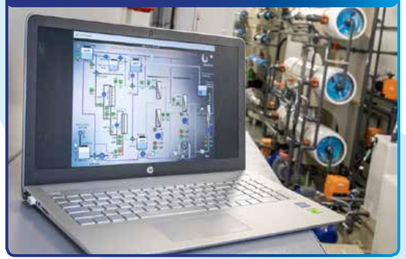
What we do

BLUE-tec works as a one-stop-shop company, realizing technology from laboratory scale up to delivery of full scale turn-key installations. We offer membrane solutions in combination with other complementary technologies.

Complete Turn-key Delivery

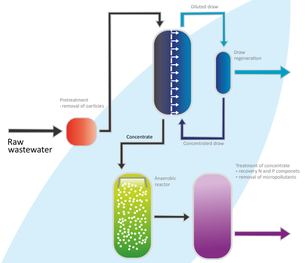
Engineering

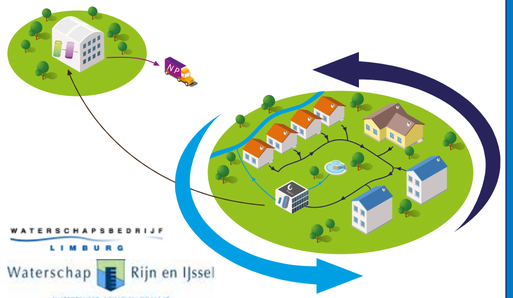
Process Control



Consulting & Lab Testing

CoRe Water: a new way of municipal wastewater treatment





CoRe Water: **Co**ncentrate, **Re**cover and **Re**use

- > No greenhouse gas emissions
- > Production of biogas
- > Recovery of raw materials from concentrate
- > Effective removal of micro-pollutants (pharma)
- > Modular concept

WATERSCHAPSBEDRIJF LIMBURG
Waterschap Rijn en IJssel
WATERBEHEER, VEILIG EN OP MAAT
Royal HaskoningDHV Enhancing Society Together
KWR Watercycle Research Institute
ALLIED WATERS
waterschap vallei en veluwe

Attero: Concentration of NOM from digestate of green waste digestion

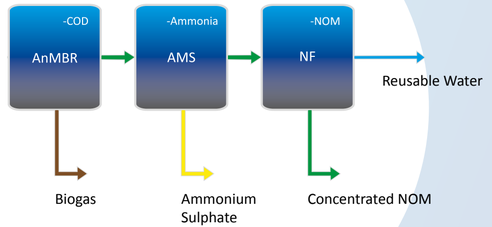
attero
energiek met milieu

Objective: Reduce COD, ammonia and NOM (Natural Organic Matter) from liquid produced at green waste treatment, in order to

Proposed and tested technologies:

- > COD removal and biogas production by anaerobic MBR (AnMBR)
- > Ammonia membrane stripping (AMS) of effluent anaerobic MBR;
- > Concentrating NOM by high pressure nanofiltration (NF)

BLUE-tec



bluetec
PROCESS WATER TECHNOLOGIES

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bluetec
PROCESS WATER TECHNOLOGIES

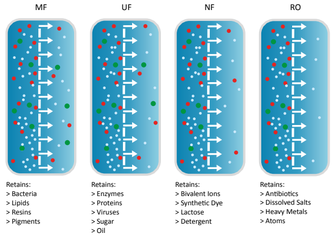
Let's Concentrate (on) your problem!

Our Technologies

Pressure Driven Membrane Processes

Characteristics:
> Application of mechanical pressure for separation
> Pressure ranges from 0,2 bar for microfiltration up to 70 bar for reverse osmosis
> Components are retained based on their size

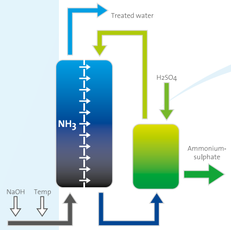
Applications:
> Concentration of products
> Water reuse
> Product recovery
> Drinking water production
> MBR
> Draw solution recovery



Ammonia Membrane Stripping

Characteristics:
> Use of gas permeable membrane which allows the permeation of the NH_3
> Small footprint
> Low energy use
> Ammonium recovery in the form of a fertilizer

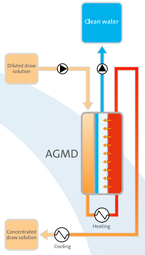
Applications:
> Centrate water from sludge treatment
> Landfill leachate
> Industrial wastewater
> Manure



