

# Greywater Recycling

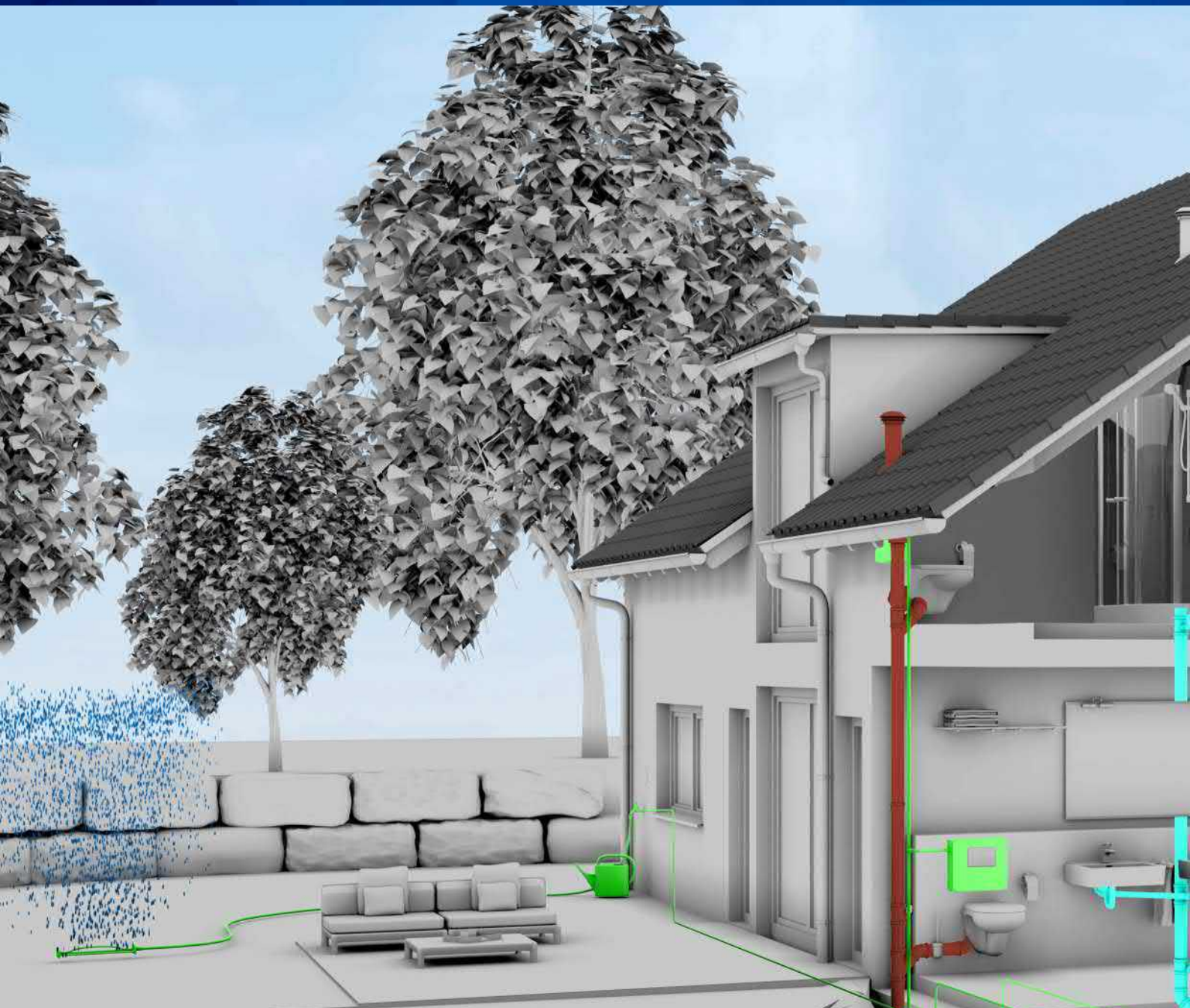
Use water twice  
to protect the environment

Water from bath, shower and laundry  
can be reused instead of sent down the drain



