

Leaders in Zero Liquid Discharge

H<sub>2</sub>O 



 German Engineering

## VACUDEST. The Effective Distillation System.



H2O GmbH belongs globally to the most experienced experts for the sustainable processing of industrial wastewater. Under the quality label “German Engineering”, using the brand name VACUDEST we offer high-quality, economical vacuum distillation systems. The excellent quality of the treated water allows it to be recycled back into the production process, thus creating a zero liquid discharge production!

# Sustainable treatment of industrial wastewater. A reliable investment into the future.

VACUDEST vacuum distillation systems allow reliable and effective processing of industrial wastewater in just one process step. In general they pay for themselves within two years, representing a reliable investment in a future free of wastewater.

Today, almost every industry is producing hazardous wastewater which is not allowed to be disposed into the public sewer system. This includes wastewater from the following industries:

- Surface technology, such as paint pre-treatment, electroplating and hardening
- Aviation and MRO
- Waste disposal and recycling
- Electronic devices
- Metal working and processing
- Chemicals, pharmaceuticals and healthcare
- Power generation and supply

Vacuum distillation has been established on the market as the most economical method

for the processing of a large variety of different industrial wastewater. It is a viable alternative to the disposal of wastewater with specialized waste management companies or other processing methods. Using our innovative state of the art VACUDEST process you can separate clean water from your wastewater. Thus you reduce the volume of your wastewater and respectively your waste management cost up to 99 percent.

The treated water can be recycled to the manufacturing process creating a zero liquid discharge production. You consequently save sustainably valuable fresh water resources and invest into a clean future worth living in.

### Processing instead of disposal:

- Recycle wastewater
- Economical
- Sustainable
- Reliable

Cost type	VACUDEST evaporator	Disposal
Interest for raising of capital	6,000 EUR/year	
Operating cost (electricity, consumables, man-power, spare-, wear- & tear-parts)	40,000 EUR/year	
Fresh water	600 EUR/year	9,000 EUR/year
Disposal of evaporation residue/ spent coolant	12,000 EUR/ year	150,000 EUR/year
<b>Total</b>	<b>58,600 EUR/year</b>	<b>159,000 EUR/year</b>
<b>Annual savings</b>	<b>100,400 EUR/year</b>	
<b>Return on investment</b>	<b>1.9 years</b>	

This example proves the cost efficiency of our VACUDEST vacuum distillation systems. This reference customer treats annually 3,000 m<sup>3</sup> spent cooling lubricant emulsions instead of disposing them with specialized waste management companies. A valuable contribution to improved economic efficiency and higher sustainability.

## Simple principle. Effective result. State of the art technology produces crystal clear distillate.

### Simple and efficient:

- Crystal clear distillate
- Free of salts and heavy metals
- Highest evaporation rates

As pioneers in the application of vacuum distillation in 1986 we were the first to make industrial wastewater reusable. Our state of the art technology is based on the simple principle of separation of materials due to boiling point deviations. The industrial wastewater is evaporated. All substances having higher boiling points than water stay in the evaporation residue. This includes heavy metals, salts as well as oils, fats and tensides. Because the clean water evaporates, the evaporation residue volume is reduced to anywhere between 0.5 and 5 percent of the original wastewater volume. The emerging vapor is practically free of impurities. After condensation it can be used as process water in the production process. This creates a complete zero liquid discharge production.

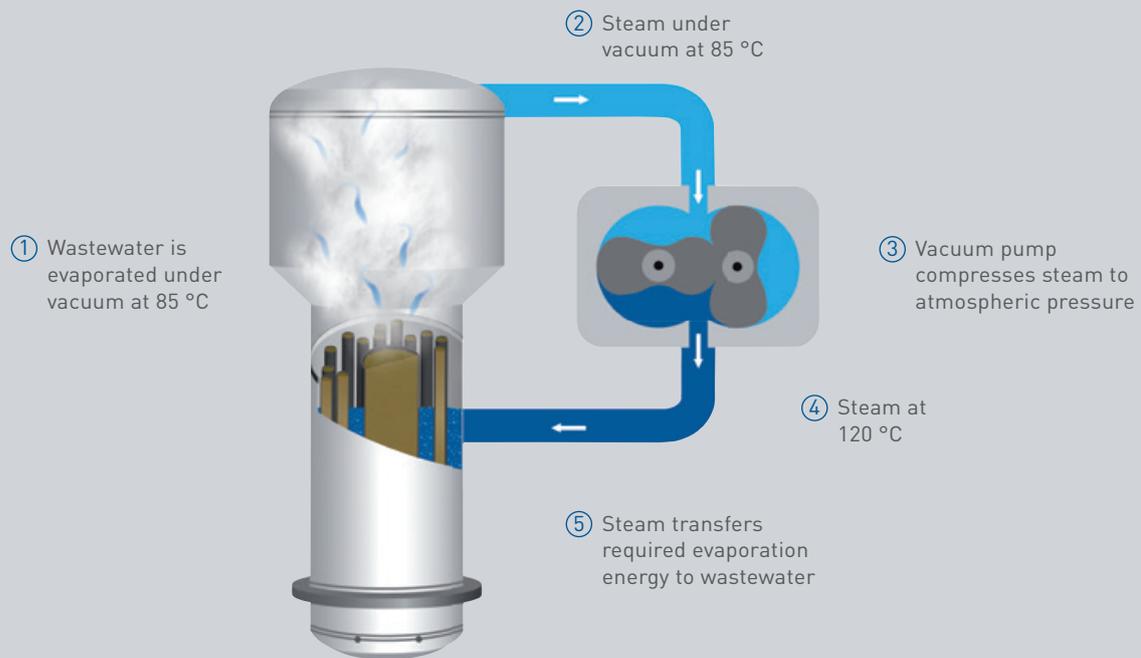
Some substances cannot be completely separated by this principle. Thus the distillate of conventional evaporators is often turbid and of poor quality, requiring post treatment. In recent years we could introduce many innovations setting benchmarks on the market regarding optimization of the separation process. Thus the VACUDEST process, compared to other conventional evaporators, guarantees crystal clear distillate with outstanding quality. Our Clearcat- and game-changing Purecat-technologies for instance allow COD reduction (COD: Chemical oxygen demand, a measurement for the degree of pollution with organic substances) of up to 99 percent. Your investment in a trend setting VACUDEST vacuum distillation system is your guarantee for excellent distillate quality.



