About US: Company specialized in Water Engineering

MPuremust-sn



MAnaergy

- Development of Innovative Water Treatment
 Technologies in our own Research and
 Development Centre.
- Broad portfolio of technologies and possibility to create Tailor-Made Solutions
- Creation of **Pilot Plants** to demonstrate in a practical way that the solutions work.
- More than 15 years in the sector and **knowledge of the complete water cycle**.
- Agreements with **Saint Gobain** for sharing experiences, technologies and projects.

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Our

Technologies

FILTRALITE

VOksidasie

MPuremust-sn

SAINT-GOBAIN

Company Background



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A key requirement for a technology to succeed: ↓ OPEX , ↓ CAPEX , SUSTAINABLE

| Iron Removal | Mangenese Removal | Ammonium Removal | Uranium Removal | Fluorides Removal | Sulphates Removal |
|--|---|---|--------------------------------|--|---|
| 0,03€ / m³ | 0,04 € / m³ | | 0,02 € / m³ | 0,18 € / m³ | |
| AdsortionParticulation | Adsortion Particulation | • Biological | Adsortion | • Coagulation/Filtration with FILTRALITE | • Biological |
| Phosphorus | Heavy Metal Removal: | Biological | Water treatment | Advanced | Biologial |
| Recovery | Arsenic 0,03 € / m³ Cupper Cadmium | denitrification | for the agri-food industry. | Oxidation | Carbonates Removal |
| | ChromeZincNickel | PUREMUST-SN® | ANAERGY | OKSIDASIE | BIOSOFTENING |
| • Adsortion | 0,02 € / m ³ • Adsortion • Particulation | 0,14 € / m³ • Biological | Biological | • Advanced Oxidation | 0,21 € / m ³ • Biological |
| *Estimated prices (each case has to be studied individually) | | | | | |

FILTRALITE



Puremust-sn®: Leading cost-effective and sustainable technology for nitrate removal.

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Why was the technology created?



Nitrogen is a vital nutrient that helps plants and crops grow, but **high concentrations** generates impacts on the stability of aquatic ecosystems.



These toxic substances generates a risk to human health and It may also affect the survival, growth and reproductive capacity of some animals.





The EU is aware of the problem and is setting out increasingly stringent measures that countries must take to reduce water pollution.

There is a growing global need of reducing water stress and treating groundwater

Central and Southern European countries have more than 20% of wells with excess nitrates.

"Need for biological removal technologies. Unlike reverse osmosis, these solutions can completely remove the pollutant and do not transfer the problem to other systems or again to the water cycle"

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Why it works better?



CERAMIC MATERIAL Expanded Clay from Norway

High Porosity & SSA [>1.500 m2/m3]

Bulk Density [800 – 900 kg/m3]

Grain Sizes [2-5 mm]

Great durability. (more than 20 years)

INTEGRATED AND REMOTED CONTROLED AUTOMATION SYSTEM

WORK IN CARBON DEFAULT (carbon below stoichiometry).

As a Result:

The system is capable of operating without loss of performance in very cold water temperatures, down to 4 degrees Celsius (39 degrees Fahrenheit).

Very **low OPEX** by working with carbon dosing below the stechiometric level.

The plants are very compact because they require a very low HRT which generates low CAPEX.

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FILTRALITE®

FILTRALITE our bacteria carrier

What solutions are available on the market?









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What solutions are available on the market?

| | INVESTMENT COST | MAINTENANCE COST | ENERGY CONSUMPTION | ADVANTAGES | DISADVANTAGES |
|---------------------|--------------------|---------------------|-----------------------|---|---|
| REVERSE OSMOSIS | HIGH | HIGH | MEDIUM | REMOVES OTHER POLLUTANTS. | REJECTIONS OF HIGHLY CONTAMINATED WATER. |
| MPuremust-sn | MEDIUM | LOW | LOW | NO REJECTION OF CONTAMINATED WATER. NO WATER CONSUMPTION | INNOVATIVE TECHNOLOGY IN THE MARKET |
| ION EXCHANGE RESINS | HIGH | HIGH | LOW | LOW WATER CONSUMPTION | VERY EXPENSIVE |

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Lower associated operating and investment costs.

How is it different/better than what is available?



Aeration is not necessary after bioflitration.

We work with almost a stoichiometric dose of carbon (less than 1.2 ppm acetic acid per ppm nitrate)

No need to overdose carbon \rightarrow No need to remove it after biofiltration.

100% automated plant with remote control

Completely clean, odorless and tasteless output water.



Puremust-sn[®] maintains 95% nitrate removal efficiency from 60ppm to 1600ppm nitrates over a water temperature range of 4º to 39º degrees.



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PERFORMANCE TESTED IN REAL INSTALLATIONS OVER SEVERAL YEARS

FILTRALITE VPuremust-sn

VPuremust-sn VS REVERSE OSMOSIS



WITH PUREMUST-SN, NITRATES ARE TRANSFORMED INTO HARMLESS NITROGEN GAS. NO DISCHARGE OF POLLUTANTS

PUREMUST-SN REMOVES NITRATES

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REVERSE OSMOSIS SEPARATES NITRATES FOR THE INITIAL WATER SUPPLY IT IS TREATING, BUT DOES NOT REMOVE THEM AND CREATES ANOTHER, MORE POLLUTED DISCHARGE.



WHAT COULD BE AN APPROXIMATE PRICE?

| m3/h | gal/min | USD | |
|------|---------|----------------|--|
| 10 | 44 | 175.604,00 USD | |
| 20 | 88 | 203.226,40 USD | |
| 30 | 132 | 244.363,60 USD | |
| 40 | 176 | 312.873,60 USD | |
| 50 | 220 | 364.607,10 USD | |
| 60 | 264 | 437.054,80 USD | |
| 70 | 308 | 476.346,00 USD | |
| 80 | 352 | 529.534,20 USD | |
| 100 | 440 | 585.499,20 USD | |
| 140 | 616 | 666.952,00 USD | |

These are reference prices for the removal of **100 ppm nitrates**. 100 ppm is the most common amount of nitrates that customers want to remove.

Cases must be analyzed individually, but can be used as a good reference.

All these prices are for fully automated, remotecontrolled, containerized plants.

We are able to supply plants at any flow rate.

*EXW price. Taxes not included

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How can WRF help?

What parts of the technology need to be validated?

• Technology has been already tested in Europe. We would like to test the technology under real conditions in the US.

What types of partners do you need?

• Partners related to US Water Managent Companies or US companies linked to water industry should be great.

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Do you need Partners?

• After testing the technology in the US we would like to get an agreement with an American company to produce in the US the plants sold there.

Any desire for in-kind support?

• Sopport for finding the place to test the technology under real conditions in the US.

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Thank you!

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"When Engineering comes from Ingenuity"





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