**DEHOUST**  
ENERGY. HEAT. WATER.

# Greywater recycling



## **GREYwater YIELD PER PERSON PER DAY**

Shower 30 – 50 liters

Bathtub 80 liters

Hand basin 5 – 10 liters

**~ 60 LITERS PER PERSON AND DAY**

## **RECYCLED GREYwater CONSUMPTION PER PERSON PER DAY**

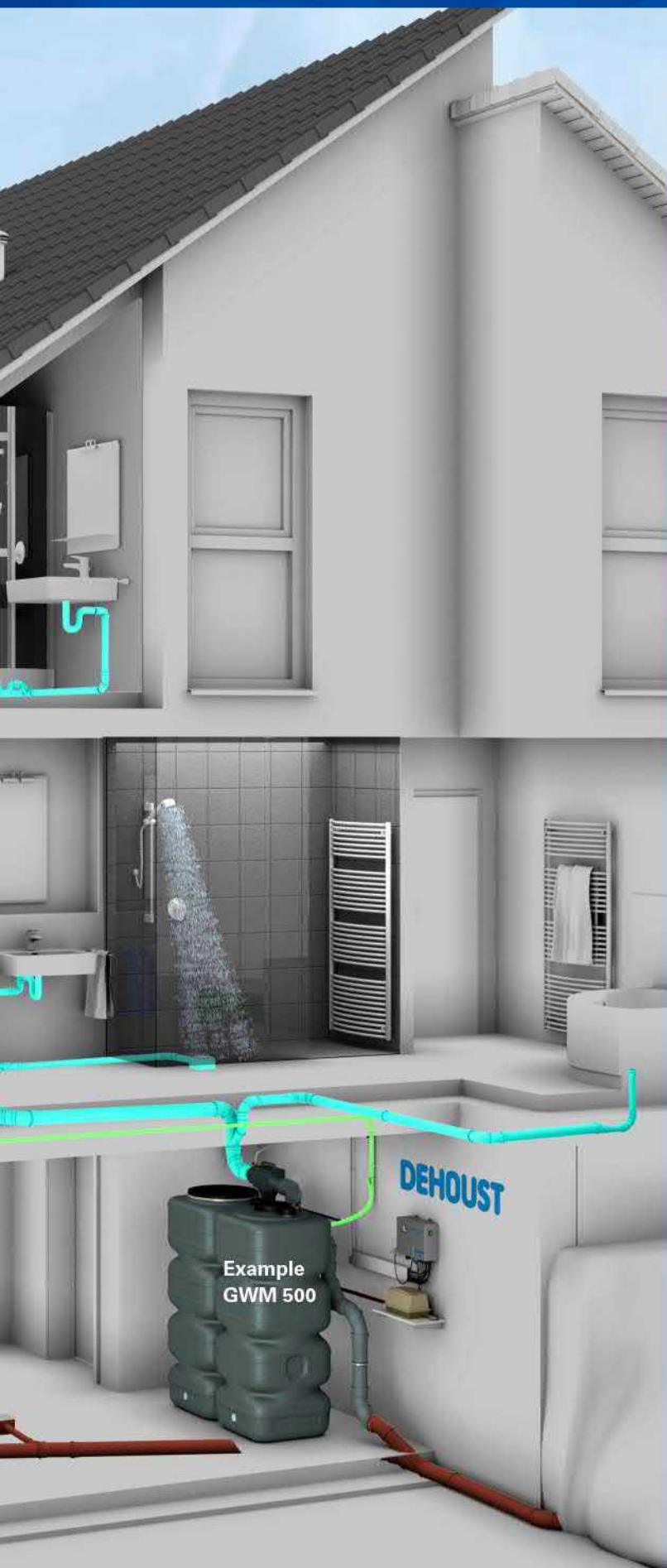
Flushing toilets 20 – 30 liters

Washing machine 10 – 15 liters

Washing/cleaning purposes 5 – 10 liters

Garden watering 100 liters (in the summer)

**~ 40 LITERS PER PERSON AND DAY**



## USING GREYWATER TO CONSERVE DRINKING WATER AND SAVE MONEY

Europeans consume an average of around 120 liters of precious drinking water every day. Most of this is used for personal hygiene.

This so-called "greywater", which can account for around 50 % of all domestic wastewater, then flows into the sewage system unused. Especially given that climate change and its consequences in the form of heat waves and droughts are becoming ever more visible, this is an enormous waste of our most precious resource!

