MAR 2014

Water Energy s.r.l

THE POWER OF WATER

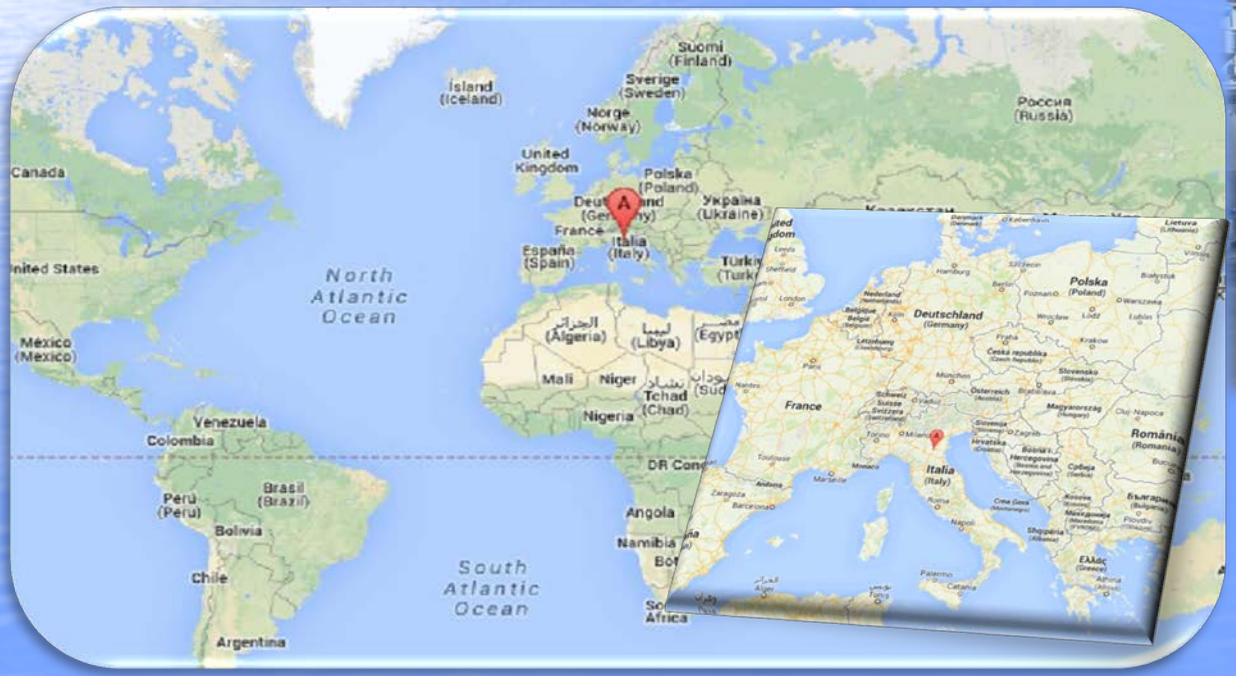
WATER ENERGY s.r.l.

Thanks to the decennial experience of its engineers and technicians, WATER ENERGY operates in the field of water treatment with competence and professionally.

The company main activities are:

- planning and production of systems for the treatment of both primary and effluent industrial waters;
- study and development of customized plants;
- assistance and maintenance of systems, both occasional or with contracts of programmed assistance;
- development and supply of ideal products for each kind of system.

OFFICES AND WAREHOUSE LOCATION



SECTORS OF ACTIVITY:

In its different activities, WATER ENERGY aims to be a technical partner for such companies that in their working process need to use water of specific quality, and which need to be treated for decontamination before being discharged or recycled

Disposal of contaminated effluent water besides being a legal requirement in most countries represents often a huge annual cost to the industrial companies.

WATER ENERGY offers the opportunity to perform in site purification of water, thanks to its multiple solutions of plants and equipments allowing re-use of the treated water.