Industrial wastewater is often heavily polluted with oil, fat and heavy metal salts. It is not allowed to be disposed of into the public sewer system without treatment.



Using VACUDEST vacuum distillation systems you can process your industrial wastewater simply and efficiently. The quality of the produced distillate sets benchmarks and meets strictest environmental standards.



Thanks to energy recycling the VACUDEST process is a forerunner regarding optimization of energy efficiency and reduction of operating cost.

## Energy recycling ensures cost efficiency. Sustainable process for a clean environment.

Energy is an expensive production resource. To save energy we've relied since 1986 on the energy efficient process of direct vapor recompression. The industrial wastewater is evaporated under a slight vacuum. This reduces the boiling temperature of the water. The emerging steam is compressed to ambient, normal pressure and heated up by means of a vapor compressor. The energy of the hot steam is recycled to evaporate the wastewater. Due to the energy recycling no additional evaporation energy is required. The electrical motor of the vapor compressor is the sole energy consumer in the system. Thus the VACUDEST process has an energy efficiency of 95 percent.

One of our goals, as we continue to further develop our VACUDEST vacuum distillation systems, is to improve energy efficiency. We therefore developed a new technological feature:

Activepowerclean continuously cleans the inner heat exchanger surface providing for an optimal heat transfer from the steam to the wastewater.

Since 2001 we succeeded in reducing the average energy consumption in our VACUDEST vacuum distillation systems by 28 percent. Our modern VACUDEST vacuum distillation systems stand for highest energy efficiency and lowest operating cost.

### Efficient vacuum distillation:

- 27 percent less energy consumption
- Low evaporation residues
- Efficient heat recycling
- Lowest operating cost



We analyze your industrial wastewater. Based on the results we develop the best solution for your individual requirements.



During project development our aim is to optimally integrate the VACUDEST vacuum distillation systems into your production process.

## Customized system solutions. Cost efficiency based on the VACUDEST Modular-System.

### The VACUDEST Modular-System:

- Standardized functional groups
- Cost efficient
- Technological applications
- Customized

An integral part of H2O's philosophy is the development of customized system solutions. Industrial wastewater is never equal. The manifold of applications requires customized treatment systems. Thus we don't offer VACUDEST vacuum distillation systems off the shelf.

To ensure that a customized solution is affordable for our customers we developed the VACUDEST Modular-System. From more than 3.5 million variants our experts choose exactly the right configuration for your individual requirements, fast and flexible and with highest quality.

Clearcat	Activepowerclean
Purecat	Destcontrol
Vacutouch	VACUDEST ZLD
Smart Services	VacuCIP
...	

Our cost efficient VACUDEST Modular-System allows us to optimally configure any system, using standardized functional groups and technological applications.



VACUDEST vacuum distillation systems offer highest efficiency and added value compared to other treatment systems for industrial wastewater – particularly thanks to the smart services supplied by H2O. The result is increased uptime, improved reliability, superior profitability and sustainability.

#### **Highest system availability**

- Fully automatic 24 hour operation
- Highest efficiency and optimised system with Industry 4.0
- Worldwide remote service for fast service support
- Maintenance friendly construction reduces down times

#### **User friendly Vacutouch control system**

- Touchscreen control for the entire system
- On-screen manual for standard procedures
- Error message notification via e-mail or SMS
- 12 month storage of process data

#### **Reliable solutions**

- Customized systems for your individual requirements
- Proven technology in many industrial sectors in a variety of applications
- Process guarantees, verified in our application center for zero liquid discharge production

#### **Highest economic efficiency**

- 95 percent energy efficiency due to energy recycling
- Highest evaporation rates reduce waste management cost
- Excellent distillate quality allows direct recycling, without post treatment