With a greywater system you are not only doing something beneficial for the environment, you are also doing something beneficial for your own wallet. When it is collected and treated for things like flushing toilets, for washing machines or for watering the garden, drinking water consumption can be significantly reduced – as can the cost of both drinking water and sewage fee.

DEHOUST offers the right system technology for your needs – from the low cost model to the high-tech system – highly efficient, with high operational reliability and minimal maintenance costs. Our plants purify greywater in an environmentally-friendly manner, but also ensure the water supply for your household in the event of a greywater shortage. This can also be done digitally, if desired: With DehoustCONNECT, you or the fitter can easily control the system using the Internet or an app.

This brochure outlines the most important advantages of greywater utilization and presents our system models in a wide range of sizes, for single-family homes as well as residential complexes, hotels or fitness studios, for example.

### Your advantages

- ▶ Save water by using it twice
- ▶ Short payback periods
- ▶ Excellent storage stability of the process water
- ▶ Versatile control system
- ▶ Can be combined with rainwater harvesting



Benefit from DEHOUST's experience. We would be happy to help you!

# Greywater Fact Check



## What is greywater?

“Greywater” is fecal-free, low-polluted water that is produced, for example, after showering or washing hands. The water quality of the treated greywater conforms with the European standard EN 16941-2 as well as other common standards such as the British Standard 8525-1 and the European standard for bathing water 2006/7 / EC.

## How does greywater recycling work?

The treatment of the slightly polluted water is carried out in a purely mechanical-biological way. The most modern and safest wastewater treatment technology currently available is used: biomembrane technology (BMT). Once the water has been treated, it is available again as absolutely clear, odorless and, most importantly, germ-free process water.



**NEED MORE  
INFORMATION?  
WANT TO SEE MORE?**

[View the video here](#)

## What can greywater be used for?

You can use the treated greywater wherever drinking water quality is not absolutely necessary! This includes, for example, flushing toilets, watering gardens or cleaning work.

## How much money can you save with a greywater system per year?

The reduction in both drinking water costs and wastewater charges means that the investment pays for itself very quickly.

## Who can benefit from such a system?

The systems can be used flexibly and, thanks to their modular construction, can be designed for any requirement – from single-family homes to systems for large properties!

We would be happy to support architects and building owners during their planning phases.

## What are the constructional requirements?

The greywater sources are connected to a separate wastewater line. The consumers, for example toilets or garden, are supplied by a service water pipe.

## Are there subsidies available?

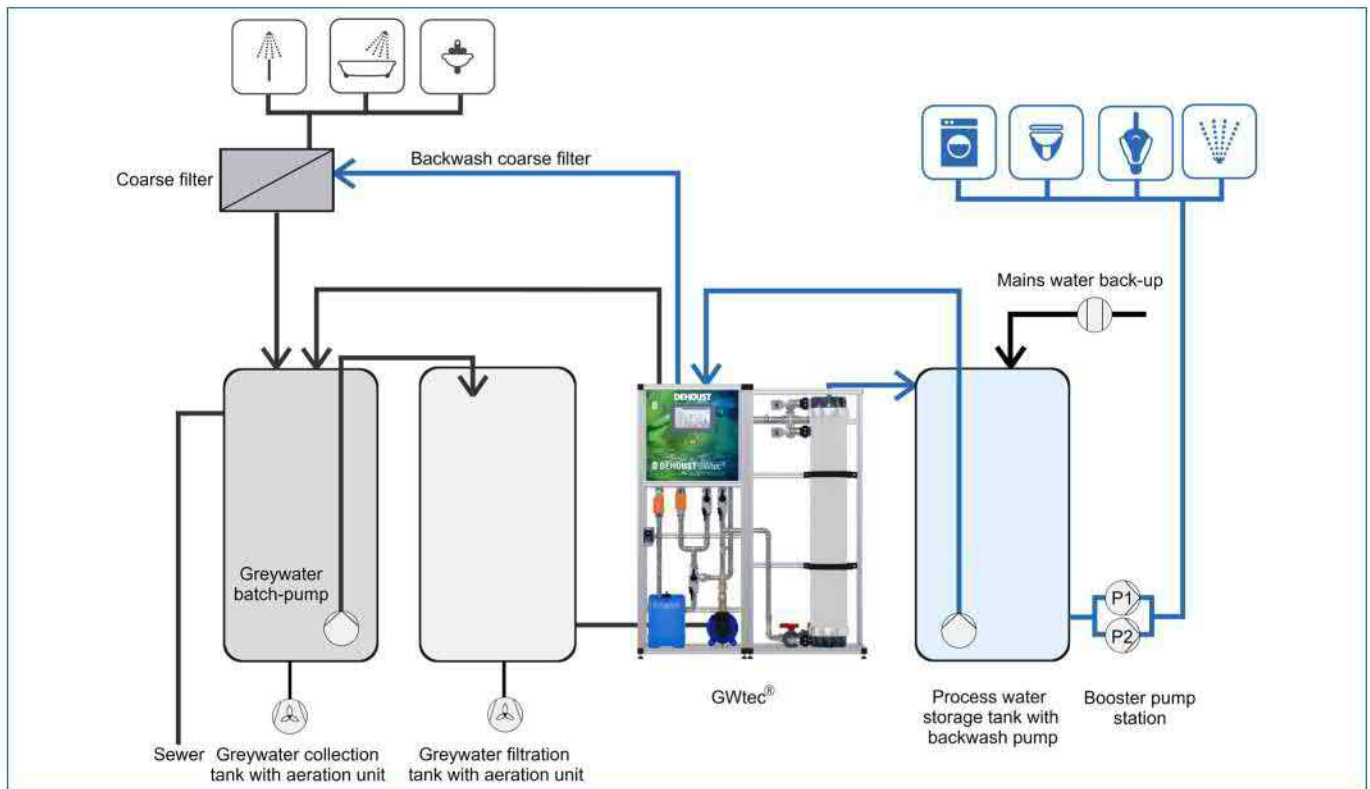
YES! A significant number of municipalities offer subsidies for the purchase of a greywater system. Please get in touch with your local authorities for more details.