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COMPANIES OF INTEREST:

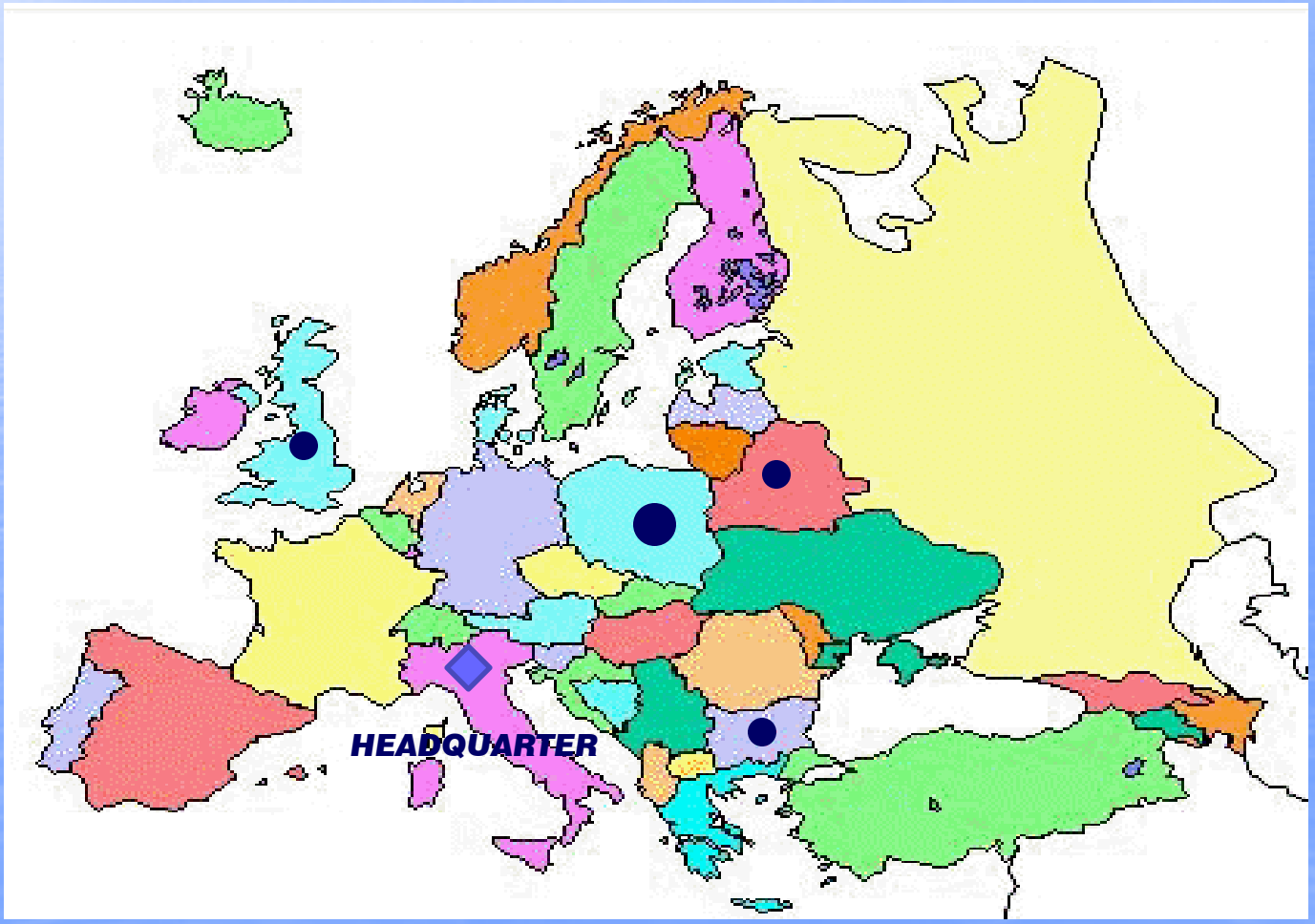
- INDUSTRIAL COATING/ PAINTING
- PAPER COMPANIES
- WOODWORKING
- CARPENTRIES
- ENGINEERING COMPANIES
- TYPOGRAPHIES, SERIGRAPHIES,FLEXIGRAFHIES
- FOOD PROCESSING COMPANIES
- TREATMENT OF EFFLUENTS FROM CONTAMINATED SITES

WATER ENERGY WORLDWIDE

Plants & Chemicals:

WATER ENERGY WORLDWIDE

PARTNERS, DEALERS & BRANCHES EUROPE



WATER ENERGY WORLDWIDE

PARTNER, DEALER & BRANCH WORLDWIDE

MAIN CLIENTS

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WATER ENERGY REALIZES:

