

German national technical approval for  
**NEUTRAclear Z-83.4-6**

Efficient and environmentally  
friendly system for the treatment  
of polluted washing water



Recycling of washing water

# Recycling of washing water eases the burden on the environment and lowers operating costs



*Even in Germany, where water is plentiful, the conditions for saving drinking water reserves should be designed with the requirements of the future in mind, ensuring that the same standard can be maintained for future generations. Annex 49 of the German Wastewater Ordinance gives an example. It contains, among other requirements, a stipulation for recycling washing water.*

*The treatment of washing water not only eases the burden on the environment. It also helps to lower the operating costs significantly.*

*The circulation water treatment system provided by Mall functions without chemical additives.*

*The costs of drinking and wastewater are significantly reduced.*



# Environmentally friendly operation on a mechanical-biological basis – NEUTRAclear

## The mechanical-biological treatment process

The polluted washing water flows towards the pre-treatment basin. Heavier and floating materials are retained there. The pre-treated washing water flows further into the treatment basin. During this process, it flows through the filter made of gravel and lava sludge. Microorganisms colonise the filter grains in a natural way. A biofilm is created by means of which the organic substances are biologically degraded. In the counter-current, air bubbles are guided through the filter bed by a compressor. These air bubbles supply the biology with oxygen, and dirt particles are floated upwards and fed to the pre-treatment basin via the sludge extraction funnel. The treated washing water flows into the storage basin for service water and is available for further use.

## Exceptional cost-effectiveness

The treatment basins are pre-mounted in the factory ready for connection, and only need to be tubed together on site, leading to a significant reduction in construction time. Due to the installation of the circulation water treatment system in the ground, the amount of space required in the equipment room for further equipment can be kept to a minimum. Thanks to the fact that no operating materials are required, and the treatment process is not controlled via pumps and valves, the level of self-monitoring and maintenance work is very low. The operating costs of the circulation water treatment system are low and the amortisation period is accordingly shorter.

## Additional savings possible through the use of rainwater

Due to the use of rainwater for rinsing the vehicles, or to offset evaporation and other water losses, a high level of drinking water costs and fees for surface sealing can be saved.

## Areas of application

- Portal car wash facilities
- Wash facilities for commercial vehicles
- Continuous car wash facilities

## Our company stands for quality and expertise

Many years of experience, continuing development and innovative products distinguish us as specialists in the field of water separation and treatment technology. We also have a sales, installation and service network which covers the whole of Germany.

## Annex 49

This part of the German Wastewater Ordinance deals with wastewater containing mineral oil. One of the essential legal requirements is to use a high proportion of recycling of water from automatic car wash facilities without causing an additional burden through the treatment.



**Top:** Installation of a NEUTRAclear system below ground level

**Below:** Side-channel compressor with controller



# NEUTRAclear – individual planning, service and installation



## Design and flow path

The system consists of the optimized pre-treatment basin, which retains floating particles and settleable solids, the biological cleaning stage with adsorption filter and finally the counter flow ventilation and service water storage basin. All components are designed to match each other and are operated as a flow-through system. The washing water will flow by gravity through the entire system, ending with the discharge of the excess water into the sewer system. As an option it is possible to replenish evaporation and incidental losses with rain water or fresh water.

## The advantages

- Very low maintenance and reliable operation
- No chemical additives required
- No odor nuisance
- Saves space, because all treatment basins are installed underground
- Reduction of surfactants and phosphates
- Decomposition of CSB and BSB
- Simple control system
- Open-air functionality
- DIBT construction type approval Z-83.4-6
- Compatible with all wash facilities which use service water
- Aerated storage basin for service water
- No separator system required
- Only notifiable
- Clear interface definition

