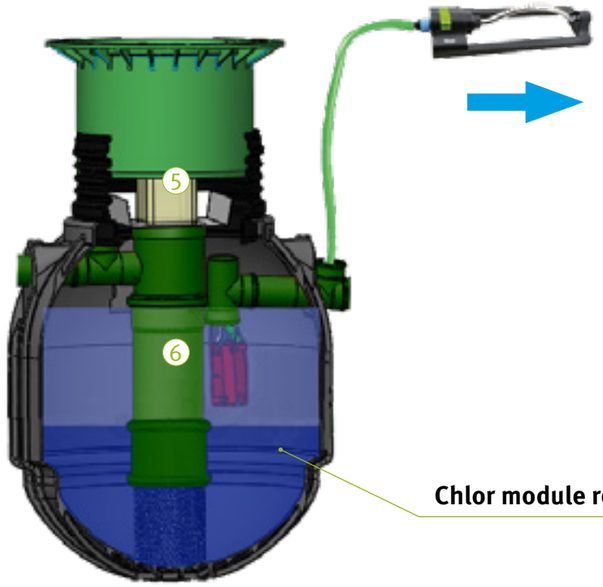


Re-use for:

- ✓ Harvesting lawn and flowers
- ✓ Harvesting fruit and vegetable garden
- ✓ Clean your car
- ✓ General cleaning

CONTROLLABLE CHLORINE DOSING

Sand filter



Chlor module reaction tank

Bluecycle components:

1. Oxylift clearwater pump
2. Dosing pump with auxiliry control for Chlorine
3. Sand filter
4. 5 m Clearwater hose 1 ¼''
5. Tray for Chlorine canister
6. Reaction tank for tertiary treatment

Chlorination with well available liquid sodium hypochlorite solution

- Safe and simple handling of the disinfection chemical
- Easy adjustment of the chlorine dosage pump to meet site-specific requirements
- Volume-proportional disinfectant dosing for low and stable chemical consumption
- Process kills near all the ecoli

Performance Results bluecycle	
eColi	99.9 %
Total coliforms	99.9 %

Results of practical testing undertaken by the Prüfinstitut für Abwassertechnik (Testing Institute for Wastewater Technology), Aachen

bluecycle – re-use your treated water

Webcode G5123

Up to 24 PE
Order no. 106390

Up to 32 PE
Order no. 106574

External Plastic Cabinet S

For one2clean

The image shows the External plastic cabinet S for 3 – 18 inhabitants

Benefits

- ✓ Flexible application of the proven one2clean control cabinet in a plastic external column
- ✓ Weather-resistant plastic
- ✓ Edge seal for complete sealing over the ground
- ✓ High corrosion protection for the electrical parts
- ✓ Good value for money
- ✓ Easy assembly
- ✓ No foundation necessary

External plastic cabinet S

For 3 – 18 inhabitants (up to 2,700 l/d)

Order no. 107990

Technical data

For air compressors	XP 80, HP 100-200
Upstream fuse	B16A (provided by customer)
Voltage supply	230 V AC ± 20 %, 50 Hz
IP	IP44
Relative air humidity	10 to 95 %
Temperature range	-25°C to +50°C
Total weight	7 kg (15.4 lbs)
Connecting line	via two-pin earthed plug

Compatibility

one***2clean***	3 – 18 PE

External Plastic Cabinet M

For one2clean/one2clean plus/Klaro E Professional

The image shows the External plastic cabinet M for 3 – 18 inhabitants with LED warning light

Benefits

- ✓ Easy access for the maintenance fitter
- ✓ Function checking is simple as the control unit is located immediately next to the system
- ✓ Ideal solution for large distances from the house (› 20 m)
- ✓ Flexible use of the proven GRAF Internal PP control cabinet in the external plastic cabinet M (size 3 – 18 inhabitants)
- ✓ Lockable housing in sturdy, weather-resistant plastic
- ✓ Integrated double power socket for easy maintenance
- ✓ No foundation necessary

External plastic cabinet M

For 3 – 18 inhabitants (up to 2,700 l/d)

Order no. 106589

Technical data

For air compressors	LA 80, XP 80, HP 100 – 200
Upstream fuse	B16A (provided by customer)
Voltage supply	230 V AC ± 20 %, 50 Hz
IP	IP44
Relative air humidity	10 to 95 %
Temperature range	-25°C to +50°C
Total weight	10 kg (22 lbs)
Connecting line	via two-pin earthed plug

Compatibility

one***2clean***	3 – 18 PE
one***2clean*** plus	3 – 18 PE
Klaro E Professional	3 – 28 PE

Accessories for small Wastewater Treatment Systems

Odour-tight empty pipe seal DN 110 for systems compatible with SBR-hose packages up to 28 PE

- Ensures no air, humidity or gas escapes from conduit pipe
- No need for PU seals
- Clean and professional solution

Order no. 107887

SBR hose package

For one2clean / one2clean plus (one-tank systems)
Includes: 1 x Ø 19 mm and 1 x Ø 13 mm
PVC hose; colour-coded

Length: 10 m

Order no. 107686

Length: 20 m

Order no. 107688

Other SBR-hoses on request

External Plastic Cabinet L

For Klaro E Professional

The image shows the External plastic cabinet L with LED warning light for 20 inhabitants

Benefits

- ✓ Easy access for the maintenance fitter
- ✓ Function checking is simple as the control unit is located immediately next to the system
- ✓ Lockable housing (simultaneous locking) in sturdy, weather-resistant plastic
- ✓ Hose connections colour-coded
- ✓ No foundation necessary

External plastic cabinet L

For 16 – 44 inhabitants (up to 6,600 l/d)

On request

Technical data

For air compressors	LA 120, 200, DT 4.10, 4.16
Upstream fuse	B16A (provided by customer)
Voltage supply	230 V AC ± 20 %, 50 Hz
IP	IP 44
Relative air humidity	10 to 95 %
Temperature range	-25°C to +50°C
Total weight	22 kg
Connecting line	via two-pin earthed plug
Air compressor	230 V
Stepped motors	24 V

Compatibility

Klaro E Professional	16 – 44 PE

External Steel Cabinet XL

For Klaro E Professional

The image shows the External steel cabinet XL for 50 inhabitants

Benefits

- ✓ Particularly robust design of powder coated steel sheet (1.5 mm / 0.005")
- ✓ Spray proof (IP 44)
- ✓ Lockable housing
- ✓ Hose connections colour-coded

External steel cabinet XL

For 42 – 50 inhabitants (up to 7,500 l/d)

On request

Solid foundation must be provided on-site.

Technical data

For compressors	DT 4.25
External surfaces	Steel sheet 1.5 mm (0.005"), powder coated
Lock	Espagnolette lock (simultaneous locking), pivoted lever lock incl. profile half cylinder
Dimensions (W x H x D)	1140 x 1080 x 720 mm
Empty weight	140 kg

Compatibility

Klaro E Professional	42 – 50 PE

Accessories for small Wastewater Treatment Systems

Cooling ventilation fan for External Plastic cabinet M

Order no. 105954

Cooling ventilation fan for External Plastic cabinet L

Order no. 105952

Warning lamp for external plastic cabinet M

Order no. 105955

Warning light
LED warning light pre-assembled on an External cabinet L, XL, XXL

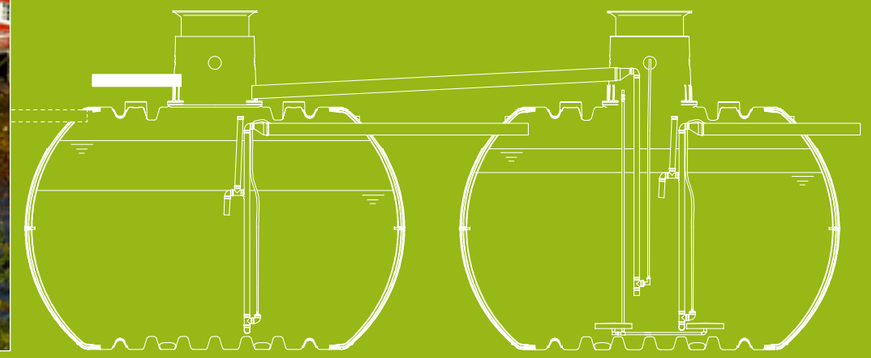
Order no. 105956

Filling granulat for External plastic cabinet L
Prevents soil moisture from rising into the cabinet. 1 bag required; 50 l bag

Order no. 107607

Fully- Prefitted Wastewater Treatment Systems

› System Comparison Page 34
› one2clean plus XXL Page 36
› Klaro XL Page 38
› Klaro XXL Page 40
› External Cabinets Page 42



System Comparison

Higher demands and space problems

70 inhabitants | 10,500 l/d

System	one*2clean* plus XXL
Example applications	for projects with higher demands on nutrients removal and space problems
Page	36/37
System conformity	EN 12566-3 / ATV A-122
Purifying technology	fully biological SBR lifting technology
Systems available up to	70 inhabitants | 10,500 l/d
Maintenance interval	2 – 4 per year
Warranty for underground tank	10 years
Warranty for purifying technology	2 years

Control	
+D Removal of nitrogen	●
+P Phosphate removal	○
+C Carbon infeed	○
+H Disinfection	○
+R Remote transmission controlled by GSM (CSD, GPRS as option) or LAN	○
Control power failure recognition	●
Temperature sensor to protect against overheating	●
Logbook function	●
USB-Slot for display size an logging	●
External control cabinet for installing control unit outdoors	○

● Standard equipment ○ Available as options

Residential and commercial

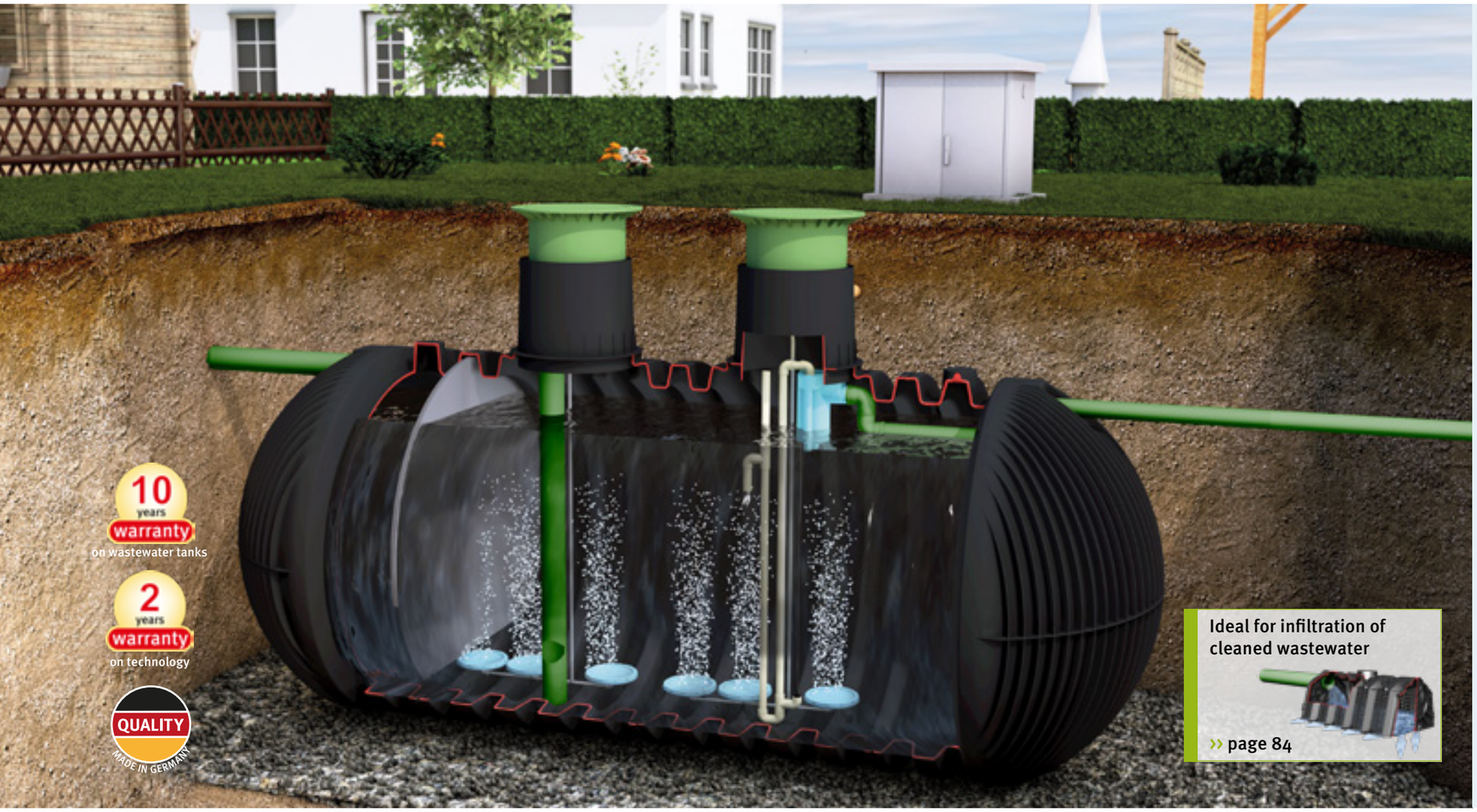
1000 inhabitants | 150,000 l/d

System	XL | XXL Retrofitting
Example applications	for residential and commercial projects
Page	38 – 41
System conformity	ATV A-122
Purifying technology	fully biological SBR lifting technology
Systems available up to	1500 inhabitants | 225,000 l/d
Maintenance interval	2 – 4 per year
Warranty for underground tank	10 years
Warranty for purifying technology	2 years

Control	
+D Removal of nitrogen	○
+P Phosphate removal	○
+C Carbon infeed	○
+H Disinfection	○
+R Remote transmission controlled by GSM (CSD, GPRS as option) or LAN	○
Control power failure recognition	●
Temperature sensor to protect against overheating	●
Logbook function	●
USB-Slot for display size an logging	●
External control cabinet for installing control unit outdoors	○

one*2clean* plus **XXL**

24 – 70 PE (3,600 – 10,500 l/day)



Ideal for infiltration of cleaned wastewater

›› page 84

Technical data

System	one*2clean* plus **XXL**
System conformity	EN 12566-3 ≤ 50 PE / ATV A-122 › 50 PE
Purifying technology	fully biological SBR lifting technology
One-tank systems available up to	70 inhabitants | 10,500 l/d
Maintenance interval	2 per year
Warranty for underground tank	10 years
Warranty for purifying technology	2 years