- Chemical-physical systems
- First rain water treatment plants
- Quartz and active carbon filters
- Different types of mechanical filters
- Osmosis plants
- Demineralizers
- Oil-water separators
- Gravity separation systems
- Vacuum evaporation systems
- Flotations units
- Products dosing systems
- Units of treatment control
- Sludge treating systems

CHEMICAL-PHYSICAL PLANTS

WATER ENERGY realizes purifiers of chemical-physical kind specially designed and developed to treat waste waters containing non-biodegradable dissolved pollutants:

- inert mineral substances;
- organic substances;
- mineral oils;
- detergents and solvents;
- paint or debris in suspension.

CHEMICAL-PHYSICAL PLANTS

Sed-Floc 800

Sed-Floc 1300

FILTRATION SYSTEMS

WATER ENERGY has different types of filtering minerals. The most common are:

- Siliceous quartz of different size to hold sludge, sand, algae, and suitable to clarify the water.
- Activated carbons to hold solvents, surfactants, flavors, scents, colors and other substances in suspension.

QUARTZ AND ACTIVE CARBON FILTERS

Quartz and active carbon filter for a site drainage, load 1000 l/h

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DEMINERALIZERS

Usually, demineralization is a physical-chemical treatment process to eliminate, either partially or totally, dissolved salts.

WATER ENERGY demineralizers work with reverse osmosis technology.

Reverse osmosis is the phenomenon that happens when a difference of pressure is applied to the surface of a membrane separating two solutions. Such pressure is contrary to and higher of osmotic pressure, so the flux occurs from more diluted to more concentrated solution. Reverse osmosis is a technology used to desalinate seawater.

DEMINERALIZERS

Osmosis on skid; 300-1.000 lt/ora

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DEMINERALIZERS

Ion-exchange systems

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OIL-WATER SEPARATORS

WATER ENERGY'S OIL-WATER SEPARATORS are used to separate mineral oils, even if in emulsion, present in treatment waters.

These plants use a coalescence system (union of two or more particles to form a bigger one), are modular systems and are totally made in stainless steel AISI 304.

OIL-WATER SEPARATORS

DS200

DS100

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SEDIMENTATION UNITS

SEDIMENTATION UNITS realized by WATER ENERGY are used to speed up separation of sludge derived from chemical-physical water treatments, by inducing the sludge to settle and thicken on the bottom.

This equipment can be manufactured either in stainless steel AISI 304 or in rotomoulded polypropylene.

STEEL SEDIMENTATION UNITS

VACUUM CONCENTRATORS

WATER ENERGY'S VACUUM EVAPORATORS/CONCENTRATORS use the combined effect of vacuum and heat pump to obtain distillation of aqueous solutions at low temperature (about 30°c).

In this way it is possible to considerably reduce the volume of waste for disposal (concentrate) and to recover the purified water (distilled) inside the productive cycle.

Sometimes, it is also possible the recovery and utilization of raw materials contained in the wastewater solution.

These plants are particularly suitable to treat highly polluted and aggressive wastewaters, that are difficult to treat with traditional techniques.

Our evaporators and concentrators work with vacuum, and this optimizes the efficiency of energy used (boiling point from 20 to 35°C).

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VACUUM CONCENTRATORS

8000 lt/day evaporator

10000 lt/day

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Galvanic baths & Sulphuric pickling

Crio Crystallizers are batch working units, that use the cooling technique to reach the solubility limit, separate the processed solutes, by obtaining solid crystals of waste. The cooling process creates saturation on the surface of the heat exchanger and the crystals are removed through an automatic scraper. The power used to cool the solution is supplied by a refrigeration system.

CRIO SERIES FOR DECARBONATION OF SODIUM CARBONATE ENRICHED SOLUTIONS

The decomposition of cyanide in alkaline, cyanic solutions based on sodium, copper, brass and cadmium produces carbonate, that influences negatively the process of electrodeposition.
Crio crystallizers can be used for the decarbonation and removal of impurities from electrolytes.