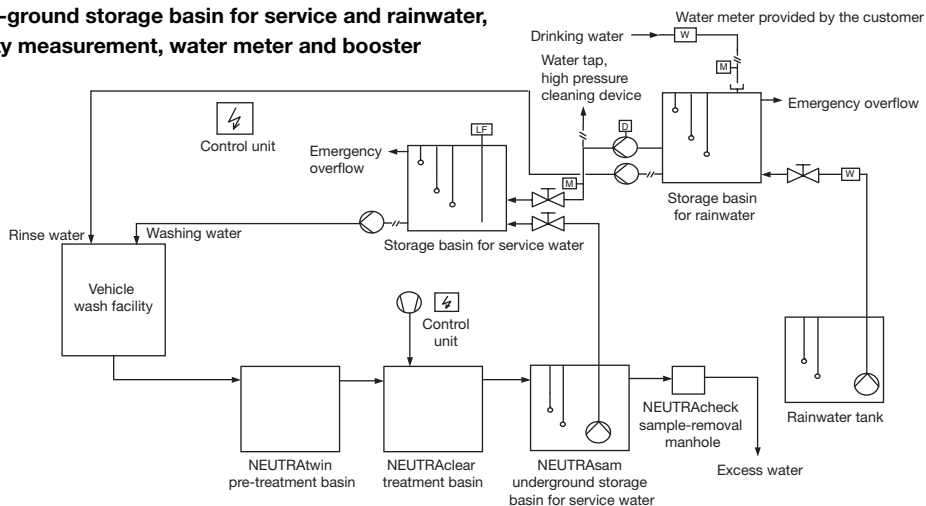
# NEUTRAclear circulation water treatment system

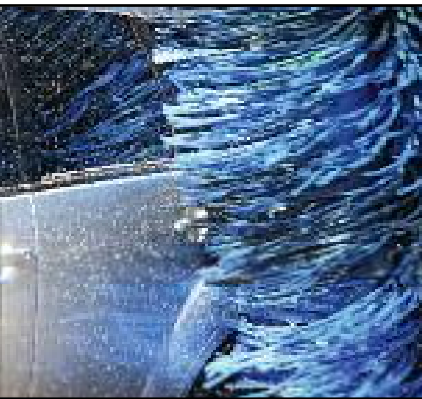
## Options

- **Storage basin for service and/or rainwater**  
Installation of an above-ground storage basin for service and/or rainwater in the equipment room with drinking water connection in accordance with DIN 1988, the corresponding pump and control unit for feeding.
- **Conductivity measurement**  
The service water is measured at any point in time and regulated accordingly in order to avoid increased salinisation.
- **Compensation for evaporation and other water losses with rainwater**  
When service water levels are too low, collected rainwater is pumped from the rainwater storage tank into the underground storage basin for service water.
- **Vertical rotary pump**  
The pump transports the service water from the above-ground storage basin for service water to the vehicle wash facility at the corresponding delivery rate and delivery height.
- **Booster station**  
The system supplies one or more consumers (water taps, high pressure cleaning devices etc.) with service or rainwater at the corresponding delivery rate and delivery height.
- **Sludge dewatering**  
The sludge which collects in the pre-treatment basin can be pumped either automatically or manually as required into the dewatering container provided for the purpose. This saves disposal costs and regular sludge layer thickness measurements.

## Flow chart, circulation water treatment system

### NEUTRAclear circulation water treatment system with above-ground storage basin for service and rainwater, conductivity measurement, water meter and booster