Download

sizing form
www.graf.info

Sampling point External DN 400, pedestrian

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one*2clean* plus **XXL** system – fully prefitted in the Carat XXL underground tank

Webcode G5115

Inhabitants [max.]	Volume [litres]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Required air hoses [quantity x Ø mm]	Length* [m]	Width* [m]	Order no.
24	16,000	3,600	1.44	2 x 19	4.66	2.50	106261
32	22,000	4,800	1.92	2 x 19	6.15	2.50	106262
45	32,000	6,750	2.7	2 x 19	8.53	2.50	106264
50	38,000	7,500	3.0	2 x 19	10.01	2.50	106265
60	44,000	9,000	3.6	4 x 19	11.50	2.50	106064
70	48,000	10,500	4.2	5 x 25	12.40	2.50	106359

Scope of supply: Carat XXL underground tank, tank domes maxi, telescopic dome shafts 600, factory pre-fitted technology and control cabinet for internal fitting. Air hoses are not included and must be ordered separately. *Total measurements

External plastic cabinet L
for 24 – 32 PE

›› page 30

External steel cabinet XL
for 45 – 70 PE

›› page 31

Sampling point, internal

For systems ≤ 60 PE

Order no. 107170

Sampling point External DN 400

For systems › 60 inhabitants

Order no. 107321 pedestrian

Order no. 107561 vehicle load

Covers

- Suitable for pedestrian or car loading

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Filling granulat for External plastic cabinet L

Prevents soil moisture from rising into the External plastic cabinet L. 1 bag required for 24 – 32 inhabitants; 50 l bag

Order no. 107607

Additional modules

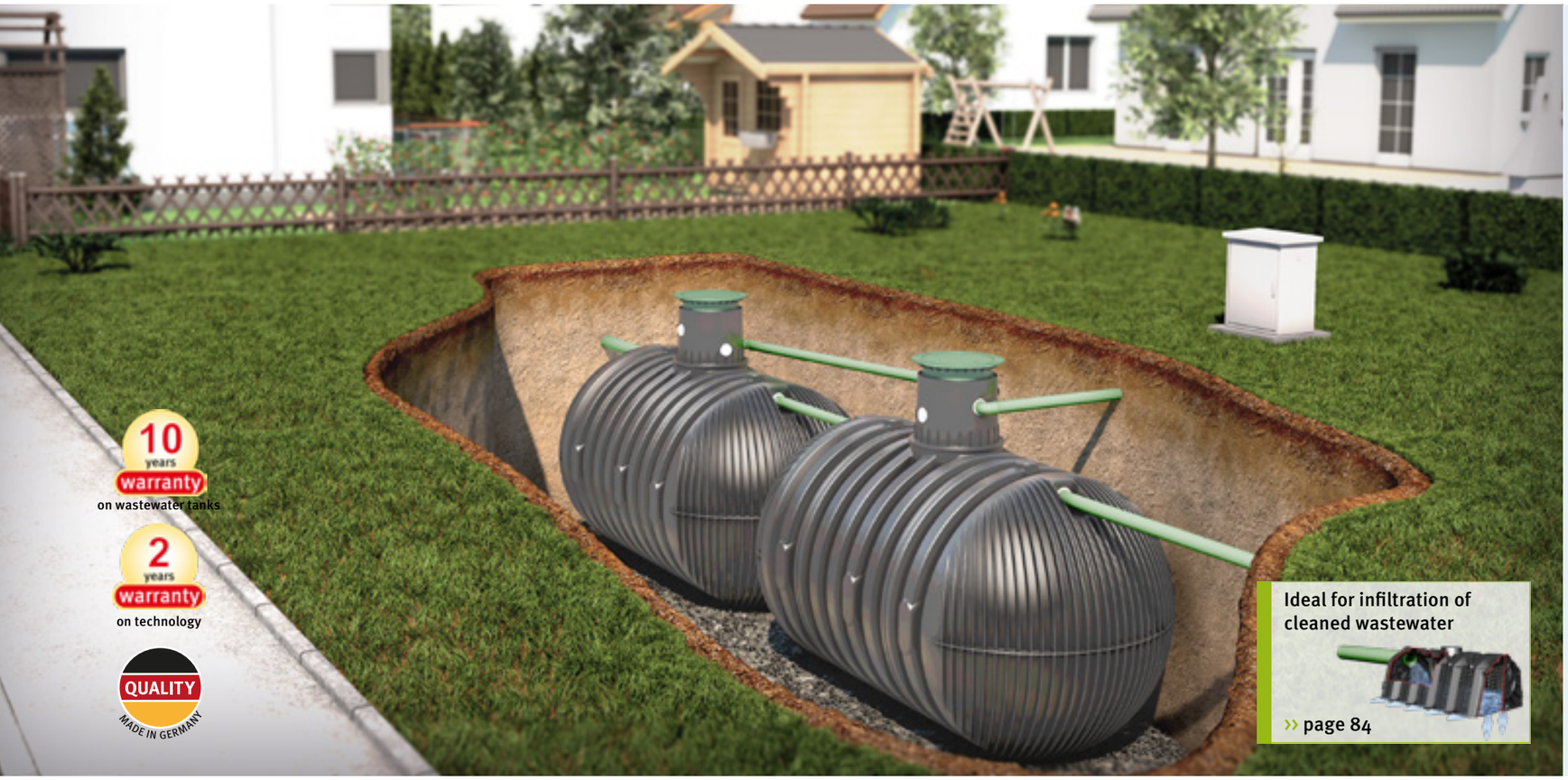
+D modules included

- +H Hygiene modules
- +P Phosphate removal module
- +C Carbon infeed module
- +R Remote transmission module

›› page 24/25

Klaro XL

38 – 200 PE (5,700 – 30,000 l/day)



Ideal for infiltration of cleaned wastewater

›› page 84

Technical data

System	Klaro XL
System conformity	ATV A-122 › 50 PE
Purifying technology	fully biological SBR lifting technology
Multi-tank systems available up to	200 inhabitants | 30,000 l/d
Maintenance interval	2 – 4 per year
Warranty for underground tank	10 years
Warranty for purifying technology	2 years

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Klaro XL system – fully prefitted in the Carat XL underground tank

Webcode G5108

Inhab. [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD_5/d]	Total number of tanks	Primary treatment [capacity in l]	SBR tank [capacity in l]	Required air hoses [quantity x Ø mm]	Length* [m]	Width* [m]	Order no.
38**	5,700	2.28	2	1 x 8,500	1 x 8,500	3 x 13, 1 x 19	7.50	2.04	107755
46**	6,900	2.76	2	1 x 10,000	1 x 10,000	3 x 13, 1 x 19	7.54	2.24	107756
80	12,000	4.80	4	2 x 8,500	2 x 8,500	6 x 19	15.50	2.04	106172
100	15,000	6.00	4	2 x 10,000	2 x 10,000	6 x 19	15.58	2.24	106173
120	18,000	7.20	5	2 x 8,500	3 x 8,500	9 x 19	11.50	7.12	106174
145	21,750	8.70	5	2 x 10,000	3 x 10,000	9 x 19	11.56	7.72	106175
165	24,750	9.90	7	3 x 8,500	4 x 8,500	12 x 19	7.50	9.66	106176
200	30,000	12.00	7	3 x 10,000	4 x 10,000	12 x 19	7.54	10.46	106177

Scope of supply: Carat XL underground tanks, tank dome maxi, telescopic dome shafts 600, factory pre-fitted technology and control cabinet for internal fitting. The air hoses from the underground tanks to the control panel are not included.
*Total measurements **Only removal of carbon

External plastic cabinet L
For 38 – 46 inhabitants
›› page 42

External steel cabinet XL
For 80 – 145 inhabitants
›› page 42

External steel cabinet XXL
For 180 – 200 inhabitants
›› page 43

Sampling point, internal
For systems ≤ 60 PE
Order no. 107170

External Universal shaft, DN 400
For systems › 60 inhabitants
Order no. 107321 pedestrian
Order no. 107561 vehicle load

Covers
- Suitable for pedestrian or car loading

›› page 76/77

Extention 300 mm
Order no. 371003

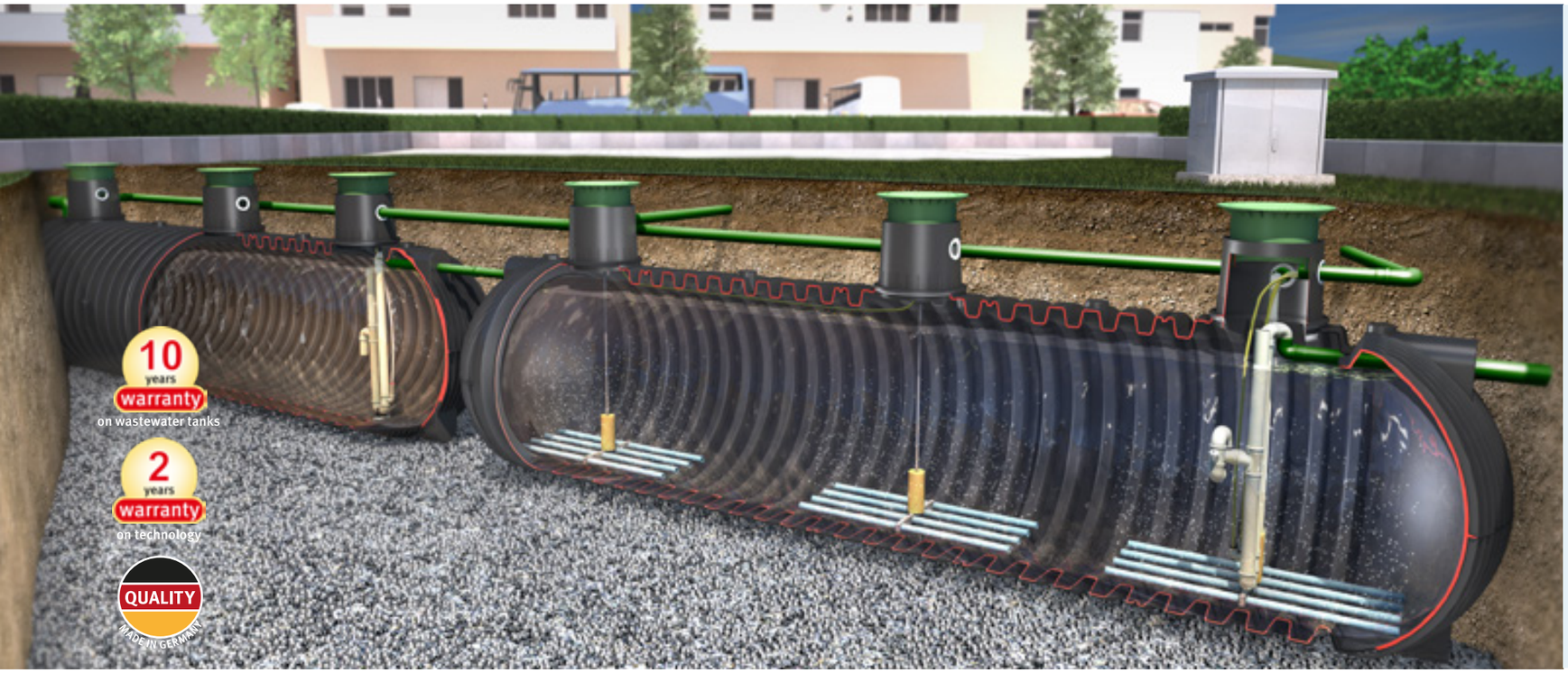
Additional modules

- +D Denitrification module
- +H Hygiene modules
- +P Phosphate removal module
- +R Remote transmission modules
- +C Carbon infeed module

›› page 24/25

Klaro XXL

75 – 1000 PE (11,250 – 150,000 l/day)



Technical data

System	Klaro XXL
System conformity	ATV A-122 › 50 PE
Purifying technology	fully biological SBR lifting technology
Multi-tank systems available up to	1000 inhabitants | 150,000 l/d
Maintenance interval	3 – 4 per year
Warranty for underground tank	10 years
Warranty for purifying technology	2 years

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Ideal for infiltration of cleaned wastewater

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Klaro XXL system – fully prefitted in the Carat XXL underground tank

Webcode G5109

Inhabitants [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Primary treatment [capacity in l]		SBR tank [capacity in l]	Required air hoses [quantity x Ø mm]	Length* [m]	Width* [m]	Order no.
75	11,250	4.50	1 x 16,000		1 x 16,000	3 x 19, 1 x 25	9.90	2.50	106125
100	15,000	6.00	1 x 22,000		1 x 22,000	5 x 19	12.90	2.50	106404
150	22,500	9.00	1 x 32,000		1 x 32,000	6 x 25	17.70	2.50	106106
200	30,000	12.00	2 x 22,000		2 x 22,000	10 x 25	26.40	2.50	106970
250	37,500	15.00	1 x 52,000		2 x 32,000	12 x 25	13.30	8.70	106049
300	45,000	18.00	1 x 52,000		2 x 32,000	12 x 25	13.30	8.70	106050
350	52,500	21.00	3 x 22,000		2 x 38,000	12 x 25	19.90	5.60	on request
400	60,000	24.00	3 x 22,000		2 x 44,000	18 x 25	21.40	5.60	on request
450 / 500	75,000	30.00	3 x 22,000		4 x 32,000	24 x 25	27.50	5.60	on request
550 / 600	90,000	36.00	3 x 26,000		4 x 32,000	24 x 25	16.20	11.80	on request
650 / 700	105,000	42.00	1 x 42,000	2 x 32,000	4 x 38,000	24 x 25	27.50	5.60	on request
750 / 800	120,000	48.00	1 x 38,000	3 x 22,000	6 x 28,000	30 x 25	26.20	8.70	on request
850 / 900	135,000	54.00	1 x 54,000	3 x 22,000	6 x 34,000	36 x 25	29.10	8.70	on request
950 / 1000	150,000	60.00	1 x 54,000	3 x 22,000	6 x 28,000	36 x 25	30.50	8.70	on request

Scope of supply: Carat XXL underground tank, tank domes maxi, telescopic dome shafts 600, factory pre-fitted technology and control cabinet for internal fitting. The air hoses from the underground tanks to the control panel are not included. *Total measurements

External steel cabinet XL
For 75 – 150 inhabitants

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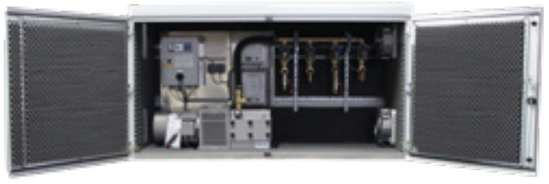

External steel cabinet XXL
For 200 – 1000 inhabitants

›› page 43

Accessories

External Universal shaft, DN 400

For systems ›60 inhabitants
Order no. 107321 pedestrian
Order no. 107561 vehicle load

Covers

- Suitable for pedestrian or car loading

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Extention 300 mm

For universal shaft 600
Order no. 371003

Compact dosing pump for external cabinet XL/XXL

0 – 37 ml/min
Order no. 105962

Additional modules

- +D Denitrification module
- +P Phosphate removal module
- +C Carbon infeed module
- +H Hygiene modules
- +R Remote transmission modules

›› page 24/25

External Cabinets

For one2clean plus XXL, Klaro L|XL|XXL

External plastic cabinet L

- ✓ Easy access for the maintenance fitter
- ✓ Function checking is simple as the control unit is located immediately next to the system
- ✓ Lockable housing (simultaneous locking) in sturdy, weather-resistant plastic
- ✓ Hose connections colour-coded
- ✓ No foundation necessary

On request

External steel cabinet XL

- ✓ Particularly robust design of powder coated steel sheet (1.5 mm / 0.005")
- ✓ Spray proof (IP 44)
- ✓ Lockable housing
- ✓ Hose connections colour-coded

Solid foundation must be provided on-site.