CRIO SERIES FOR THE REMOVAL OF FERROUS SULPHATE FROM SULPHURIC PICKLING

Crio Crystallizers are used to eliminate ferrous sulphate during the process of pickling of carbon steel. As

FLOTATION UNITS

WATER ENERGY'S FLOTATION UNITS are systems that allow to separate rapidly the pollutants from industrial processes to re-use directly the treated water.

Depending on the pollutant to be treated, WATER ENERGY'S flotation units exploit the different flotation technologies: natural flotation; dispersed air and gas flotation; induced flotation; flotation with foam.

FLOTATION UNITS

Skimmerflot 3000

Skimmerflot 5000

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FLOTATION UNITS

Skimmerflot 8000

Skimmerflot 15000

DRENA 800

The objective is to drain the sludge reducing the quantity of water inside the bags.

WATER ENERGY have studied a system to speed up sludge draining without touching the big bag. It is necessary to insert the sludge container inside a sludge- draining system (in case you use our squared sludge container, as enclosed in the pictures).

DOSING PUMPS

WATER ENERGY offers a wide range of dosing pumps that allow the dosage of different products by keeping automatically controlled, the amount of product to be dosed and the different needs of treatment. In this way, the plant management is simplified with consequent high savings.

DOSING PUMPS

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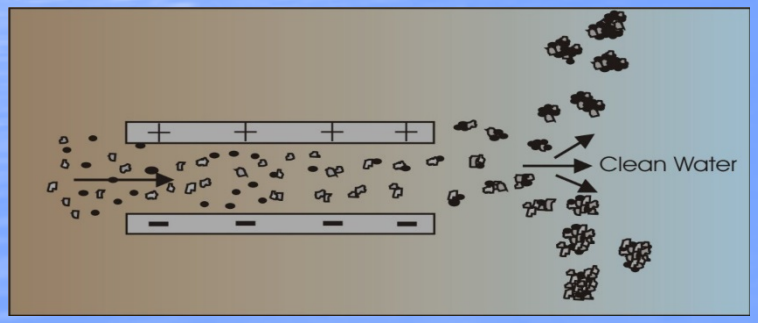
FLOTATION SYSTEMS

Taking advantage of the natural flotation or chemically induced, of the pollutants to be separated, WATER ENERGY realized water suction systems that float. These systems, defined flotation systems, when applied to submerged pumps allow to feed treatment plants by facilitating the separation of the pollutant.

ELECTROCOAGULATION TREATMENT



This technology consists in a process of separation of substances in suspension in a liquid, through electrostatic aggregation (floc shaping).

Modifying the Z-potential of a stable suspension, causes a disruption of the balance of the particles which are separated, shaping two distinct phases.

This process is used when it is needed to delete hardly settleable or filterable colloidal particles .

ELECTROCOAGULATION TREATMENT

The electrocoagulation is an alternative method to achieve the same purpose: coagulation and separation of undesirable substances in a liquid , using the electric current instead of chemical products . In its essential lines, it consists of an electrolytic cell where electrodes are positioned in the metal alloys, which coagulate and separate unwanted substances by the application of a suitable electric current.

This principle has different applications; according to the type of electrodes and the applied current, it will achieve different effects.

MAIN SECTOR:

PAINT MANIFACTURING, FLEXIGRAPHY

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CLEANING SYSTEM OF COOLING COILS

Water Energy has developed a completely automatic multi-stage cleaning system for cleaning the cooling coils of molds for various plastics. It can use up to two products as reagents, has a double water rinsing cycle and can wash the coils of twelve molds simultaneously. It may be placed in the molds storage area or wheeled and moved where necessary. Made entirely of AISI 304 stainless steel, with all fittings in AISI 316, this system is fully automatic; all process steps are manageable by the operator. It is already successfully used in several plastics molding facilities, e.g. from the eyewear, lighting, etc. industries.