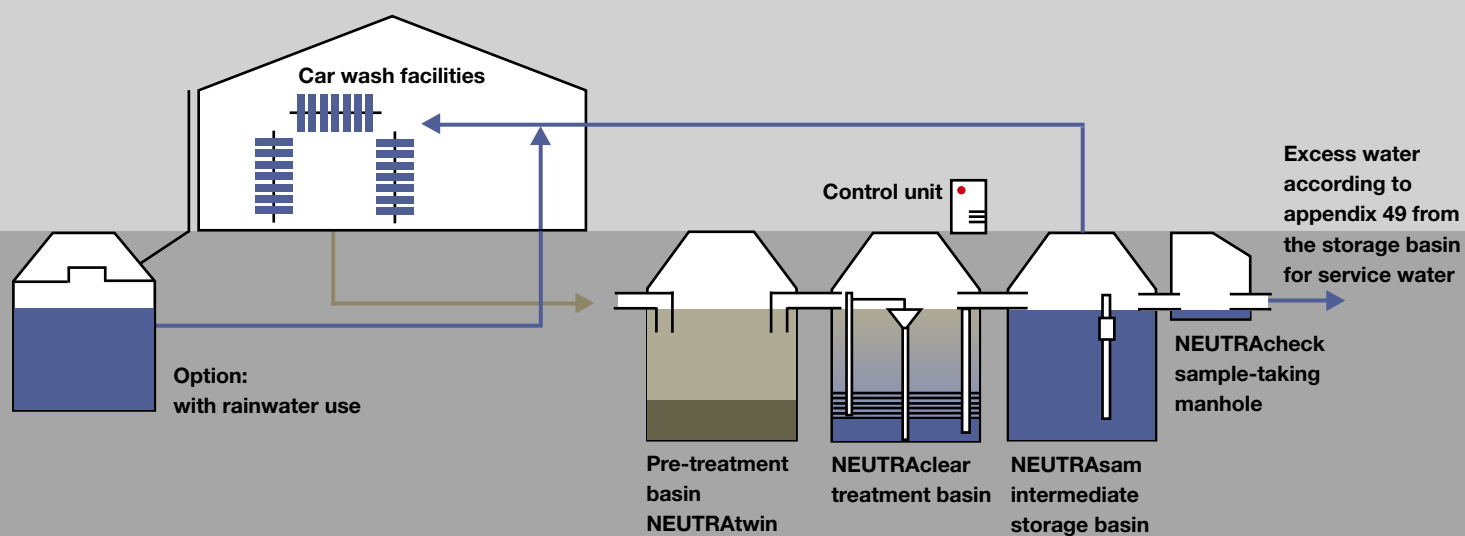
# Technical data – NEUTRAclear



## NEUTRAclear

Plant type	Interior diameter mm	Flow rate leistung m <sup>3</sup> /h	Control box Dimensions l · d · h mm	Connected electrical load
C 1500	1500	bis 6,00	810 · 640 · 1100	0,75 kW; 400 V
C 2000	2000	bis 11,00	810 · 640 · 1100	1,1 kW; 400 V
C 2500	2500	bis 17,00	810 · 640 · 1100	2,0 kW; 400 V
C 3000	3000	bis 32,00	1320 · 640 · 1100	2 · 2,0 kW; 400 V
C 4000	4000	bis 46,00	2030 · 840 · 1250	2 – 3,0 kW; 400 V

## Kreislaufanlage NEUTRAclear



# Project reports – Public Transport Authority, Regensburg, Germany



## The initial situation

The existing bus washing facility with its service water treatment system was beyond refurbishment. Because of the very calciferous fresh water, it was also decided to utilise the roof surfaces and use the water effectively for the last rinsing cycle. The Regensburg Public Transport Authority (RVV) owns 70 buses and uses another 297 buses from external companies, which have to be regularly washed.

## The solution

The rainwater run-off on the approximately 1000 m<sup>2</sup> roof surface is discharged via a filter shaft into a large, 66 m<sup>3</sup> tank. The water is then pumped from there to a pre-treatment tank. The rainwater is used on the one hand for rinsing and on the other hand for reducing the conductivity in winter when the salt content of the service water is too high. The service water is treated with a NEUTRAclear C2000 circulation water treatment plant that has national technical approval. The

wastewater from the workshop and pre-wash is treated with a Class I and II NEUTRAmax separator plant to EN 858 / DIN 1999-100, with an integrated NS 10-2500 sludge trap.