On request

External steel cabinet XXL

- ✓ Particularly robust design of powder coated steel sheet (1.5 mm / 0.005")
- ✓ Spray proof (IP 44)
- ✓ Lockable housing
- ✓ Hose connections colour-coded

Solid foundation must be provided on-site.

For 165 – 1,000 inhabitants (up to 150,000 l/d)

On request

Technical data

For air compressors	LA 120, 200, DT 4.10, 4.16	DTN 41, KDT 3.60, KDT 3.80	KDT 3.100, 3.140
Upstream fuse	B16A (provided by customer)	B16A (provided by customer)	B16A (provided by customer)
Voltage supply	230 V AC ± 20 %, 50 Hz	380 VAC, 3~, 50 Hz	380 VAC, 3~, 50 Hz
IP	IP 44	IP 44	IP 44
Relative air humidity	10 to 95 %	10 to 95 %	10 to 95 %
Temperature range	-25°C to +50°C	-25°C to +50°C	-25°C to +50°C
Total weight	22 kg	140 kg	210 kg
Connecting line	via two-pin earthed plug	via four-pin earthed plug	via four-pin earthed plug
Air compressor	230 V	380 V	380 V
Stepped motors	24 V	24 V	24 V
External surfaces	Plastic	Steel sheet 1.5 mm, powder coated	Steel sheet 1.5 mm, powder coated
Lock	Espagnolette lock (simultaneous locking), pivoted lever, lock incl profile half cylinder	Espagnolette lock (simultaneous locking), pivoted lever lock incl profile half cylinder	Espagnolette lock (simultaneous locking), pivoted lever lock incl profile half cylinder
Dimensions (W x H x D)	480 x 1750 x 340 mm	1140 x 1080 x 720 mm	2000 x 1100 x 900 mm

Compatibility

one*2clean* plus *XXL*	24 – 32 PE	45 – 70 PE	–
Klaro L	–	60 – 150 PE	180 PE
Klaro XL	38 – 46 PE	80 – 145 PE	165 – 200 PE
Klaro XXL	–	75 – 150 PE	200 – 1000 PE
Klaro XXL retrofitting	–	on request	on request

Accessories

Filling granulate for External plastic cabinet L

Prevents soil moisture from rising into the cabinet; 1 bag required 50 litre bag

Order no. 107607

Cooling ventilation fan for External Plastic cabinet L

Order no. 105952

Warning light

LED warning light pre-assambled on an External cabinet L, XL, XXL

Order no. 105956

SBR hose Ø 19 mm, 20 m roll

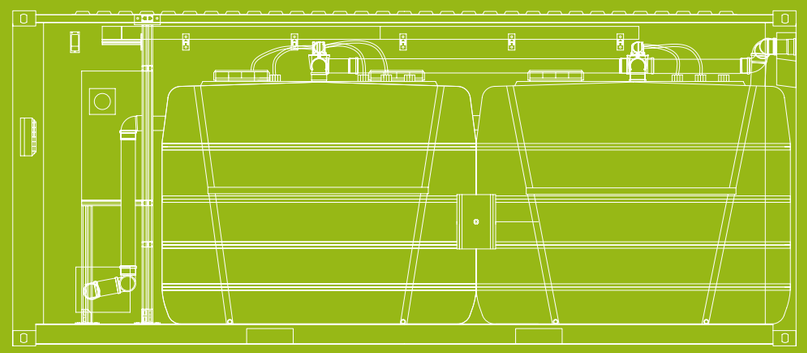
transparent	Order no. 934692
red	Order no. 934693
blue	Order no. 934020
black	Order no. 934694

SBR hose Ø 25 mm

transparent	Order no. 934002

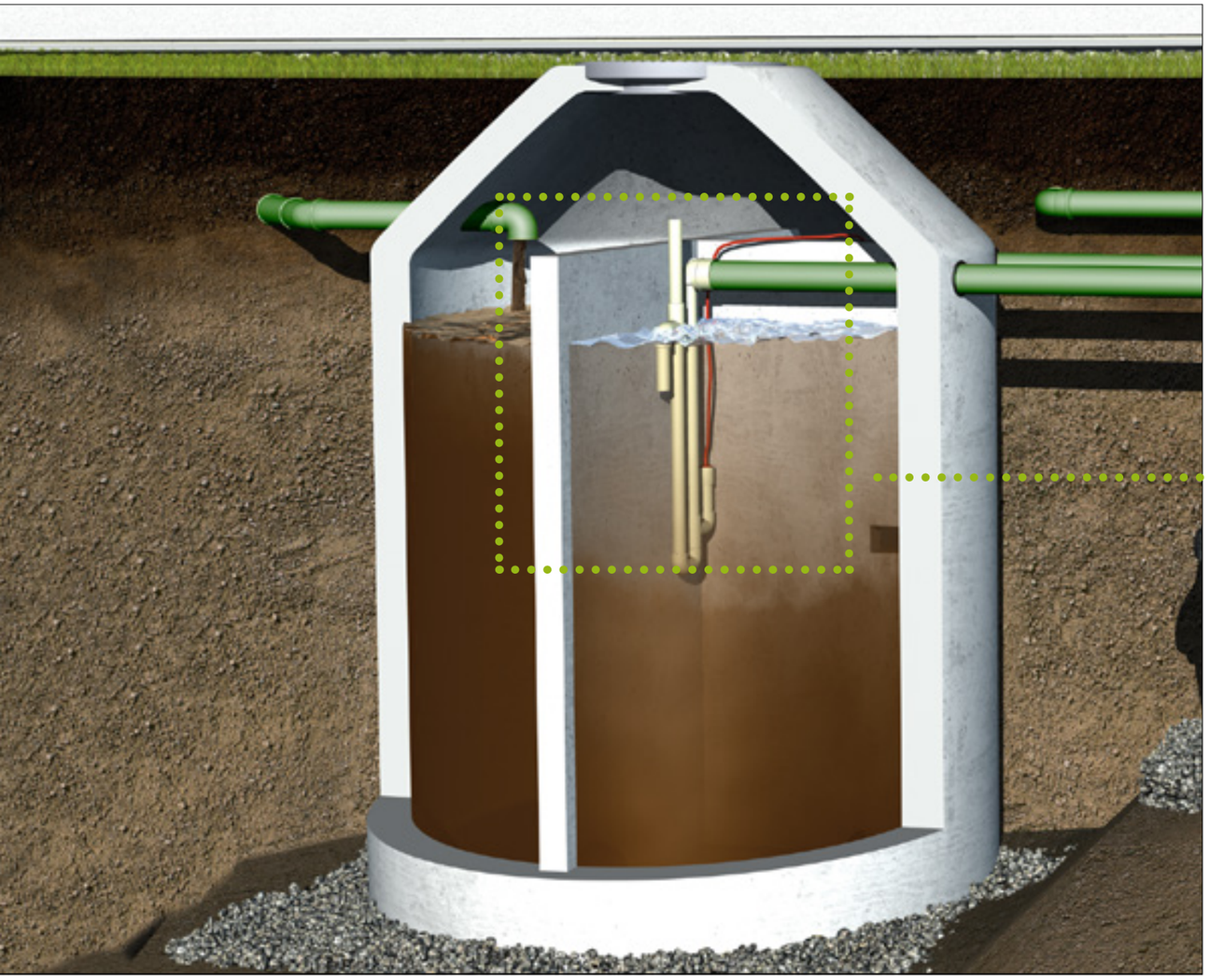
Special Wastewater Treatment Systems

› Klaro E Professional Retrofitting Page 46
› Klaro XXL Retrofitting Page 48
› upONE Page 50
› KLARO Container.one Page 52
› grey2clean system Page 54



Klaro E Professional for Retrofitting

5 – 50 PE (750 – 7,500 l/day)



Retrofitting – what needs to be done?

- Empty and clean pit
- Test tank to ensure leak-tightness /seal the baffle
- Measure existing pit: baffle height, diameter/depth dimensions
- Contact GRAF

airlift.blue

airlift.blue
System pack for retrofitting
up to 28 inhab.
Compressor as required

On request

Webcode G5201

Want to bring your multi-chamber pit bang up to date? Then get in touch!
The GRAF system packs allow existing tanks to be used with the proven GRAF Klaro E Professional.

Image shows System pack for retrofitting › 28 inhabitants)

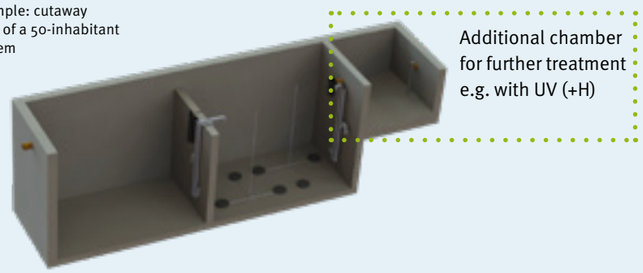
Our experienced team
takes all local circumstances into account to dimension your required system-pack

Klaro XXL Retrofitting for Onsite Concrete Tanks

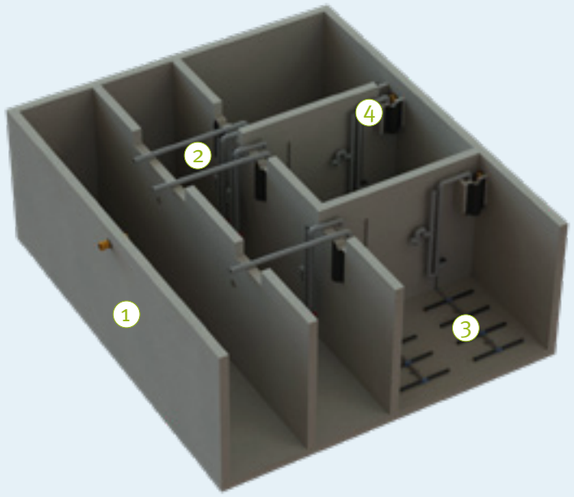
100 – 5000 PE (15,000 – 750,000 l/day)

Our experienced team will help you to plan your project. We take all local circumstances into account from the concept planning phase to implementation.

Example: cutaway view of a 50-inhabitant system



Example: system for 411 inhabitants in a rectangular concrete pit



Checklist

To plan your system, we need the following information:

- **What type of project?**
  (Domestic, hotel, commercial etc.)
- **How many people will use the system and what is the water consumption per head?**
- **What legal requirements apply to wastewater at the location?**
- **Local power grid**

System components

1. Technical calculation for pit size
2. Air lifts
3. Aerator unit
4. Outflow with sampling point

Special requirements

Systems for more than 50 inhabitants work on the same principle as small wastewater treatment systems and use the SBR process. Because of the special requirements involved, all systems for more than 50 inhabitants are planned as individual projects. Our experienced team of engineers and technicians will help you to plan your project. We take all local circumstances into account from the concept planning phase to implementation.

Klaro XXL Retrofitting for onsite concrete tanks

Webcode G5206

Inhabitants [max.]	Max. daily flow [m³/d]	Max. organicload [kg BOD5/d]	Water depth [mm]	Sludge / buffer [m]	SBR chamber [m]	Compressor
100	15	6.00	2500	2.80 x 2.90	2.80 x 2.90	DTN 41
200	30	12.00	2750	2.80 x 5.40	2.80 x 5.40	KDT 3.80
300	45	18.00	3000	2.80 x 7.50	2.80 x 7.50	KDT 3.100
400	60	24.00	3000	5.50 x 4.90	5.50 x 4.90	KDT 3.140
500	75	30.00	3000	5.50 x 6.40	5.50 x 6.40	KDT 3.140
600	90	36.00	3000	5.80 x 6.60	2 x 2.80 x 7.50	2 x KDT 3.100
700	105	42.00	3000	11.20 x 3.90	2 x 5.50 x 4.30	2 x KDT 3.100
800	120	48.00	3000	11.20 x 4.50	2 x 5.50 x 4.90	2 x KDT 3.140
900	135	54.00	3000	11.20 x 5.00	2 x 5.50 x 5.50	2 x KDT 3.140
1000	150	60.00	3000	11.20 x 5.60	2 x 5.50 x 6.40	2 x KDT 3.140

Further sizes up to 5000 PE on request

External cabinets and further accessories

›› page 42

Machine technique

As an alternative to a conventional control cabinet, the technical components can be installed in a dedicated room or machine house. This guarantees sufficient space for all the necessary components and maximum flexibility.