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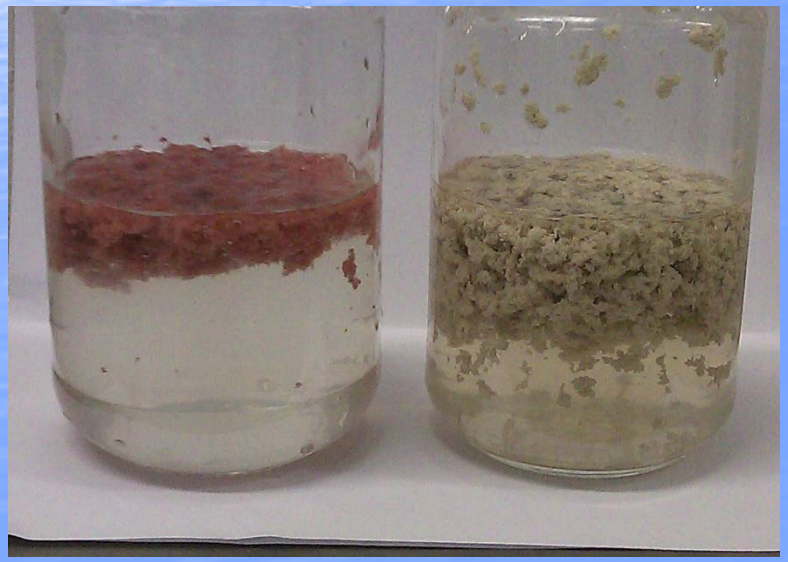
FLOTATION SYSTEMS

LABORATORY TESTING



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SLUDGE TREATMENT

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BIOLOGICAL TREATMENT

Technical office is able to design on their own. Economic offer first and the execution phase, Manufactures its own facilities, using primary supplier companies of various electromechanical machinery.
The laboratory chemical-technological environment carries out preliminary tests on the wastewater to be treated, previously studying the chemical-physical and biological, then giving the solution to the problem. We provide our customers the service of "TECHNICAL ASSISTANCE AND SCHEDULED MAINTENANCE OF THE SYSTEM"

The objectives to be achieved with the proposed service are:

- Proper management, so that the sewage treatment plant, complies with the rules and regulations on environmental protection;
- Optimize the treatment cycle, both under the functional aspect, both from the point of view of energy consumption and also by means of this control and the development of bacterial strains responsible for degradation of organic matter, dosing and if necessary an appropriate product line;

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BIOLOGICAL TREATMENT

MUNICIPAL INSTALLATION

SCHOOL & CATERING

RESORT, TURISTIC AREA, CAMPING

MILITAR AREA

HOTEL
RESTAURANT
SPA & WELLNESS

RAIN WATER TREATMENT

SHOPPING CENTER

HOSPITAL

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BIOLOGICAL TREATMENT

SLAUGHTER &
BREEDING

MILLS
VEGETATION WATER

DAIRY

CAR WASHING
TRUCK WASHING
OIL TREATMENT

WINE
BEER
VINEGAR

CHEMICAL INDUSTRY
COSMETIC INDUSTRY
PHARMACEUTIC INDUSTRY

DYEING
WHOOL

LAUNDRY

FISH

WASTE FROM LANDFILL

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THE WASTEWATER TREATMENT SCHEMATIC:

