Evaporation technology by

ENVOTHERM®

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Experts in treatment and recycling of industrial wastewater

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ENVOTHERM – Smarter Wastewater Recycling

ENVOTHERM develops innovative systems for recycling industrial wastewater. Since 2007, the company has focused on continuous development and real-world testing to prove the strength of its unique product platform.

In 2022, ENVOTHERM became part of the ANMASI Group, enabling further growth and broader reach. The vision is clear: to create wastewater treatment solutions that are both environmentally friendly and financially viable.

The Technology

(AIRLESS VAPOURING)
ZLD with E•MVR Technology
ENVOTHERM's Zero Liquid Discharge (ZLD) systems use advanced evaporation to remove all pollutants from industrial wastewater – allowing up to 98% of the water to be reused. Thanks to the patented E•MVR technology, the system runs continuously, and reuses heat internally, reducing energy consumption by up to 66%. This makes it one of the most efficient and resource-saving solutions on the market.

Reduce wastewater in your production by 90–98% with an ENVOTHERM solution

Application Areas

ENVOTHERM units treat industrial wastewater from almost any source – as long as water is the main component. Suitable for a wide range of applications.

Hereby some of the application areas:

- Cutting fluids and other oil-bearing wastewater
- Wastewater from alkaline cleaning
- Rinsing water carrying TEFLON and heavy metals
- Process water from various industries: glass production-galvanic-ball polishing etc.
- Separation of organic matter in general
- Die casting: Oil, soap, heavy metals etc. are all separated effectively.

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Zero Liquid Discharge with E•MVR Technology
ZLD stands for Zero Liquid Discharge – a wastewater treatment technology that separates all pollutants from water through evaporation, ensuring no water is wasted. The purified water can be reused again and again. By using a ZLD evaporator, wastewater treatment is optimized while saving valuable resources.

Reduced Waste Through Advanced Evaporation Technology
With ENVOTHERM's patented E•MVR technology, wastewater volume is reduced by 90–98%.

This significant reduction allows large amounts of process water to be reused, lowering the overall environmental footprint of your production. Unlike traditional vacuum evaporation systems that operate in batches, E•MVR works continuously.

Wastewater flows steadily into the evaporation chamber, and the compressor runs without interruption, keeping heat within the process. This results in outstanding energy efficiency – using as little as 20 kWh per cubic meter of treated water.

Heat Exchanger Innovation
The core of the system is the reuse of outgoing steam to heat the incoming wastewater. This smart use of energy reduces overall consumption by up to 66% compared to conventional systems.

ENVOTHERM holds a strong market position due to its patented technology, tailored to most industrial wastewater segments.

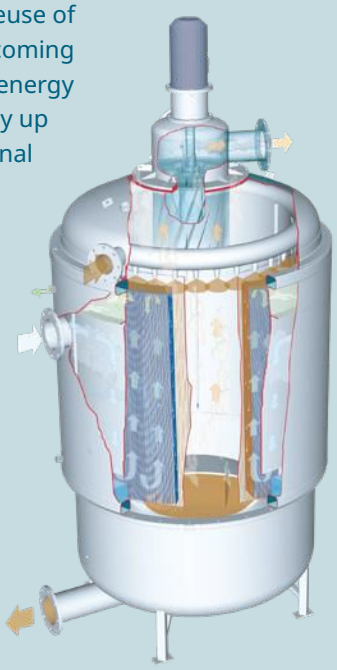

Illustration of the heat exchanger, which is a central part of the technology behind the ENVOTHERM system.

The advantages

ENVOTHERM E•MVR contains many advantages compared to similar systems:

- Low energy consumption (15-60 kWh/m3)
- Low chemical consumption
- Low maintenance cost due to patent construction design
- Intergrated mechanical defoamer
- High degree of separation - Wastewater is separated into distillated (Clean water) and a waste concentrate of only 3-15% of the original quantity
- All heavy metals are effectively removed e.g.: Chromate (Cr), Nickel (Ni), Cadmium (Ca) etc.
- Low COD after treatment is needed.
- Complete monitoring system
- Siemens touch screen and intuitive software