## Advantages

- Prefabricated concrete elements in B 55
- Cost savings due to short construction time
- Guaranteed impermeability
- Still no fresh water required after one year
- Optimum washing results, above all with the windscreens (no calcium residues)
- The colours of the buses have been more bright since, according to the owner
- General technical approval



## Client

Regensburg Public Transport Authority (RVV)

## Design

Ing. Büro Scholz,  
Regensburg, Germany

## Year of construction

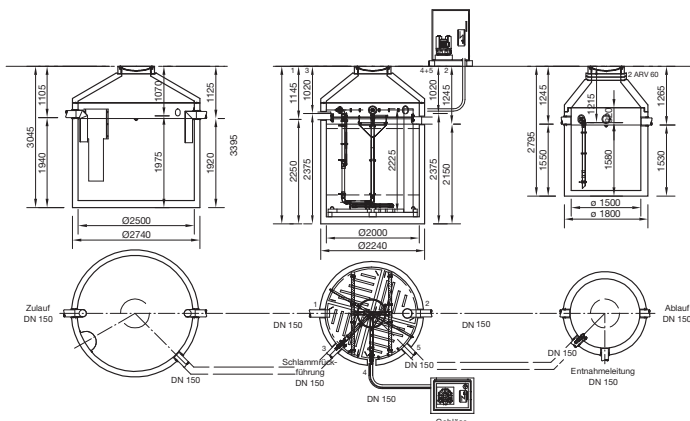
2005

## Products

Filter shaft S 2500,  
large, 66 m<sup>3</sup> tank,  
pump equipment,  
NEUTRAclear circulation  
water treatment plant C2000

## NEUTRAclear C2000 circulation water treatment plant Aerated concrete shaft cover with dirt trap

Pre-treatment  
basin  
NEUTRA  
twin  
8,700 l



Storage basin  
for service water  
NEUTRA  
Asam  
2,500 l



# References

## Mall sets quality standards. And has been doing so for decades.

With its extensive range of environmental and climate protection products, the Mall group has become one of the most important specialist providers over the last five decades, offering process-engineering expertise in the fields of separation technology, rainwater management, wastewater treatment, new energies and pump and plant engineering.

With continuous dialogue and expertise transfer, we have combined concrete technology and environmental processes to create integrated solutions and systems.

Mall is one of the market leaders in rainwater and separation technology and, with 5 production facilities, has a Germany-wide presence in the construction material trade.

Mall has additional subsidiaries in Switzerland, France, Poland and Hungary.

### Our core areas of competence

- Rainwater management
- Separators
- Recycling of washing water
- Wastewater treatment plants
- New energies
- Manhole and container construction
- Pump and plant engineering
- Grey water utilisation

### Services

- Consultation
- Project planning
- Installation drawings
- Installation with leak test
- Maintenance and service

See [www.mall.info](http://www.mall.info) for project reports.

## Further references

**HZL Ringzug**  
**SüdbadenBus GmbH**  
**RVB Regensburg**  
**Spedition Dischinger**

**78194 Immendingen**  
**79100 Freiburg**  
**93053 Regensburg**  
**79238 Ehrenkirchen**

**Train wash facility + petrol station**  
**Bus wash facility + petrol station**  
**Bus wash facility**  
**Car and lorry wash facility + petrol station**

**Audi Zentrum Regensburg**  
**Opel Bergmann**  
**Albrecht + Grimm**  
**Volkswagenzentrum Trier**  
**Lorry tank station and wash centre**  
**Autohaus Hilsheimer**

**93059 Regensburg**  
**28857 Syke**  
**04179 Leipzig**  
**54290 Trier**  
**78056 VS-Schwenningen**  
**68159 Mannheim**

**Car portal wash facility**  
**Carwash**  
**Carwash**  
**Car portal wash facility**  
**Lorry wash facility**  
**Car portal wash facility**

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