## Building Certifications also known as “Green Building”

There are various certification systems available around the world. Greywater recycling and as well as rainwater harvesting is an elementary part for every certification provider.

If you have any questions regarding building certifications, contact the respective certification bodies for your country.

# Treatment steps and main components



In a multi-stage treatment process, the collected greywater is initially subjected to biological treatment and then the remaining dirt particles are removed using DEHOUST GWtec® membrane filtration.

## Rough filtration

Greywater collected separately is first freed from its undissolved water contaminants including hair and textile lint.

## Aerobic biological purification

All organic contaminants, like shower gel and soap, are biologically degraded by special wastewater bacteria in the aerated greywater tank.

## Sedimentation

Aeration in the filtration tank is controlled to settle particles and suspended solids prior to ultrafiltration.

## Ultrafiltration

The DEHOUST GWtec® membrane filter begins to gently filter the pre-treated greywater. Ultrafiltration is followed by a short flushing of the membrane filter with process water.

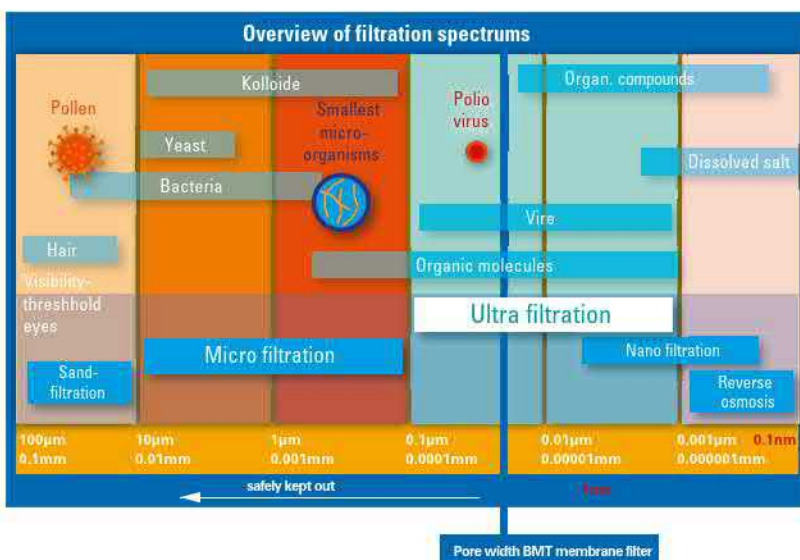
The control system manages all processes fully automatically and regulates the cleaning process depending on the level of greywater contamination for the best possible results.