Model overview

MODEL	ZLD 0.5	ZLD 1	ZLD 2	ZLD 3	ZLD 4	ZLD 5	ZLD 6	ZLD 7	ZLD 10
RATED CAPACITY (m^3/Year)	450	750	1500	2250	3000	3750	5400	6750	13500
ENERGY CONSUMPTION (Kwh/m^3)	60-70	55-65	50-60	45-55	40-50	35-45	30-40	25-35	20-30
LENGTH (mm)	1720	2210	2210	3120	3120	3500	3500	4030	5320
WIDTH (mm)	1005	1270	1270	2130	2130	2230	2230	2330	2970
HEIGHT (mm)	2120	2720	2720	3060	3060	3090	3090	3152	3925
WEIGHT (kg)	950	1550	1850	2100	2400	3800	4700	6500	8000
SUPPLY VOLTAGE (V)	400/440	400/440	400/440	400/440	400/440	400/440	400/440	400/440	400/440
SUPPLY FREQUENCY (Hz)	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60

Why Wastewater Treatment Matters

Wastewater is a serious environmental burden that can have harmful effects on our surroundings if not properly managed and disposed of. That's why effective wastewater treatment solutions are essential. Ensuring that water is thoroughly cleaned before being released back into nature.

Disposing of industrial wastewater is a critical task that calls for efficient and environmentally friendly methods. Common treatment processes include physical, chemical, biological, and thermal treatments – as well as water reuse and recycling. An ENVOTHERM system combines thermal treatment and water reuse.

The Complete ENVOTHERM Solution

ENVOTHERM's technology provides companies with a reliable, cost-effective and future-proof solution for treating process and wastewater.

1. Pre-filtration and pH Adjustment

- The wastewater first passes through a band filter or pre-filter to remove impurities and solid particles.
- After pre-filtration, the pH level is adjusted to optimize the following treatment process.

2. Evaporation System – The E•MVR Method

- ENVOTHERM's advanced evaporation technology ensures highly efficient wastewater treatment.
- With low energy consumption, process water is converted into clean distillate that can be reused in production.
- The evaporation system minimizes waste volume, significantly reducing disposal costs.

3. Activated Carbon Filter – Ensuring Purity

- This step eliminates remaining organic compounds and ensures the treated water meets the highest quality standards.
- After evaporation, an activated carbon filter is recommended to remove any unwanted smells or trace substances.

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Before Evaporator

PH SICAL-CHEMICAL PARAMETERS		
PH-value (laboratory)		10,2
Conductive at 25°	µg/cm	38000
ANIONS		
Chloride (CL)	Mg/l	1100
Sulfate (SO)	Mg/l	1000
Total cyanide	Mg/l	0,34
SUMMARY PARAMETERS		
Oil+fat (total)	Mg/l	i.k
Oil (non-polar fraction)	Mg/l	i.k
Sediment	Mg/l	<0,033 (lod)
Suspended solids	Mg/l	560
INORGANIC TRACE ELEMENTS		
Arsenic (As)	µg/l	195
Lead (Pb)	µg/l	12700
Cadmium (Cd)	µg/l	69,7
Chromium (Cr)	µg/l	7100
Copper (Cu)	µg/l	13600
Mercury (Hg)	µg/l	<0,0300 (LOD)
Molybdenum (Mo)	µg/l	5750
Nickel (Ni)	µg/l	16800
Selenium (Se)	µg/l	29,6
Silver (Ag)	µg/l	23
Zinc (Zn)	µg/l	173000
cobalt (Co)	µg/l	0,757
tin (Sn)	µg/l	3,35