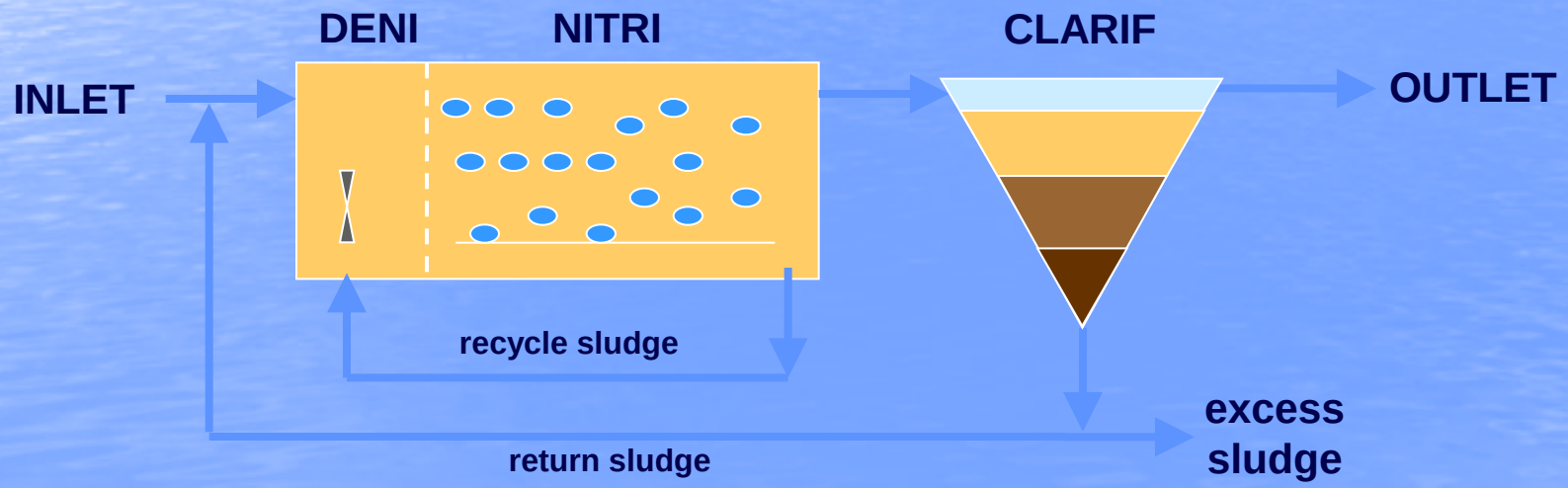
TRADITIONAL SISTEM

-Bioreactor with a part areata and another non areata ;

-Separation of sludge sedimentation tank;

-Typical concentration of sludge: 2-4 g / L;

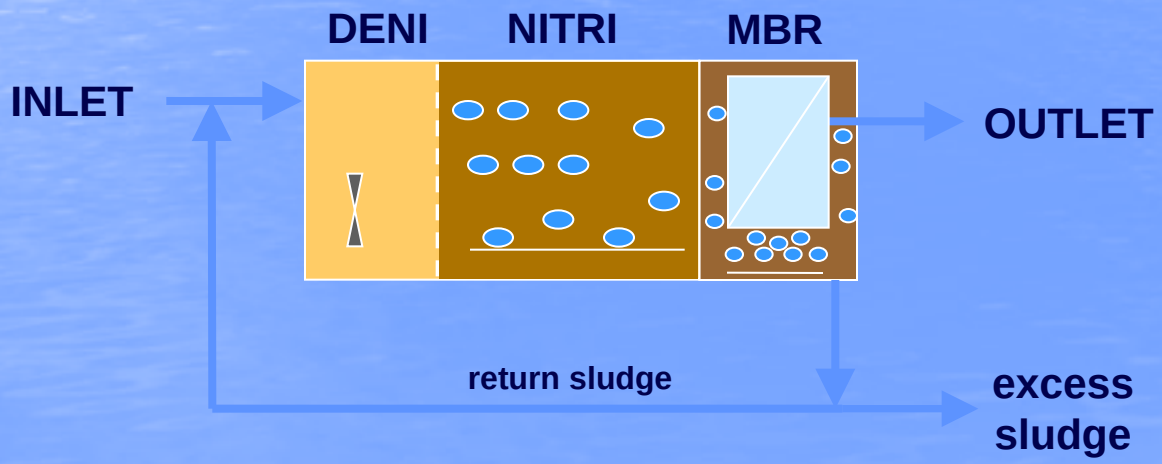
-Treatment objectives: carbon removal, nitrification, denitrification, phosphorus removal.