Example: Installation in a machine house

Example: Installation in an existing plant room

upOne Wastewater Treatment System

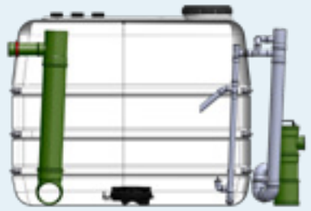
The special solution for above-ground

upOne

Small single-tank compact system

PE	Qd [l/d]	Bd [g/d]	L [mm]	W [mm]	H [mm]	Tank [l]	Order no.
3	450	180	2070	720	1740	2.000	160470
6	900	360	2430	995	2000	4.000	160471

Webcode G5120



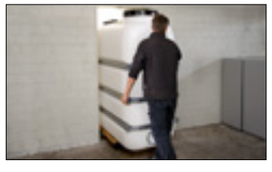
The special solution for above-ground

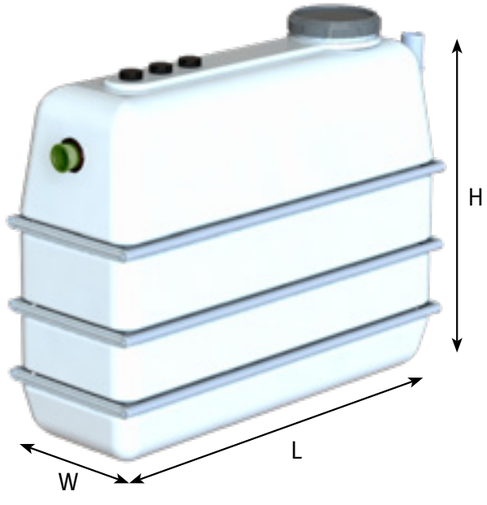
Fully biological wastewater treatment system for treating all domestic sewage with welltried SBR technology. Different tank sizes and system variants possible depending on requirements.

- Sewage treatment tank made from HDPE
- Above-ground installation
- Can be used in very confined spaces
- For low volume of sewage
- Cost-effective

Application areas

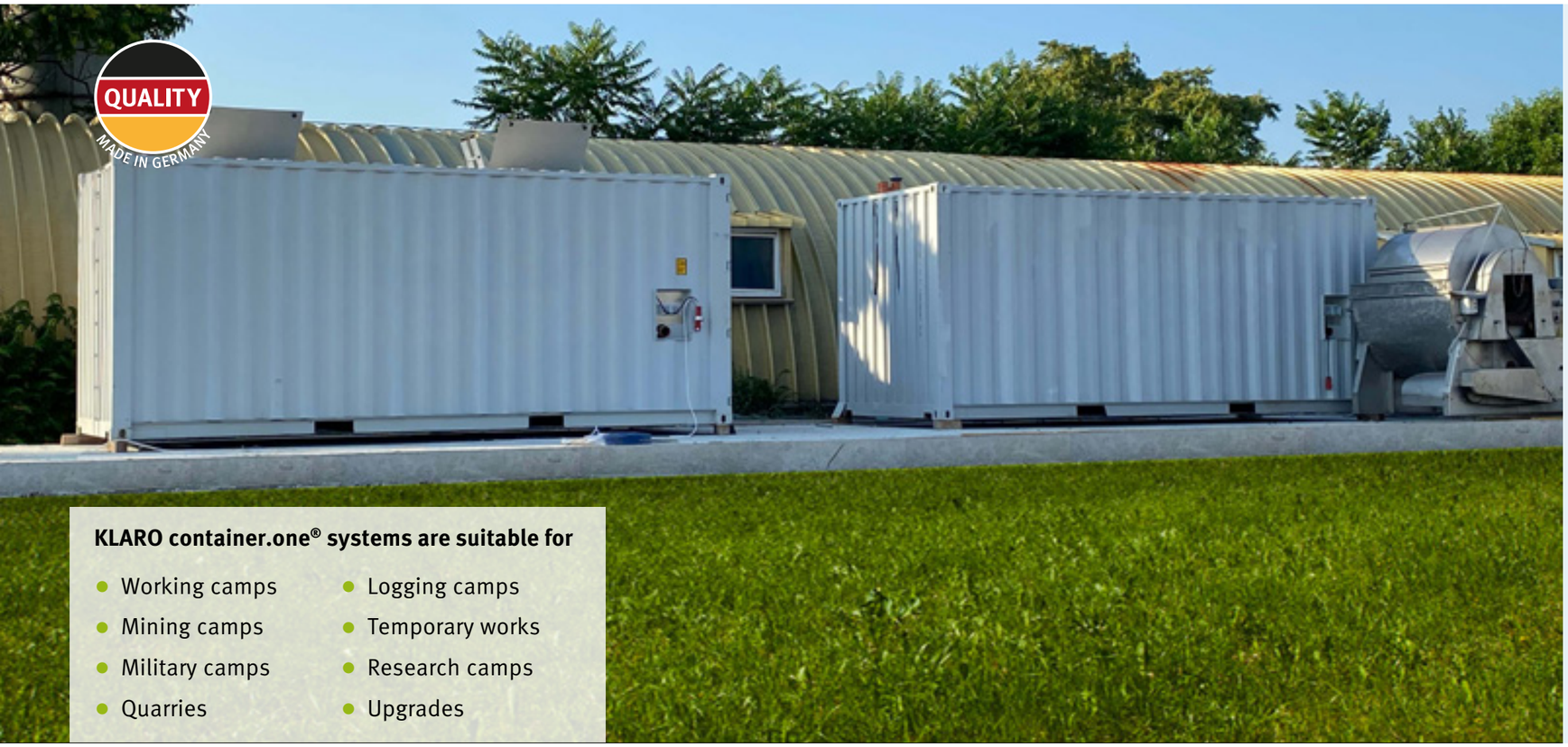
- Alternative if underground installation not possible
- Small businesses
- Retrofitting of existing above-ground systems
- For temporary use
- Test sewage treatment system





Klaro container.one®

The mobile 20 ft (15 m³/d) and 40 ft (30 m³/d) wastewater treatment solution



KLARO container.one® systems are suitable for

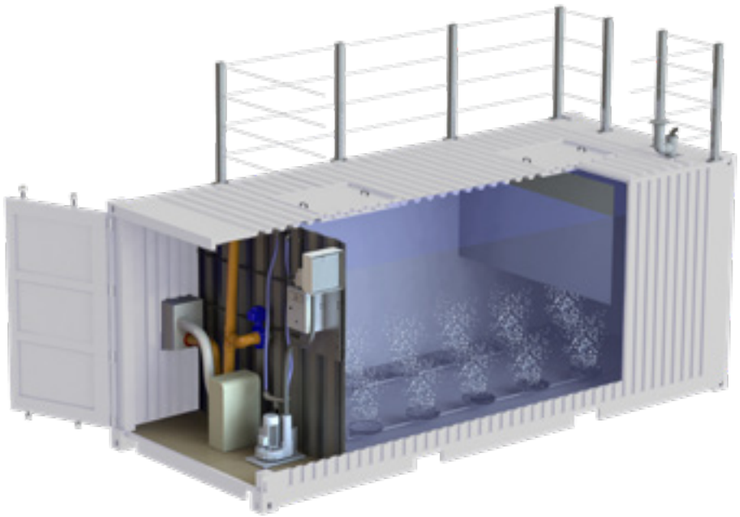
- Working camps
- Mining camps
- Military camps
- Quarries
- Logging camps
- Temporary works
- Research camps
- Upgrades

Technical data

General system data	
Equipment	20 ft side door container
Material	Steel
Weight (tare)	3150 kg
Dimensions	(L) 6058 mm; (B) 2438 mm; (H) 2591 mm
Inlet	DN 110; height 2600 mm
Outlet	DN 110; height 945 mm
Operating voltage	400 V, 50 Hz (60 Hz)
Rated current	16 A
Temperature range	-10°C to +35°C
Power consumption	13 kWh/d

Wastewater treatment data	
Inflow volume	15 m³/d
BOD_5 load	6 kg/d (60 gBOD_5/inhab.*d)
Operating time	24 h
Operation	Automatic

Process quality	
SS (suspended solids)	< 30 mg/l
BOD_5 (biochemical oxygen demand)	< 10 mg/l
COD (chemical oxygen demand)	< 120 mg/l
NH_4-N	< 10 mg/l
N_{total}	< 20 mg/l
P (with P-module)	< 1 mg/l
eColi (with UV-module)	< 100 cfu/100 ml



Mechanics

The main unit of the system is the protected machinery compartment, located at the front of the plant. This space houses all the necessary electro-mechanical components (control unit, compressor and A/C unit) and controls the treatment processes.

container.One
20 ft container; up to 15 m³/d
on request

40 ft container; up to 30 m³/d
on request

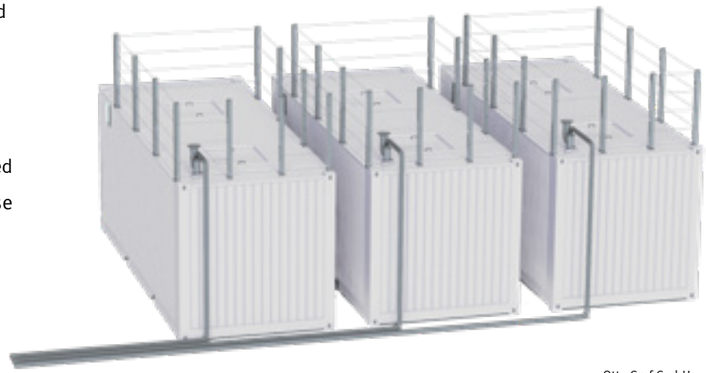
Webcode G5116

Benefits KLARO container.one

- ✓ Easy to transport (standard 20 ft and 40 ft container)
- ✓ Prefabricated, expandable design
- ✓ Rapid assembly and disassembly
- ✓ Low power consumption (0.87 kWh per 1,000 l water treated)
- ✓ Virtually odourless thanks to vented tanks
- ✓ Parallel connection for larger volumes of wastewater
- ✓ Less maintenance knowledge needed
- ✓ Plug & play, ready for immediate use

Modular extension

These mobile wastewater treatment plants feature a modular extension and set-up concept. This allows for maximum flexibility when it comes to designing your wastewater treatment solution. In case of larger volumes of wastewater, you could either use two or more complete 20 or 40 ft KLARO container.one systems or opt for one complete 40 ft container plant. Container plants are also available in various treatment stage versions. So they can be used specifically for pre-treatment stages, biological stages, final treatment stages or sludge treatment stages. Plant designs are project-specific and based on customer preferences.



grey*2clean* System

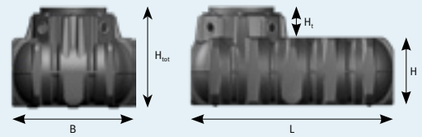
Ideal combination with our cesspools

See Cesspool range on page 60

grey water system grey*2clean*

Max. daily flow [l/d]	Tank [l]	W [mm]	L [mm]	H [mm]	Weight [kg]	Tank Order no.	grey2clean package Order no.
380	1.500	1250	2100	1015	82	390000	106686
760	3.000	2100	2450	1050	180	390001	106687
1270	5.000	2300	2890	1315	250	390002	106688
1900	7.500	2250	3600	1565	380	390005	106689

Scope of supply: Platin underground tank, Telescopic dome shaft 600, grey2clean system pack
Please order the air hoses separately (›› page 29).



Platin underground tank

›› page 60

Technical data

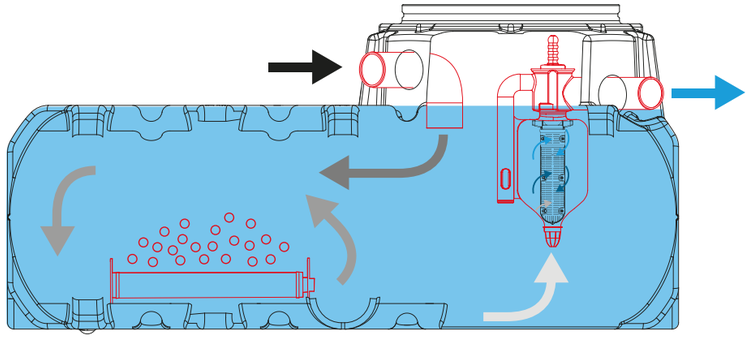
Max. earth covering (without groundwater vehicle loading)	1200 mm (3' 11")
Max. axle load	2,2 to (4850 lbs)
Max. total weight	3,5 to (7716 lbs)
Earth covering required for vehicle loading	700 – 1000 mm (27.6" – 3' 3")
Groundwater stability	up to tank shoulder
Earth covering required for groundwater stability	700 – 1200 mm (27.6" – 3' 11")
Connection	4 x DN 110 (4") Optionally up to DN 160 (6")

Where to use grey2clean?