## Storing process water

Due to its extremely low nutrient content (biological purification) and the hardly detectable residual biomass (ultrafiltration), the treated greywater can be stored for extended periods and reused without concerns.

## Mains water back-up

If no treated service water is available in the storage tank, the integrated potable water replenishment (EN 1717) secures the water supply.



# For Single-Family Homes

## GREYWATER RECYCLING FOR SINGLE-FAMILY HOMES

The average family uses about 65 % of its drinking water for showering, bathing, washing hands and laundry. Rather than letting this water disappear unused in the sewage system, use the water a second time for flushing your toilets, washing laundry, domestic cleaning and watering your garden with a greywater system from Dehoust. Save money and, above all, drinking water!

With the GWR 300 we offer a simple greywater recycling system for private users, preferably for garden irrigation with a daily output of up to 300 liters, depending on the quality and the time of occurrence of the greywater.

The GWM 500 is a fully automatic system with integrated drinking water feeding according to DIN EN 1717 and a powerful submersible pressure pump. The control system is designed for the integration of a rainwater cistern with feeder pump.

All plants with submerged membrane filters and biological pre-treatment for hygienically perfect process water.  
More information at [dehoust.com](http://dehoust.com) (enter article number in search)



	GWR 300	GWM 500
<b>Residents</b>	2-4	2-6
<b>Submerged membrane filter with aeration</b>	yes	yes
<b>Output volume</b>	up to 300 l/d	500 l/d
<b>Puffer volume greywater</b>	200 l	200 l
<b>BW storage</b>	500 l	600 l
<b>Pressure increase</b>	optional	Submerged pressure pump including
<b>Drinking water feed</b>	optional	including
<b>Control</b>	no	yes
<b>Rainwater integration</b>	no	possible
<b>Articles</b>	813221	813330



# For medium to larger residential projects

## BMT TECHNOLOGY WITH SUBMERGED ULTRAFILTRATION FOR GREYWATER SYSTEMS UP TO 3,000 LITERS PER DAY WITH THE GWM WATER MANAGER

Would you like it to be a little bit larger? Particularly when it comes to larger properties, greywater utilization offers substantial potential for savings – both in terms of operating costs and drinking water consumption. Save year after year with Dehoust greywater utilization and increase the attractiveness of your property with green building technology.

We support you with a solid, fully automatic greywater treatment system for in-house installation, equipped with a coarse filter, a large-volume greywater storage tank, a compact BMT unit, a service water storage tank with integrated drinking water separation station, a control unit and a suitable pressure boosting system.

Proven treatment technology since 2009



**GWM 1150**



**GWM 3000**

### Key topics at a glance:

- ▶ modular concept of the BMT membrane filter tank
- ▶ all plant components are transportable by door and by hand
- ▶ environmentally-friendly biomechanical treatment process
- ▶ no chemicals
- ▶ fully automatic control unit for regulation and monitoring of all operating processes
- ▶ volt-free alarm output for building management system
- ▶ compatible with rainwater harvesting systems
- ▶ proven and safe treatment technology in hundreds of Dehoust greywatersystems

The GWM control unit also manages the supply of rainwater from the cistern with the feeder pump (article no. 812966)



Greywater recycling system	Residents	Treatment output	Greywater storage volume	Process water storage volume	Article
<b>GWM 950*</b>	20 – 30	950 Liter / day	500 liters	500 liters	813345
<b>GWM 1150</b>	30 – 40	1,150 Liter / day	600 liters	600 liters	813355
<b>GWM 2000</b>	40 – 60	2,000 Liter / day	1.800 liters	1.700 liters	813388
<b>GWM 3000</b>	60 – 80	3,000 Liter / day	2.500 liters	2.700 liters	813398

\* Type suitable for technology rooms with low room heights > 2,000 mm;  
all other types require room heights > 2,200 mm

# For residential complexes, sports centers, hotels, etc.

## GREYwater SYSTEMS UP TO 20,000 LITERS PER DAY WITH DEHOUST GWtec® CONNECT

With our generously-dimensioned greywater systems, starting at a consumption of 3,000 liters per day, for hotels, for example, your operating and maintenance costs can be substantially reduced – while the level of water quality remains high at the same time. The plant can be variably adapted to the existing space conditions.