Membrane Distillation

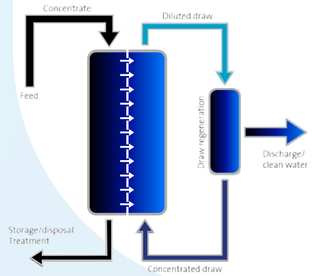
Characteristics:
> Water is transferred through a hydrophobic membrane due to the difference in vapor pressure
> Use of low grade (waste) heat of 80 °C
> Feed concentration up to 250 g/L salts can be reached

Applications:
> Brine concentration
> Pickling bath recovery
> Landfill leachate
> Manure concentration



Forward Osmosis

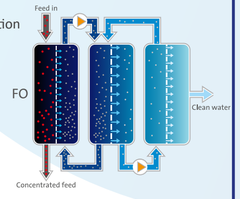
Characteristics:
> Driving force: osmotic pressure difference (no mechanical pressure applied)
> Low-fouling separation process
> Very high concentration factors possible
> Forward Osmosis membrane rejects organics, minerals, and other solids



Applications:
> Zero Liquid Discharge for industrial wastewater
> Treatment of hospital wastewater (CoDis Water concept)
> Cold concentration by a mild process for the food and beverage industry
> Direct concentration of municipal wastewater with recovery of water, biogas, and nutrients (CoRe Water concept)

High Brine Reverse Osmosis

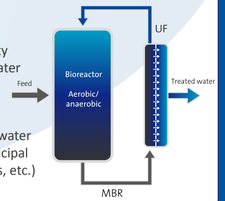
Characteristics:
> Draw solution concentration up to 160 g/L
> Energy consumption 15 - 20 kWh/m³
> Use of osmotic assisted RO and leaking RO membranes



Applications:
> Zero Liquid Discharge
> Brine concentration
> Cold concentration in the food and beverage industry
> Replacement of existing evaporators

Membrane Bioreactor

Characteristics:
> Combination of membrane filtration and biological treatment
> Small foot print
> Excellent treated water quality
> Treatment of difficult wastewater
> Aerobic and anaerobic



Applications:
> Treatment of industrial wastewater
> Treatment of small scale municipal wastewater (residencies, ships, etc.)
> Water reuse

Our Segments

Industrial wastewater

More and more industries face the request for Zero Liquid Discharge (ZLD) due to undesired compounds in the final effluent. BLUE-tec's membrane filtration technologies, such as FO and HBRO provide solution at acceptable costs.

Subsegments:
> Waste industry and land fill leachate
> Metal and surface industry
> Oil & gas industry
> Chemical industry
> Food and beverage industry
> Leather and textile industry

Municipal wastewater treatment

Although wastewater contains a lot of valuable materials, such as ammonium, phosphate and organics, only a small amount of these valuables are recovered nowadays.

By means of new membrane technologies, such as Ammonia Stripping and Forward Osmosis (FO) the recovery can be strongly improved.

Together with partners BLUE-tec has developed the CoRe Water (Concentrate, Recover, and Reuse) concept for complete recovery of raw materials and clean water from wastewater.

Industrial Processes

Cold concentration and reduction of energy use are the new challenges for the process industry. With membrane filtration the industry can make new steps in the production and concentration of products. possible against acceptable costs.

Through the application of Forward Osmosis cold concentration in the food and beverage industry is possible, ensuring excellent quality of the dewatered products.

Manure Treatment

Many places with intensive agriculture industry face the challenges posed by over production of manure.
By recovering phosphate, ammonium, and other valuable minerals from manure the transition from linear to circular economy can be realized - the recovered raw materials can be distributed to places where they are needed.

Applied Technologies:
> Forward Osmosis
> Ammonia Membrane Stripping
> Ultrafiltration and Nanofiltration
> Membrane Bioreactor

Our Realizations

Forward Osmosis - Membrane Distillation Pilot

Reverse Osmosis Test Pilot

Forward Osmosis Unit

High Brine Reverse Osmosis Unit

Ammonia Membrane Stripping Unit

High Pressure Nanofiltration Unit

Partners

ALLIED WATERS®
ederna
KWR Watercycle Research Institute
Royal HaskoningDHV Enhancing Society Together

Clients

Waterschap Rijn en IJssel – Waterbeheer: veilig en op maat
Waterschapsbedrijf Limburg
attero – energiek met milieu
4PET HOLDING
DANONE
GZV Groot Zevert Vergisting
waterschap vallei en veluwe