- Holiday houses with separated sewer lines
- Sauna houses
- Permanant houses with separated sewer lines

Webcode G5122

Cleaning process



grey2clean cabinets

External plastic cabinet S

›› page 28

External plastic cabinet M

›› page 29

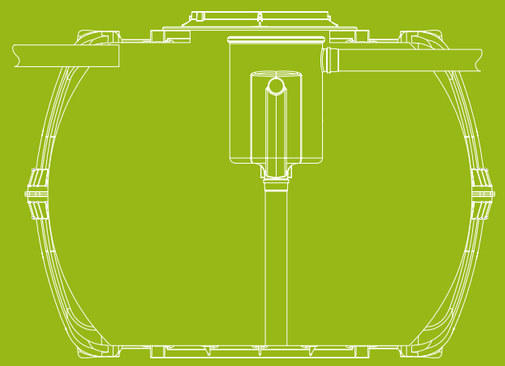
Covers

- Suitable for pedestrian or car loading

›› page 76/77

Powerless Wastewater Treatment Systems

› System Comparison Page 58
› Platin Cesspools Page 60
› Carat S Septic Tank Page 62
› Herkules Septic Tank and Cesspool Page 63
› Anaerobix – Wastewater Treatment System with Biological Filter Page 64
› Anaerobix XL/XXL Page 66
› Biomatic System Page 68



System Comparison

Find your wastewater solution
www.graf.info/cesspool-advisor/

System	Cesspools	Septic Tanks	Anaerobix / Anaerobix XL / Anaerobix XXL	Biomatic
Page	60/61	62/65	66	68/69
System conformity	—	EN 12566-1	—	EN 12566-3
Purifying technology	—	mechanical separation	anaerobic process	Sand filter bed
Warranty for underground tank	10 years	10 years	10 years	10 years

Limit values			30 l / 40 l / 60 l	
BOD_5 (biochemical oxygen demand)	—	50 – 65 %	75 %	97.5 %
SS (suspended solids)	—	60 – 70 %	90 %	96.7 %

Anaerobix

Carat S

Carat XL

Carat XXL

Herkules

Platin

Platin Cesspools

Benefits

- ✓ Can be installed in groundwater
- ✓ Shallow installation
- ✓ Easy installation due to low net weight
- ✓ The tank can also be used as a rainwater collection tank after cleaning.
- ✓ Can be expanded as required

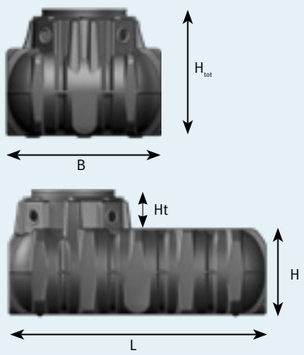
Platin Cesspool

Webcode G5411

Volume [l]	Width B [mm]	Length L [mm]	Height H [mm]	Height H_{tot} [mm]	Height of dome shaft ht [mm]	Internal Ø of dome shaf t [mm]	Weight [kg]
1,500	1250	2100	700	1015	315	650	82
3,000	2100	2450	735	1050	315	650	180
5,000	2300	2890	950	1315	315	650	250
7,500	2250	3600	1250	1565	315	650	380

Technical data

Max. earth covering (without groundwater vehicle loading)	1200 mm (3' 11")
Max. axle load	2,2 to (4850 lbs)
Max. total weight	3,5 to (7716 lbs)
Earth covering required for vehicle loading	700 – 1000 mm (27.6" – 3' 3")
Groundwater stability	up to tank shoulder
Earth covering required for groundwater stability	700 – 1200 mm (27.6" – 3' 11")
Connection	4 x DN 110 (4") Optionally up to DN 160 (6")



Carat Cesspools

Benefits

- ✓ Easy installation due to low net weight
- ✓ The tank can also be used as a rainwater collection tank after cleaning
- ✓ Can be expanded as required.
- ✓ Self-anchoring

Carat S Cesspool (» page 76 – suitable covers)

Webcode G5408

Volume [l]	Length [mm]	Width [mm]	Height [mm]	Weight [kg]
2,700	2080	1565	2010	120
3,750	2280	1755	2200	150
4,850	2280	1985	2430	185
6,500	2390	2190	2710	220

Carat XL Cesspool (» page 76/77 – suitable covers)

Webcode G5409

Volume [l]	Length [mm]	Width [mm]	Height [mm]	Weight [kg]
8,500	3500	2040	2695	380
10,000	3520	2240	2895	456

Carat XXL Cesspool (» page 76/77– suitable covers)

Webcode G5410

Volume [l]	Length [mm]	Width [mm]	Height [mm]	Weight [kg]
16,000	4660	2500	2550	805
36,000	9430	2500	2550	1495
56,000	14200	2500	2550	2185
76,000	18970	2500	2550	2875

Other sizes » page 81 / up to 122.000 litres on request

Accessories

Overflow guard
Emits visual and audio alarm, battery-operated (9 V).
Order no. 351017

Odour filter for ventilation shaft
Reliably filters out unpleasant odours.
Order no. 104018

Special seal DN 110 (not for XL/XXL)
For connections
Order no. 332033

Drill DN 110
With view shaft
Order no. 202003

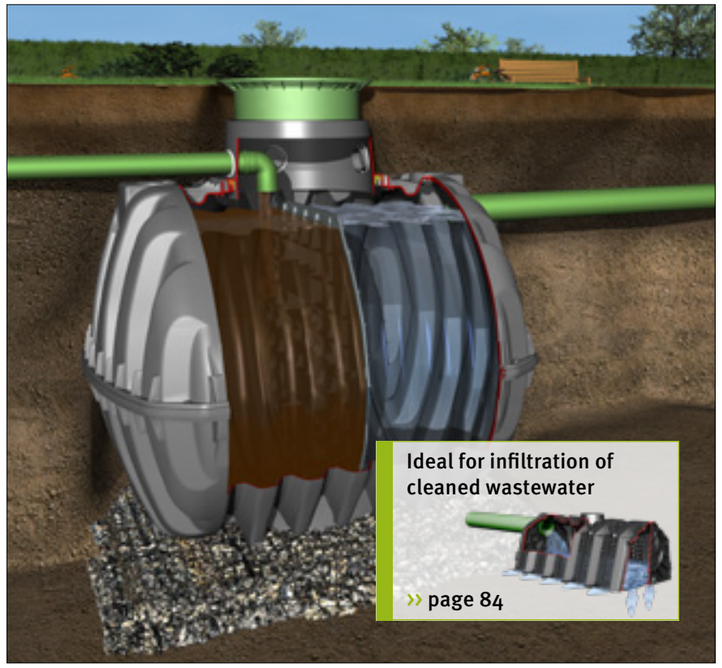
Carat S Septic Tank

Three chambers / Two chambers / One chamber

Benefits

- ✓ Up to 45 wastewater tanks per lorry
- ✓ Low weight: can also be installed in difficult local conditions without a crane
- ✓ Reasonable purchase and installation costs. Compare!
- ✓ Low maintenance: maintenance or cleaning work can be performed through the shafts
- ✓ Tanks can be used as rainwater harvesting systems after thorough cleaning

Floating and removable material is extracted from domestic wastewater in mechanical wastewater tanks. This is purely mechanical cleaning.



12566-1*
Hydraulic efficiency **99.9 %**

*Refer to the installation instructions for CE-compliant Septic tanks

Carat S Septic tank

Webcode G5504

Inhabitants [max]	Total volume [l]	Capacity [l]	Length [mm]	Width [mm]	Height [mm]	Weight [kg]
5	2,700	2,700	2080	1565	2010	145
7	3,750	3,750	2280	1755	2200	175
9	4,800	4,800	2280	1985	2430	220
13	6,500	6,500	2390	2190	2710	260

Scope of supply: Carat S underground tank with baffle. Also available without baffle as a one-chamber wastewater tank.
(›› page 76/77 – suitable covers ›› page 78 – different baffle position)

Presenting the Carat septic tank

GRAF TV
www.graf.info/v213

Accessories

Inspection end DN 200
For Carat S 4,800 l and 6,500 l
Order no. 340527

Deaeration end
DN 110
Order no. 369017

Herkules Septic Tank / Cesspool

For overground and underground installation

Benefits

- ✓ Stability tested according to European standard (DIN EN 12566-3)
- ✓ Construction approved by DIBt for domestic wastewater
- ✓ Can be installed in groundwater
- ✓ Fits through any door (80 cm) – each half-shell weighs just 30 kg
- ✓ Fast tank fitting with profile seal and fast connectors
- ✓ Tanks can be used for rainwater harvesting systems after thorough cleaning
- ✓ Can be expanded as required

Herkules tank 1,600 l
Order no. 320001

Technical data

Webcode G5406

Total volume [l]	Volume [l]	Height [mm]	Ø max. [mm]	Weight [kg]
Herkules – Septic tank (three chambers)				
4,800	1,600	1600	1350	60
	1,600	1600	1350	60
	1,600	1600	1350	60
Herkules – Septic tank (two chambers)				
3,200	1,600	1600	1350	60
	1,600	1600	1350	60
Herkules – Septic tank (one chamber)				
1,600	1,600	1600	1350	60
Herkules – Cesspool				
1,600	1,600	1600	1350	60

Accessories

Tank dome DN 200
With telescopic end, length 1 m
Order no. 322026

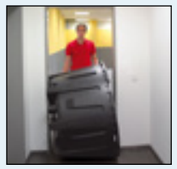
Extension set
2 x seal DN 110 without connection pipe
Order no. 202028

Drill DN 110
With view shaft
Order no. 202003

Unbeatable advantages:

Long-lasting
Durably sealed thanks to solid profile sealing (seal lifetime of more than 25 years proven in laboratory tests)

Can be extended as desired
Shape-matched end connectors and connection surfaces enable volumes of several 10,000 l



Easy transport
Thanks to low weight of 30 kg per half-shell and practical size; fits through all doorways (up to 80 cm)

Stackable

Anaerobix

GRAF Wastewater Treatment System with Biological Filter

Ideal for infiltration of cleaned wastewater

›› page 84

The benefits of the Anaerobix system at a glance

- ✓ Very good cleaning performance: efficiency over 90 %, PIA-tested (Testing Institute for Waste Water Technology)
- ✓ No power consumed, no electrical or mechanical components (e.g. pumps or float switch) in tank
- ✓ Largely maintenance-free
- ✓ Installation in proven Graf tanks
- ✓ Easy to install with standard DN 110 pipes
- ✓ Very good value for money

Simple and low-cost

- Anaerobix is the low-cost anaerobic filter system for GRAF wastewater tanks
- Filled with the carrier material supplied, it increases the cleaning performance of a wastewater tank several times over. The large surface of the recyclable plastic carrier material (141 m²/m³) allows the biofilm responsible for the cleaning process to cover a large area.

Anaerobix single-tank system

Webcode G5507

Inhab. [max.]	Max. daily flow [l / day]	Tank	Anaerobix Typ [l]
1 – 2	150 – 300	Saphir 600 l	30
2 – 3	150 – 450	Saphir 900 l	30
2 – 3	300 – 450	Cesspool 1,000 l	30
2 – 3	300 – 600	Saphir 1,200 l	30
3 – 4	450 – 750	FLAT 1,500 l	30
4 – 5	450 – 750	Cristall 1,600 l	40
5 – 8	750 – 1,200	Cristall 2,650 l	40
8 – 9	750 – 1,350	Carat S 2,700 l*	60
10 – 12	1,050 – 1,800	Carat S 3,750 l*	60
12 – 16	1,350 – 2,400	Carat S 4,800 l*	60
16 – 21	1,950 – 3,150	Carat S 6,500 l*	60
1 - 5	300	Herkules 1,600 l	integrated

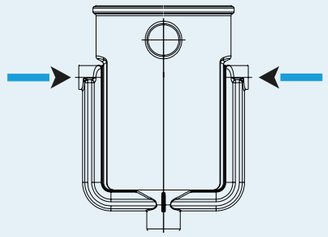
Scope of supply: Graf wastewater tank (tank dome and telescopic dome shaft 600), Anaerobix filter.

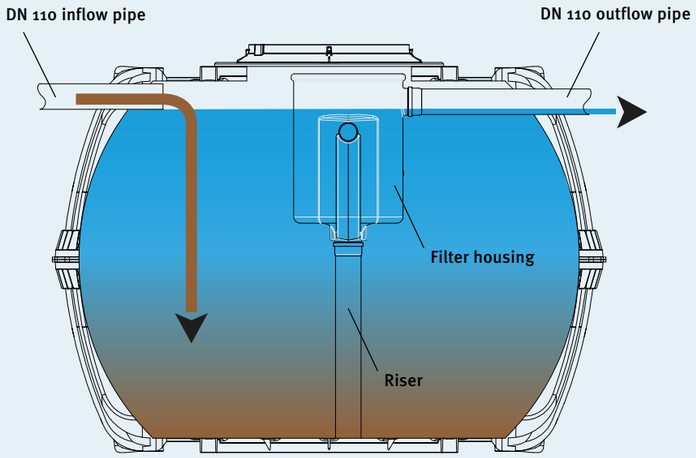
* ›› page 74 – The GRAF modular system

PIA, independent testing institute in Aachen

Technical data

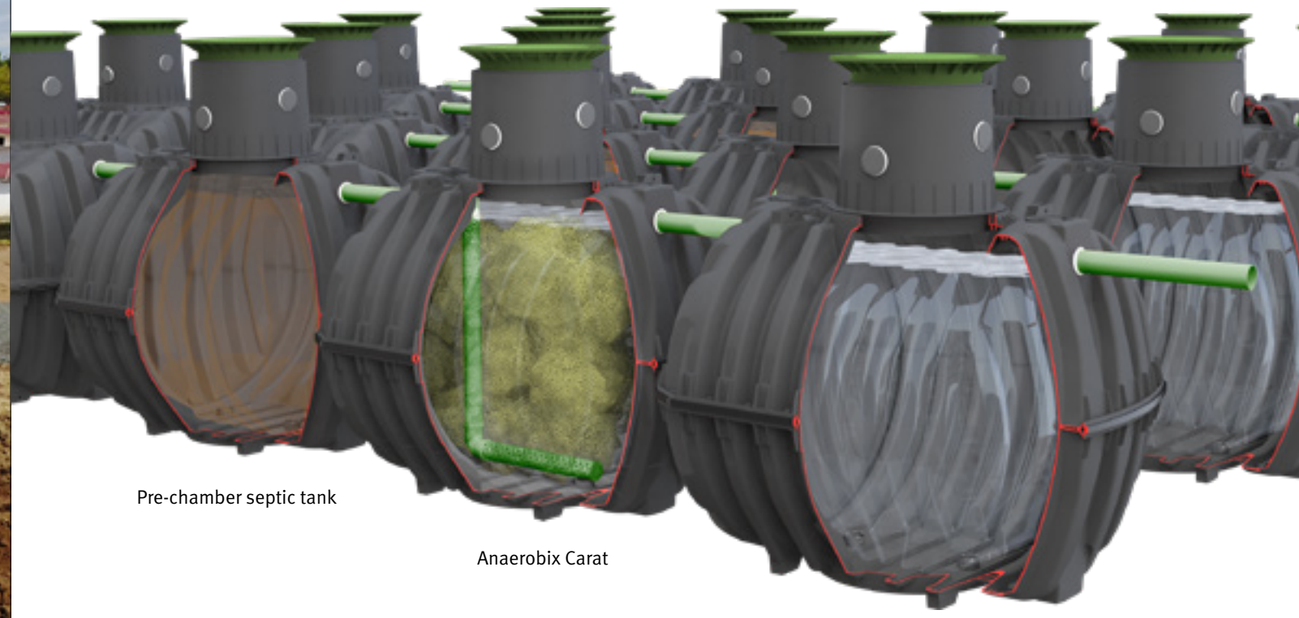
System Anaerobix	Herkules	30 l | 40 l | 60 l
Purifying technology	Anaerobic system	Anaerobic system
One-tank systems available up to	300 l/d	3,150 l/d
Maintenance interval	1 – 2 per year	1 – 2 per year
Warranty for underground tank	10 years	–





Limit values		30 l / 40 l / 60 l
BOD_5 (biochemical oxygen demand)	56,6 %	75 %
SS (suspended solids)	81 %	90 %

800 PE, Panama



Anaerobix XL

Webcode G5505

Inhab. [max.]	Anaerobix tank	Required vol. for pre-treatment septic tank [l]	Max. daily flow [l/d]	Carrier material [m³]	Qty. of bags [0,05 m³ / bag]	Order no.
22 – 33	underground tank 1,000 l	10,000	4,950	0,75	15	107696
33 – 53	Cristall 1,600 l	16,000	7,950	1,5	30	107697
53 – 88	Cristall 2,650 l	32,000	13,200	2,4	48	107698

Scope of supply: GRAF underground tank, tank dome, telescopic dome shafts 600 and Anaerobix XL Filter.