After Evaporator

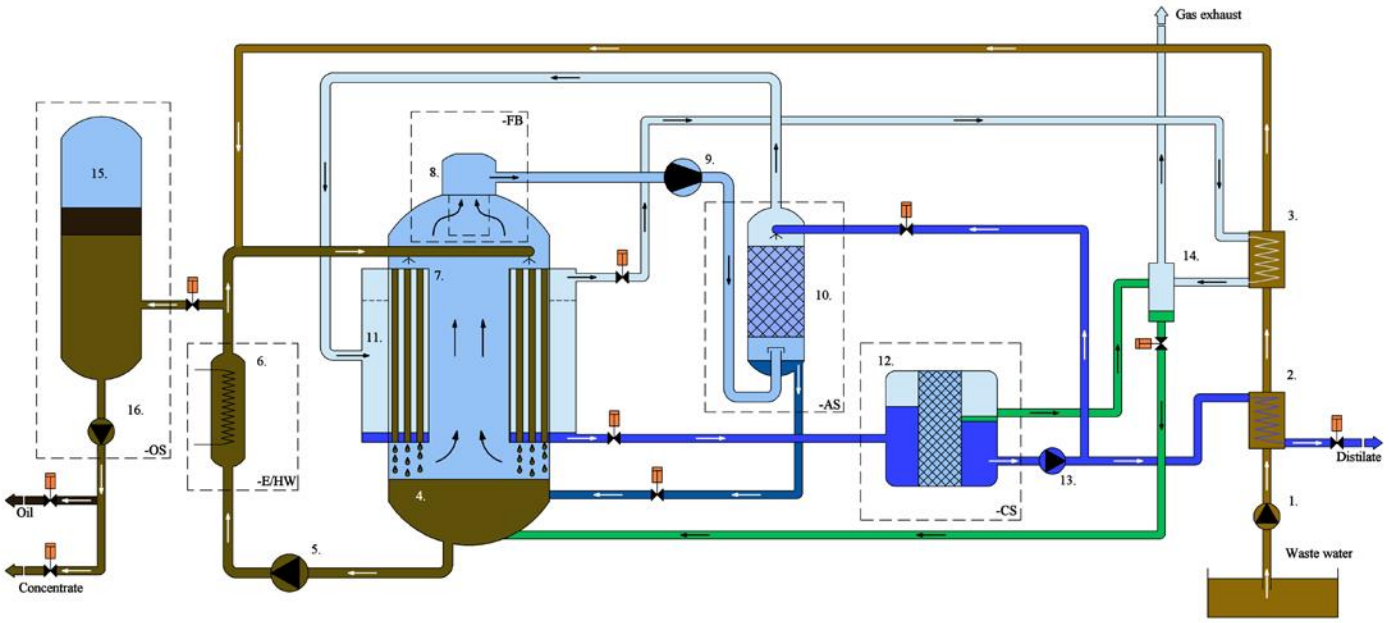
PH SICAL-CHEMICAL PARAMETERS		
PH-value (laboratory)		10,4
Conductive at 25°	µg/cm	470
ANIONS		
Chloride (CL)	Mg/l	<1,0(+)
Sulfate (SO)	Mg/l	7,2
Total cyanide	Mg/l	<0,010 (lod)
SUMMARY PARAMETERS		
Oil+fat (total)	Mg/l	280
Oil (non-polar fraction)	Mg/l	9,8
Sediment	Mg/l	<0,033 (lod)
Suspended solids	Mg/l	6,4
INORGANIC TRACE ELEMENTS		
Arsenic (As)	µg/l	4,9
Lead (Pb)	µg/l	<1 (lod)
Cadmium (Cd)	µg/l	<0,03 (lod)
Chromium (Cr)	µg/l	7
Copper (Cu)	µg/l	26
Mercury (Hg)	µg/l	<0,0300 (LOD)
Molybdenum (Mo)	µg/l	2,6
Nickel (Ni)	µg/l	9
Selenium (Se) (Se)	µg/l	<0,24 (+)
Silver (Ag)	µg/l	<1 (lod)
Zinc (Zn)	µg/l	<90 (+)
cobalt (Co)	µg/l	<0,010
tin (Sn)	µg/l	0,06

Lab Report Summary

This lab report presents heavy polluted wastewater values from a Danish railway company, measured before and after treatment using our ZLD (Zero Liquid Discharge) unit. The results show a significant reduction across all parameters - and notably, this has been achieved without the use of activated carbon. If activated carbon is added, both conductivity and oil/fat residues can be completely eliminated.

Installation strength and Flow Chart overview

- Low energy consumption
- Low maintenance and running



Built to last
- lower costs,
less maintenance
and smaller
environmental
footprint

PURE WATER
LESS ENERGY

Installation

ENVOTHERM E•MVR systems comes as a compact unit ready for installation.

All processes in our installation are supervised and controlled by the team and we secure the correct run-in of the systems for optimal performance.

E•MVR systems are designed to save space as they are installed in compact units.

E•MVR systems allow you easy maintenance and the compact size are optimizing the production space for your benefit.

Service

ENVOTHERM E•MVR systems are well proven and documented over the years with basis in naturally functioning processes. This is your security for low service- and maintenance cost.

ENVOTHERM will happily enter into individual service contracts where your ENVOTHERM evaporator will be monitored constantly online.

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