### LATEST GENERATION in the area of greywater recycling



Greywater system DEHOUST GWtec® 240

#### Key topics at a glance:

- ▶ environmentally-friendly treatment procedure without chemicals
- ▶ energy-efficient technology
- ▶ dry-mounted hollow fiber membrane filters for fast and easy maintenance
- ▶ dynamic control of treatment performance thanks to SmartFiltrationControl
- ▶ control system with high-resolution 4" touchscreen display
- ▶ integrated web interface provides real-time access to all plant processes via smartphone, tablet and PC
- ▶ compatible with rainwater harvesting systems

#### Standard equipment:

DEHOUST GWtec® ControlUnit, DEHOUST GWtec® membrane filter, filtrate pump, level transmitter, flow meter, switching valves, greywater filtration tank and aeration unit

DEHOUST Grey Water recycling system	*Residents	**Treatment output m <sup>3</sup> /day	Weight kg	Article
DEHOUST GWtec® 140 W	up to 100	3 – 5	130	813371
DEHOUST GWtec® 240 W	200	10	190	813372
DEHOUST GWtec® 340 W	300	15	260	813373
DEHOUST GWtec® 440 W	400	20	330	813374

\* determined with operating water consumption 50 liters/resident and day (e.g. for flushing toilets, cleaning,...).

\*\* net treatment capacity including membrane filter backwash; treatment capacity dependent on operating settings and greywater contamination.

# DEHOUST GWtec® Membrane Technology

All of the data communication is safeguarded against unauthorized access and only runs on the company's own DehoustCONNECT server.

Remote servicing is enabled by using a secure SSH connection. Any further device communication with the DehoustCONNECT cloud is based on encrypted connections on port 1883 and 8883. No port forwarding needed.

The DehoustCONNECT control unit's integrated web interface provides a wide range of remote operation options:

- ▶ reviewing and modification of operating parameters to optimize performance
- ▶ live monitoring of operating processes and data
- ▶ error analysis and correction via remote access
- ▶ sending alarm and status messages via e-mail
- ▶ automatic software updates
- ▶ Data output in MODBUS or BACnet



Example GWtec® 440. Storage volume depends on system.

# Supplementary components ...

## Coarse filter DEHOUST MAX I

with DN 100 ports including backwashing

control via DEHOUST GWtec® unit

Article 812651

## Coarse filter DEHOUST MAX II

with DN 150 ports including backwashing

control via DEHOUST GWtec® unit

Article 812657



## Greywater collection tank 1,500 – 4,000 liters

with inlet DN 100/500 and overflow nozzle DN 100/150

control via DEHOUST GWtec® unit

Article 962051 – 1,500/1,350 liter volume

Article 962053 – 2,000/1,800 liter volume

Article 962055 – 2,500/2,300 liter volume

Article 962057 – 3,000/2,800 liter volume

Article 962059 – 4,000/3,750 liter volume



## Process water storage including drinking water storage

In accordance with DIN EN 1717 with overflow nozzle DN 100/150

control via DEHOUST GWtec® unit

Article 962050 – 1,500/1,250 liter volume

Article 962052 – 2,000/1,650 liter volume

Article 962054 – 2,500/2,050 liter volume

Article 962056 – 3,000/2,450 liter volume

Article 962058 – 4,000/3,100 liter volume



additional tanks:



# ... for DEHOUST GWtec® technology

## Aeration unit

- ▶ Aeration unit for greywater collection tank
- ▶ Article 813440



## Greywater batch pump

- ▶ Greywater batch pump DOC 3
- ▶ Volume rate: max. 8.7 m<sup>3</sup> / h
- ▶ Delivery height: max. 7 m
- ▶ Article 813443

- ▶ Greywater batch pump DOC 7
- ▶ Volume rate: max. 13.8 m<sup>3</sup> / h
- ▶ Delivery height: max. 11 m
- ▶ Article 813444



## Automatic drainage system for process water storage

- ▶ Automatic drainage system for process water storage
- ▶ Article 813456



## Rainwater harvesting package

- ▶ DEHOUST GWtec® rainwater feeder pump for automatic replenishment of rainwater to the process water storage tank including fill level indicator rainwater cistern
- ▶ Article 813475



All supplementary components are supplied and controlled through the DEHOUST GWtec® Station