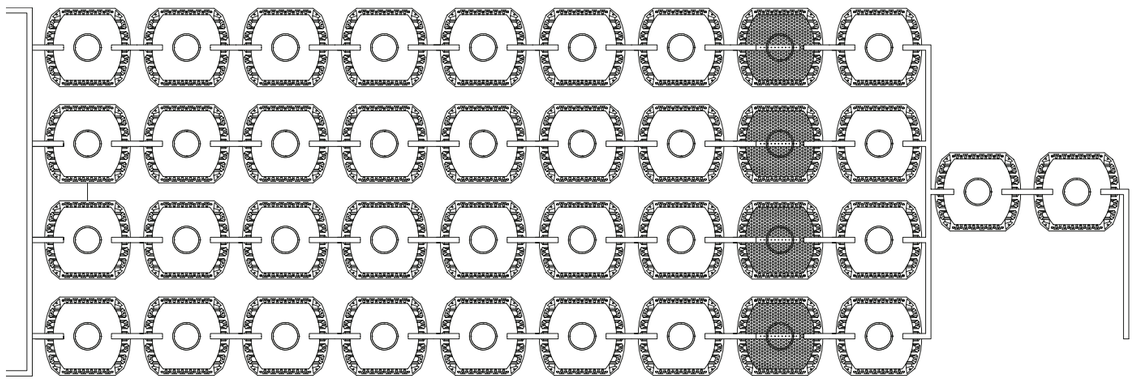
Anaerobix XXL

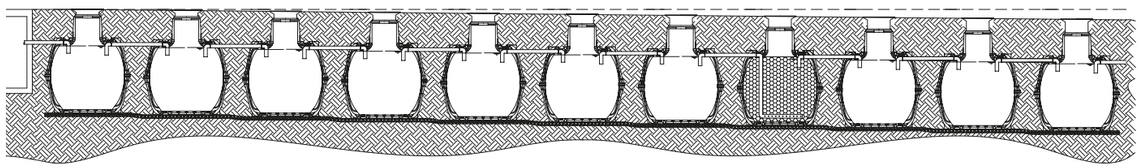
Webcode G5506

Inhab. [max.]	Anaerobix tank	Required vol. for pre-treatment septic tank [l]	Max. daily flow [l/d]	Carrier material [m³]	Qty. of bags [0,05 m³ / bag]	Order no.
200	1 x Carat S 6,500 l	60,000	30,000	6	100	on request
400	2 x Carat S 6,500 l	120,000	60,000	12	200	on request
600	3 x Carat S 6,500 l	180,000	90,000	18	300	on request
800	4 x Carat S 6,500 l	240,000	120,000	24	400	on request

Further sizes on request

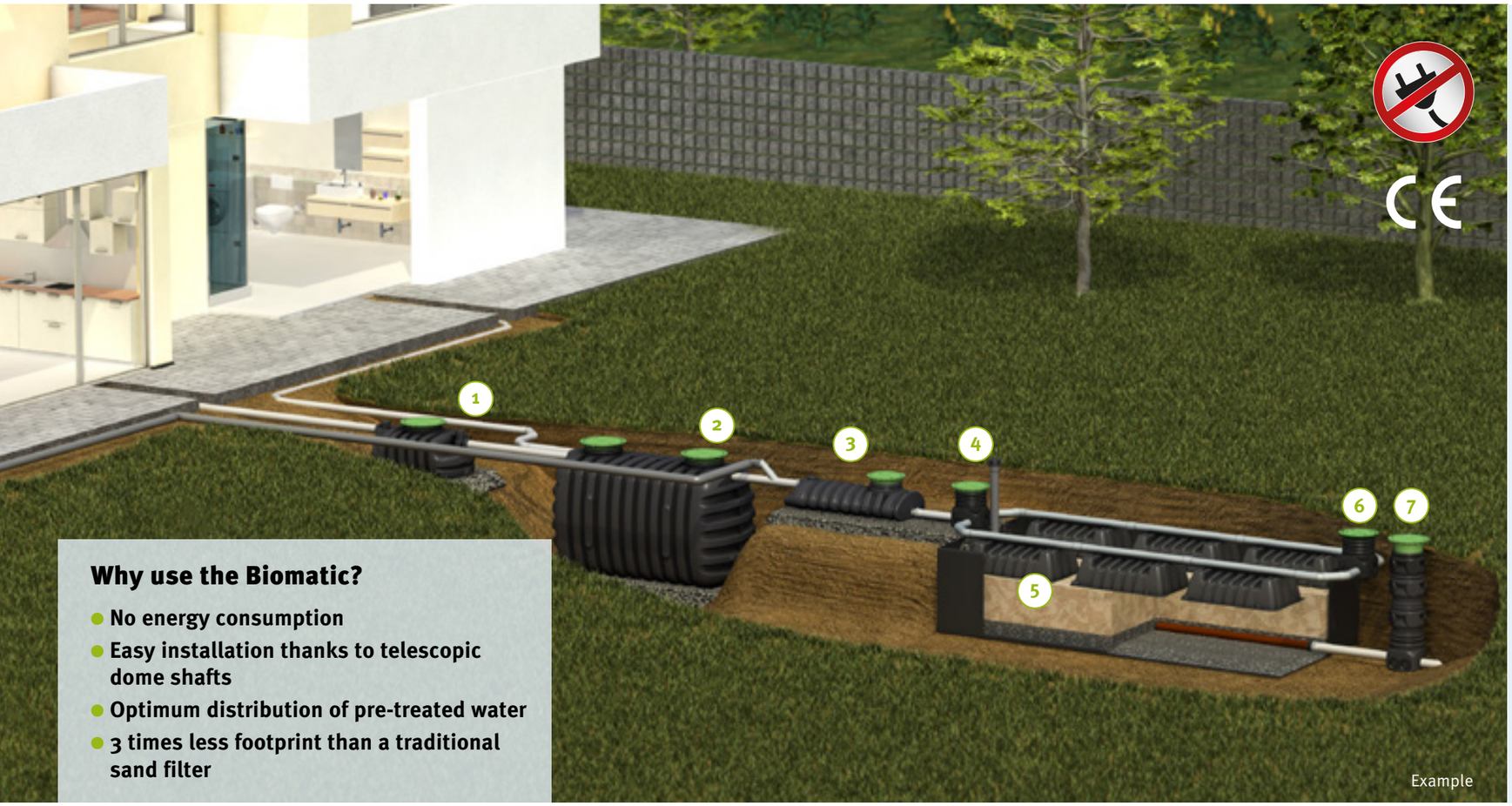
Scope of supply: Carat S underground tanks, tank domes, telescopic dome shafts 600, accessory set for pre treatment septic tanks, accessory set for Anaerobix XXL Filter and carrier material.





Biomatic compact filter

Powerless System



Why use the Biomatic?

- No energy consumption
- Easy installation thanks to telescopic dome shafts
- Optimum distribution of pre-treated water
- 3 times less footprint than a traditional sand filter

Technical data

System	Biomatic system
System conformity	EN 12566-3
Purifying technology	sand filter bed
Maintenance interval	1 – 2 per year
Warranty for underground tank	10 years

Parameter	Cleaning performance for Klaro E Professional	
COD (chemical oxygen demand)	92.3 %	62 mg/l
BOD_5 (biochemical oxygen demand)	97.5 %	7 mg/l
SS (suspended solids)	96.7 %	7 mg/l
NH_4-N	78.8 %	12 mg/l

Results of practical testing undertaken by the Centre Scientifique et Technique du Bâtiment (CSTB), Nantes

How does Biomatic work?

The Biomatic compact filter is a compact, stand-alone sanitation solution that works on the principle of traditional sectors. This solution, composed of 100% GRAF products, operates in a gravitational manner and without electricity. The Biomatic modules making up the treatment system stand out from traditional sand filters because of their compactness (less than 11 m² for 6 PE).

1. Greas seperator (optional 1 l / sec.)
2. Carat S 3,750 l / 6,500 l incl. Anaerobix 60 l
3. Batch feeding tank 50 l (6 PE), 100 l (12 PE)
4. Distribution shaft
5. Biomatic modules / filter bed
6. Ventilation / maintenance shaft
7. Collector shaft

Biomatic system

Webcode G5117

Inhab. [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Pre-treatment Volume [litres]	Length* [mm]	Width* [mm]	Height* [mm]	Weight** [kg]	Order no.
6	900	0.36	3,750	2590	2590	1380	260	106398
12	1,800	0.72	6,500	3890	5580	1380	440	106399

* Total measurement
**without pre-treatment septic tank

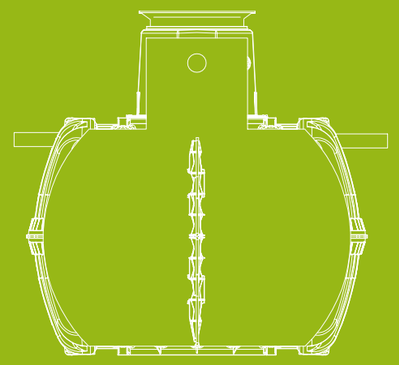
Simple Transport due to optimized packaging

Function of the Biomatic system

GRAF TV
www.graf.info/v221

Carat Wastewater Underground Tank

› Carat S Underground Tank Page 72
› Carat XL Underground Tank Page 80
› Carat XXL Underground Tank Page 81



Carat S Underground Tank – Benefits

Advantages

Benefits

- ✓ Unrivalled fitting accuracy
- ✓ Ribbed tank base
- ✓ Groundwater-stable thanks to its extremely stable construction
- ✓ Very high stability thanks to modern production methods
- ✓ Made of 100 % recycling material
- ✓ Easy to transport, 5 – 9 tanks per pallet
- ✓ Up to 36 complete wastewater systems or 45 wastewater tanks per lorry

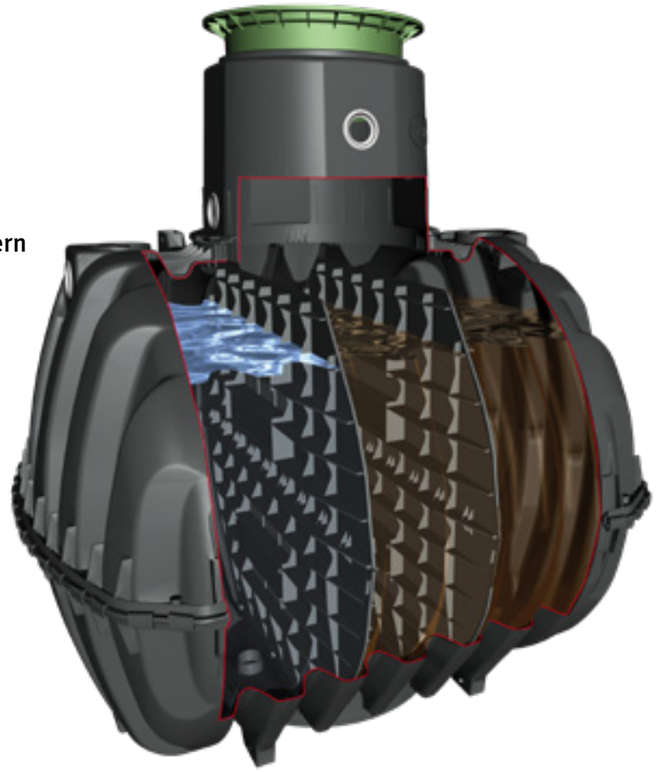
10 years warranty

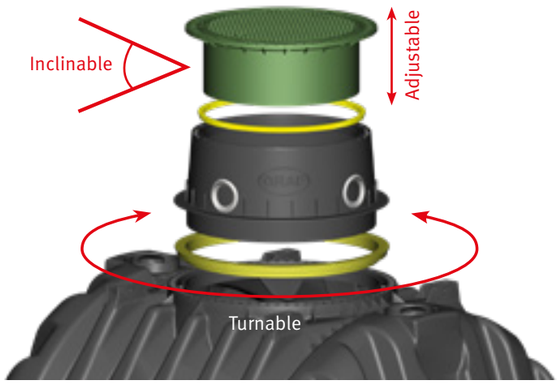
QUALITY MADE IN GERMANY

CE

Carat S: Reduce freight costs by up to 80 %

GRAF TV
www.graf.info/v208





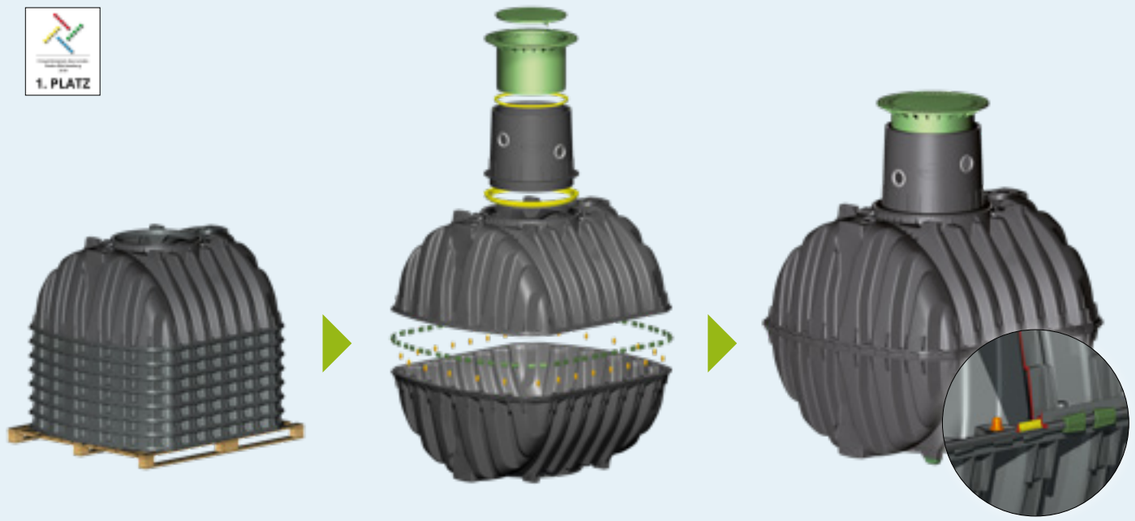
Telescopic dome shaft 600 cast iron suitable for vehicles

Flush with ground level

- ✓ Unique fit accuracy of the components
- ✓ Suitable for vehicle loading (when combined with the cast iron telescopic tank dome)
- ✓ Numerous seals to effectively stop dirt getting into the tank
- ✓ The height of the telescopic tank dome can be smoothly adjusted
- ✓ The telescopic tank dome can additionally be inclined by 5° to suit the local conditions
- ✓ Impact-resistant

Easy and safe assembly

1. PLATZ



The GRAF Modular System

Choose your system from four different modulars

Tank

Carat S 2,700 – 6,500 litres

Tank cover

Telescopic dome shaft 600 Mini and 600 Maxi

CORROSION-FREE THANKS TO PLASTIC LID

Telescopic dome shaft 600 car

Telescopic dome shaft 600 cast iron

Telescopic dome shaft 600 universal

Extension

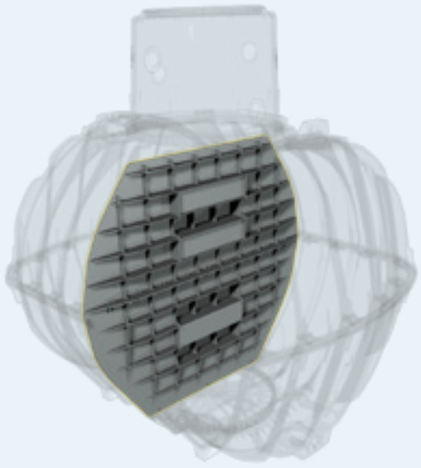
Tank dome Mini for Carat S

Tank dome Micro for Carat S

Tank dome Maxi for Carat S

Baffles

Baffles – Carat S 2,700 – 6,500 litres



System packs

one*2clean*

Klaro E Professional (Klaro L)

one*2clean* plus

Anaerobix

Carat S Underground Tank

Choose your tank size

Carat S underground tank Suitable for vehicle loading

Size 2,700 – 6,500 litres. Designed to be used in conjunction with the vehicle loading telescopic tank dome. The access dome is designed in accordance with DIN testing.

Tank dome Maxi
Order no. 371040

Tank dome Mini
Order no. 371041

Tank dome Micro
Order no. 371009

Illustration shows 4,800 litre tank with telescopic dome shaft 600 for pedestrian loading

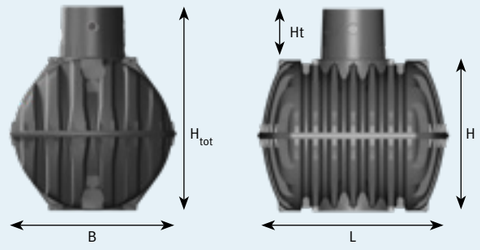
Webcode G5305

Dimensions

Volume [l]	Width B [mm]	Length L [mm]	Height H [mm]	Height H_{tot} [mm]	Height of tank dome Ht [mm]	Inner Ø of tank dome [mm]	Weight [kg]	Order no.
2,700 (700 US gal.)	1565 (61.6")	2080 (81.9")	1400 (55.1")	2010 (79.1")	610 (24.0")	650 – 800 (25.6 – 31.5")	120 (265 lbs)	372024
3,750 (1,000 US gal.)	1755 (69.1")	2280 (89.8")	1590 (62.6")	2200 (86.6")	610 (24.0")	650 – 800 (25.6 – 31.5")	150 (331 lbs)	372025
4,800 (1,250 US gal.)	1985 (78.2")	2280 (89.8")	1820 (71.6")	2430 (95.7")	610 (24.0")	650 – 800 (25.6 – 31.5")	185 (408 lbs)	372026
6,500 (1,700 US gal.)	2190 (86.2")	2390 (94.1")	2100 (82.7")	2710 (106.7")	610 (24.0")	650 – 800 (25.6 – 31.5")	220 (485 lbs)	372027

Technical data

Max. earth covering (without groundwater vehicle loading)	1500 mm (59.1")
Max. vehicle weight	12 to (26456 lbs)
Earth covering required for vehicle loading	800 – 1500 mm (31.5 – 59.1")
Groundwater stability	Up to tank equator
Earth covering required for groundwater stability	800 – 1500 mm (31.5 – 59.1")
Connection	DN 110 / DN 160 / DN 200 on top



Carat S Underground Tank

Choose your tank domes and covers

Tank dome Micro

- Weight: 7 kg (15,43 lbs)
- including green lid
- for shallow excavation
- earth cover only 90 mm

Order no. 371009

Tank dome Maxi

- Weight: 15 kg (33 lbs)
- For large earth coverings (loading capacity)
- incl. 5 edge seals

Order no. 371040

Tank dome Mini

- Weight: 11 kg (24 lbs)
- For especially flat installation
- incl. 3 edge seals

Order no. 371041

Extension

- Weight: 6 kg (13 lbs)
- The earth covering can be raised 300 mm using the extension

Order no. 371003

Telescopic dome shaft 600 Mini

- with PP lid
- suitable for pedestrian loading
- Weight: 9 kg (19 lbs)
- Adjustable earth covering across upper tank surface

plus 140 – 340 mm (5.51 - 13.4") earth covering

Order no. 371010

Telescopic dome shaft 600 Maxi

- with PP lid
- suitable for pedestrian loading
- Weight: 15 kg (33 lbs)
- Adjustable earth covering across upper tank surface

plus 140 mm – 440 mm e (5.51 – 17.3") earth covering

Order no. 371011

Telescopic dome shaft 600 cast iron

- Suitable for vehicle loading – with childproof cast iron cover up to 3.5 t
- Weight: 55 kg (121 lbs)
- Adjustable earth covering across upper tank surface

plus 140 mm – 440 mm (5.51 – 17.3") earth covering

Order no. 371020

Telescopic dome shaft 600 universal*

- Suitable for vehicle/ lorry-bearing
- Weight: 11 kg (24 lbs)
- Cover to be provided on site
- Adjustable earth covering across upper tank surface
- For commercially available concrete rings/covers (to be provided on site)

plus 140 mm – 440 mm (5.51 – 17.3") earth covering

Order no. 371021

*on request

Inspired by nature

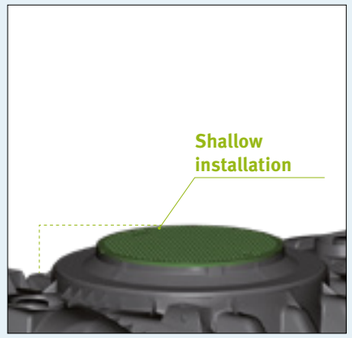
Telescopic dome shaft 600 car

- Suitable for vehicle loading – with childproof plastic lid cover up to 3.5 t
- Weight: 22,5 kg (50 lbs)
- Adjustable earth covering across upper tank surface
- Perfect fitting accuracy

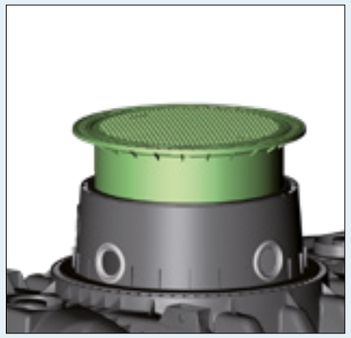
plus 140 mm – 440 mm (5.51 – 17.3") earth covering

Order no. 371052

*on request



Tank dome Micro



Tank dome Mini

Tank dome Maxi

Telescopic dome shaft 600 Mini suitable for pedestrian loading

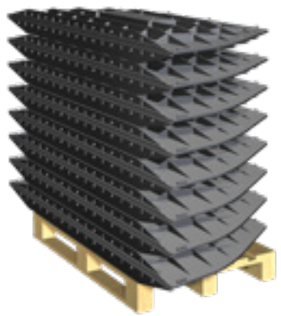
Telescopic dome shaft 600 cast iron suitable for vehicles

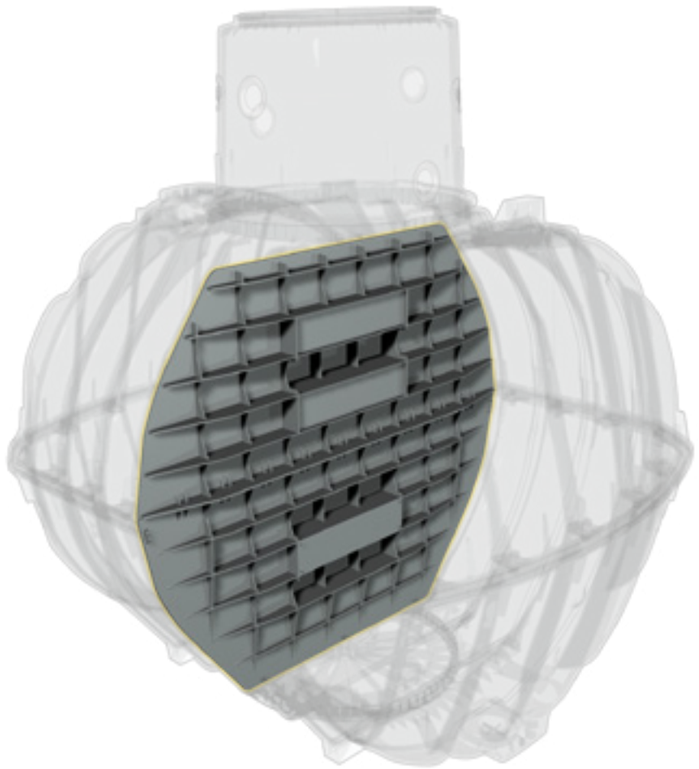
Carat S Underground Tank

Baffles

Choose your baffle position

The baffle separates the Carat S underground tank into two or three chambers as desired. It consists of two halves and is simple to insert when assembling the second tank half of the Carat S. A profile seal provides reliable and permanent separation of the chambers. The Carat S underground tank with baffle is ready for use as a multi-chamber tank. This can then be expanded by means of a system pack to create a wastewater treatment system (›› page 79). The system pack is simply fitted to the baffle and the control unit is installed in the house – and the wastewater treatment system is ready to go.





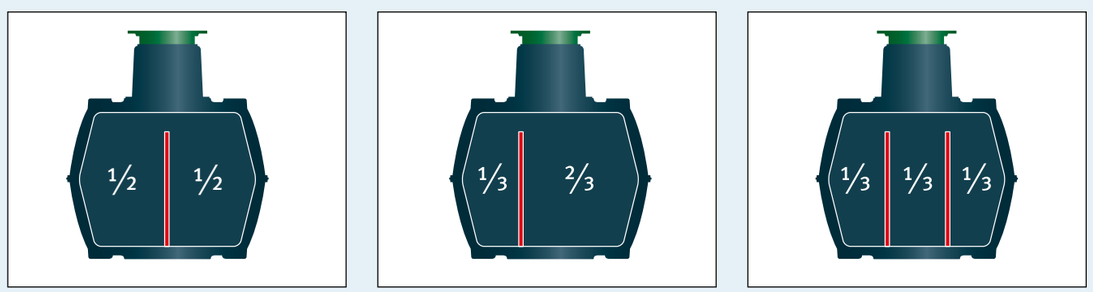
Baffle for Carat S tank

Volume [l]	pcs/pal	Positions	Weight [kg]	Order no.
2,700 (700 US gal.)	9	1/2	20 (44 lbs)	375067
2,700 (700 US gal.)	9	1/3	20 (44 lbs)	375077
3,750 (1,000 US gal.)	7	1/2	25 (55 lbs)	375025
3,750 (1,000 US gal.)	7	1/3	25 (55 lbs)	375080
4,800 (1,250 US gal.)	5	several positions	35 (77 lbs)	375026
6,500 (1,700 US gal.)	5	several positions	45 (99 lbs)	375027

European 1897814 Patent

The baffles of the Carat S underground tank are supplied on pallets and can easily be inserted in the tanks as needed.

Flexible baffle positions



Examples of different baffle positions.

Carat S Underground Tank

System packs

Choose your system pack

System pack one*2clean* / one*2clean* plus

The system pack one2clean (›› page 10) works according to the SBR air lift pump process. This requires a wastewater tank with a scum baffle. Scope of supply: control cabinet with air compressor for internal mounting, one2clean system pack comprising air lift pumps and tube diffuser. Air hose not included.

SBR hose package
Includes: 1 x Ø 19 mm and 1 x Ø 13 mm PVC hose; colour-coded

10 m	Order no. 107686
20 m	Order no. 107688

Inhabitants [max.]	Volume [l]	System packs [Order no.]	
		one*2clean*	one*2clean* plus
For one-tank systems			
3	2,700	106850	106417
5	3,750	106851	106418
7	4,800	106852	106419
9	6,500	106853	106420
For two-tank systems			
7	2 x 2,700	106854	106425
10	2 x 3,750	106855	106426
14	2 x 4,800	106856	106427
18	2 x 6,500	106857	106428

System pack Klaro E Professional

The system pack Klaro E Professional (›› page 16) works according to the SBR air lift pump process. This requires a wastewater tank with two chambers. Scope of supply: control cabinet with air compressor for internal mounting, Klaro E Professional system pack comprising air lift pumps and disk diffuser. Air hose not included.

SBR hose package
Includes: 1 x Ø 19 mm; 3 x Ø 13 mm, PVC hose; colour-coded

10 m	Order no. 107190
20 m	Order no. 107192

Sizes

Inhabitants [max.]	Volume [l]	System packs [Order no.]
For multitank systems		**Set-up kits**
16	2 x 3,750	106847
22	2 x 4,800	106931
28	2 x 6,500	106943
32	4 x 3,750	106949
44	4 x 4,800	106952
50	4 x 6,500	106955
For Klaro L		
60	4 x 6,500	372710
90	5 x 6,500	372711
120	7 x 6,500	372712
150	9 x 6,500	372713
180	10 x 6,500	372714

Anaerobix

The filter system Anaerobix (›› page 64) is an anaerobic filter system (filled with carrier material) for GRAF wastewater tanks. It increases the cleaning performance of a wastewater tank several times over. Scope of supply: GRAF wastewater tank with Anaerobix filter.

Sizes

Inhabitants [max.]	Volume [l]	Anaerobix 60 l [Order no.]
8 – 9	Carat S 2,700 l	107600
10 – 12	Carat S 3,750 l	107600
12 – 16	Carat S 4,800 l	107600
16 – 21	Carat S 6,500 l	107600

Further sizes on request

Carat XL Underground Tank

8,500 and 10,000 litres

Benefits

- ✓ Suitable for loading up to 12 t
- ✓ Can be mounted in groundwater
- ✓ Lower weight than concrete and steel
- ✓ Various connection surfaces DN 110 / 160 / 200
- ✓ Investment security thanks to a 15-year warranty

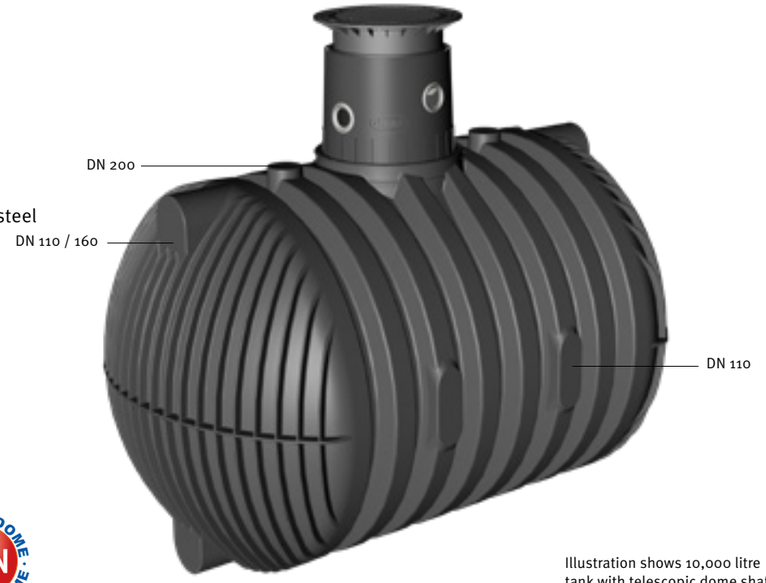


Illustration shows 10,000 litre tank with telescopic dome shaft 600 with cast iron lid, suitable for vehicle loading.

Webcode G5303

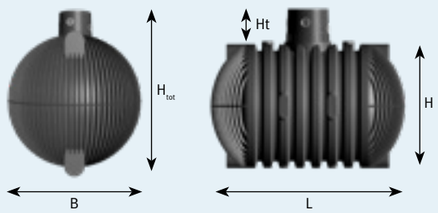
Dimensions

Volume [l]	Width B [mm]	Length L [mm]	Height H [mm]	Height H_{tot} [mm]	Height of dome shaft Ht [mm]	Internal Ø of dome shaft [mm]	Weight [kg]	Order no.
8,500 (2245 US gal.)	2040 (80.3")	3500 (138")	2085 (82.1")	2695 (106")	610 (24")	650 (25.6")	380 (15")	370005
10,000 (2641 US gal.)	2240 (88.2")	3520 (139")	2285 (90")	2895 (114")	610 (24")	650 (25.6")	455 (17.9")	370006

Fits in a 40' HC Container

Technical data

Max. earth covering (without groundwater vehicle loading)	2000 mm (6' 6.7")
Max. axle load	3.5 to (7716 lbs) with 2.2 to cast iron cover, 12 to (26456 lbs) with telescopic dome shaft 600 lorry
Max. total weight	12 to (26456 lbs)
Earth covering required for vehicle loading	800 mm – 2000 mm (31.5" – 6' 6.7")
Groundwater stability	up to middle of tank
Earth covering required for groundwater stability	800 mm – 1800 mm (31.5" – 5' 10.9")
Connection	5 x DN 160 (6") + 2 x DN 200 (8") (on top)



Carat XXL Underground Tank

up to 122,000 litres

Benefits

- ✓ Suitable for loading up to 40 t
- ✓ Can be mounted in groundwater
- ✓ Lower weight than concrete and steel
- ✓ Various connection surfaces DN 110 / 160 / 200
- ✓ Available with DN 315 connection as an option
- ✓ Available with a second tank dome as an option
- ✓ Investment security thanks to a 10-year warranty

Illustration shows Carat XXL 46,000 l with telescopic dome shaft 600 suitable for loading.

Webcode G5304

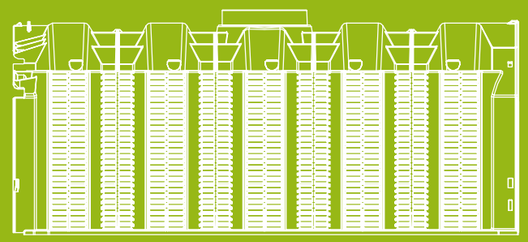
Dimensions

Volume [l]	Width W [mm]	Length L [mm]	Height H [mm]	Height H_{tot} [mm]	Height of dome shaft Ht [mm]	Internal Ø of dome shaft [mm]	Weight [kg]	Order no.
16,000	2500	4590	2550	3160	610	650	770	380001
22,000*	2500	6230	2550	3160	610	650	1025	380000
26,000*	2500	7200	2550	3160	610	650	1125	380002
32,000*	2500	8440	2550	3160	610	650	1405	380003
36,000*	2500	9410	2550	3160	610	650	1500	380004
42,000*	2500	10680	2550	3160	610	650	1795	380005
46,000*	2500	11650	2550	3160	610	650	1890	380006
52,000*	2500	12920	2550	3160	610	650	2185	380007
56,000*	2500	13890	2550	3160	610	650	2280	380008
62,000*	2500	15160	2550	3160	610	650	2580	380009
66,000*	2500	16130	2550	3160	610	650	2670	380010
72,000*	2500	17400	2550	3160	610	650	2965	380011
76,000*	2500	18370	2550	3160	610	650	3060	380012

*with a second tank dome

Infiltration

› Infiltration Tunnel Page 84



Infiltration Tunnel

The Graf Infiltration Tunnel has been mainly designed for the use in private and rural areas. The system, which consists of one or more tunnel modules and two end plates, can be extended as desired. The tunnel is laid in one or more lines of the same level. As the weight of one module is only 11 kg, the handling of the Infiltration Tunnel is excellent. The surface above the tunnels is suitable for vehicle loading, offering varied possibilities for use.

Up to 12,000 litres infiltration volume per pallet

Thanks to its special design, the GRAF Infiltration Tunnel can be stacked easily. Consequently, the shipment of up to 40 Infiltration Tunnels on one pallet saves considerable transport and storage costs.

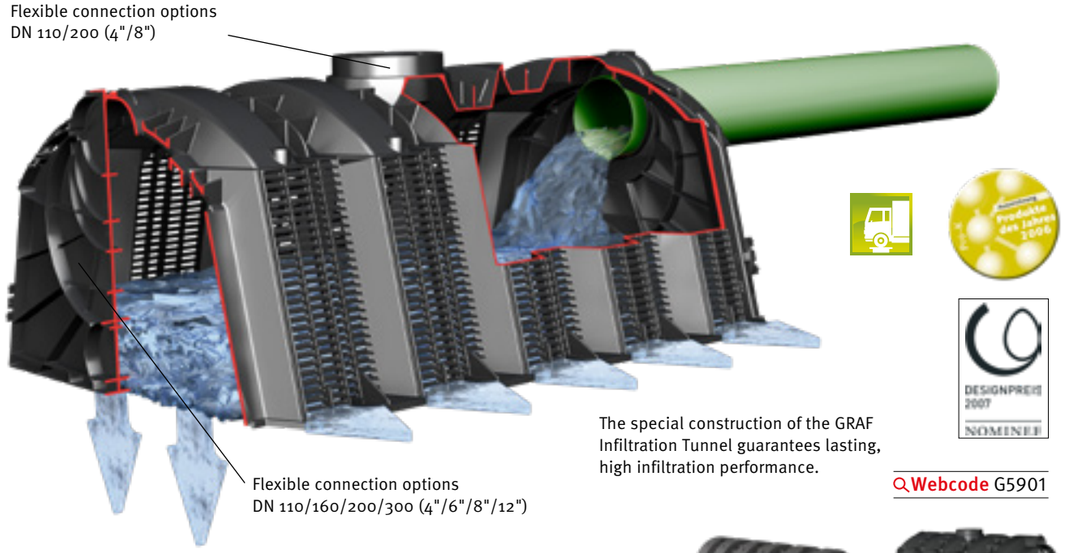
Vehicle loading

For versatility, the surface above the infiltration tunnels can withstand a continuous load of up to 100 kN/m² and is therefore also suitable for vehicle loading.

Easy installation

The GRAF Infiltration Tunnels are laid in lines and can be flexibly adapted to specific conditions and to the individual storage volume requested.
The installation of the modules is easy, quick and variable. Installation is possible without heavy equipment, as one Infiltration Tunnel weighs just 11 kg. The tunnel modules are simply joined together in a line and two end plates are fitted per line.

INFILTRATION TUNNEL, REPLACES 36 m DRAINAGE PIPE



The special construction of the GRAF Infiltration Tunnel guarantees lasting, high infiltration performance.

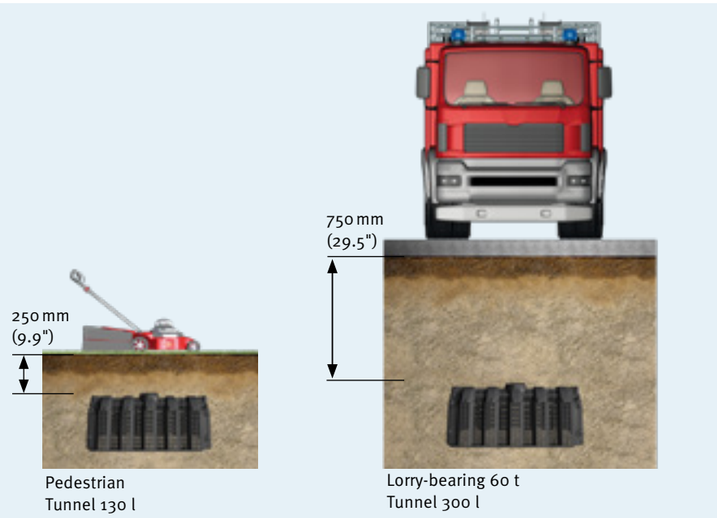
Webcode G5901

Infiltration Tunnel lorry

Volume	Length	Width	Height	Weight	Colour	Order no.
130 l (34 US gal.)	1190 mm (3'10")	490 mm (19.3")	320 mm (12.6")	5 kg (9,9 lbs)	black	410200
300 l (79 US gal.)	1160 mm (45.7")	800 mm (31.5")	510 mm (20")	11 kg (24.4 lbs)	black	230010

End plate for Infiltration Tunnel / Twin

Item	Length [mm]	Colour	Order no.
130 l – end plates (Set of 2 units)	30 (1.2")	black	410203
300 l – end plates (Set of 2 units)	48 (1.9 ")	black	231004



Inspection end
DN 200 (8")
Order no. 340527

Deaeration end
DN 110 (4")
Order no. 369017

GRAF-Tex geotextile
For an Infiltration Tunnel size of 2.50 x 2.50 m (8' 2.4" x 8' 2.4")
Order no. 231006

Roll width 5 m (16' 4.8")
Order no. 231002

Internationally proven:
GRAF Wastewater Treatment Systems

10 inhabitants, Julita (Sweden)

130 inhabitants, Saalburg (Germany)

50 inhabitants, Šuškova (Latvia)

5 inhabitants, Uurainen (Finland)

200 inhabitants, Tumenzogt (Mongolia)

46 inhabitants, Cuenca (Spain)

35 inhabitants, Le Mans (France)

140 inhabitants, Mexico City (Mexico)

32 inhabitants, British Columbia (Canada)

90 inhabitants, Tehran (Iran)

6 inhabitants, Landsveit (Iceland)

4 inhabitants, Döbeln (Germany)

150 inhabitants, Annas Skärgård (Sweden)

7 inhabitants, Tiflis (Georgia)

115 inhabitants, Le Pasquier (France)

15 inhabitants, Fürenalp (Switzerland)

60 inhabitants, Sofia (Bulgaria)

200 inhabitants, Rudenki Town (Ukraine)

The GRAF recycling cycle

This is us

The whole world is talking about sustainability. For us, it has long been a natural part of our DNA. We recognized the potential of rainwater early on: „Rainwater is free“ was one of our first campaigns back in the 1970s. Rain barrels were produced in our family business as early as 1974. The first underground tanks for rainwater harvesting followed just four years later. GRAF rain barrels have been made from recycled material since 1980. By the way, rainwater is still free of charge. But in times of climate change, drought and heavy rain, sustainable water management is much more than that: it is a valuable contribution to our future.

For this we stand

70 %
Share of recycling material

Environmental products for SUSTAINABLE water management

100,000 TONNES CO2 savings every year as much as more than 60,000 cars emit

LONG SERVICE LIFE and spare parts supply

Recycling material FREE FROM POLLUTANTS

80 % share of renewable energies in production

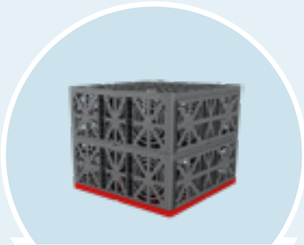
Products FULLY RECYCLABLE

State-of-the-art production facilities for LOW ENERGY CONSUMPTION

For further information see:
www.graf.info/sustainability

learn more

Stormwater Management

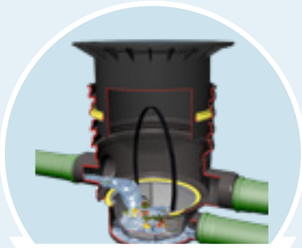


GRAF EcoBloc
Inspect flex

GRAF EcoBloc
maxx

Vario 800 flex
shaft system

Multi Infiltration shaft
DN 400 / 630



Industrial Universal
filter 3

Carat S retention
detention

Infiltration
Tunnel

Infiltration
Tunnel twin

www.graf.info

Stormwater Management
For more information about our stormwater management, ask for our catalogue.

60 YEARS OF QUALITY AND INNOVATION
60 YEARS OF EXPERIENCE

RAINWATER HARVESTING

STORMWATER MANAGEMENT

WASTEWATER TREATMENT SOLUTIONS

SEPARATORS

GARDEN PRODUCTS &
MULTI-PURPOSE CONTAINERS

Separators

For more information about our separators, ask for our catalogue.

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Pictures and photographs are approximate only.

The applicable technical documentation for the products shall control, which we will be happy to send you on request.

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