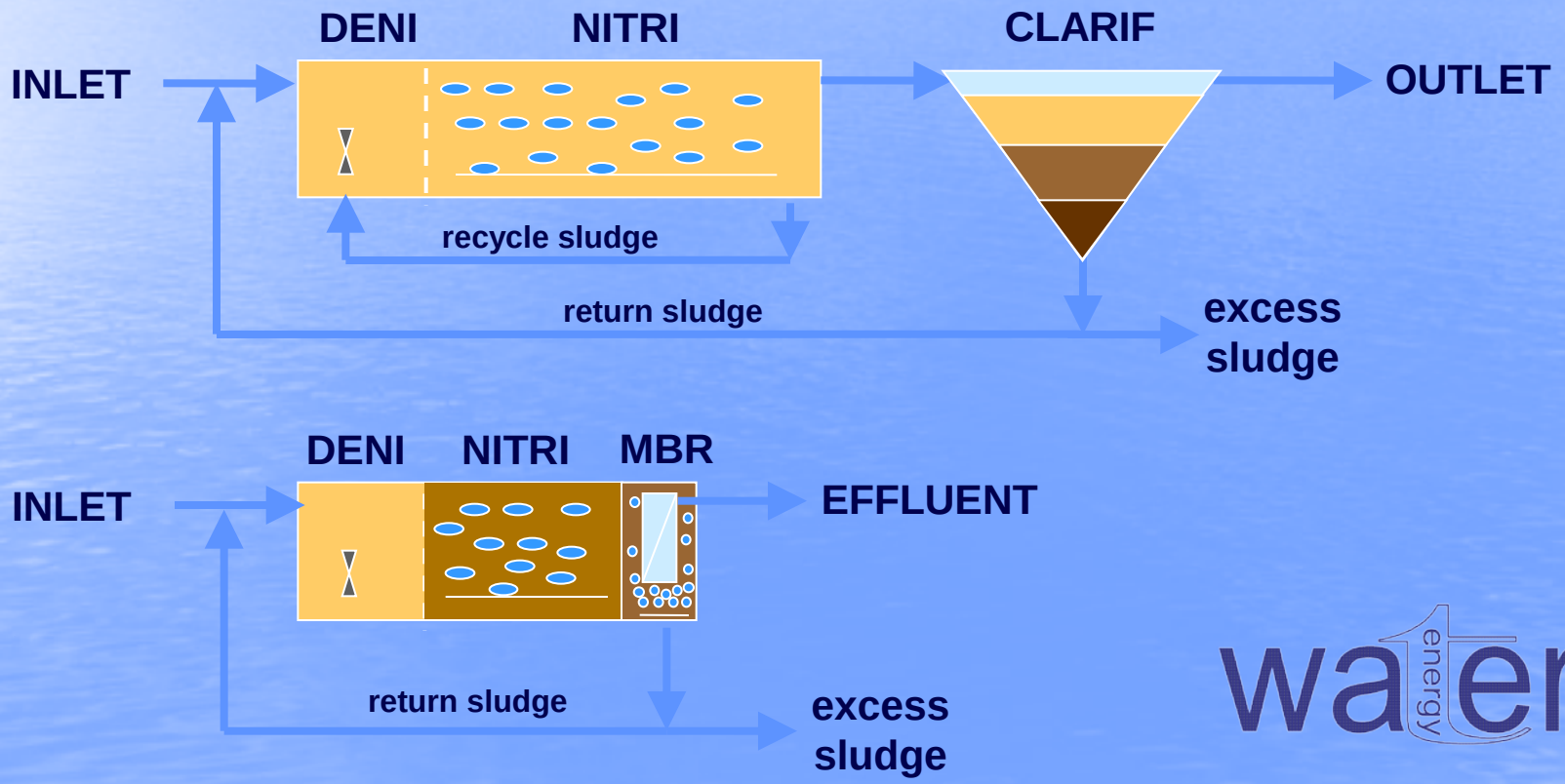
THE SHEMATIC WASTWATER TREATMENT:

THE MBR SISTEM

- Bioreactor with a part of a non-ventilated and another ventilated,
- Separation of sludge through membrane filtration;
- Typical concentration of sludge: 8 -15 g / L;
- Treatment objectives: carbon removal, nitrification, denitrification, phosphorus removal effluent free from bacteria
- Very compact system.



LESS SPACE BUT THE SAME FLOW



with the same volume biological is possible to treat a flow 3 times higher

THE MBR TECHNOLOGY FOR THE WASTEWATER TREATMENT

The MBR or Membrane Biological Reactor are an advanced purification technology most common than the traditional activated sludge. The MBR system combines a conventional activated sludge process, with the process of membrane separation (generally microfiltration or ultrafiltration), which replaces the secondary settler. Membrane bioreactors were born in the 60s, and the development of this technology is having a significant recent global spread in all those cases where it is necessary to ensure wastewater quality characteristics with particularly high technologies without high energy consumption . These technologies allow reuse for civil use (eg water washing of roads), agricultural and industrial (eg, process water or cooling) of treated wastewater permitting water conservation for the exclusive use of high quality drinking water, in order to not to affect the world's water resources available, now greatly utilized.

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TECHNOLOGY APPLIED TO THE WASTEWATER TREATMENT








WHAT ARE THE MEMBRAN

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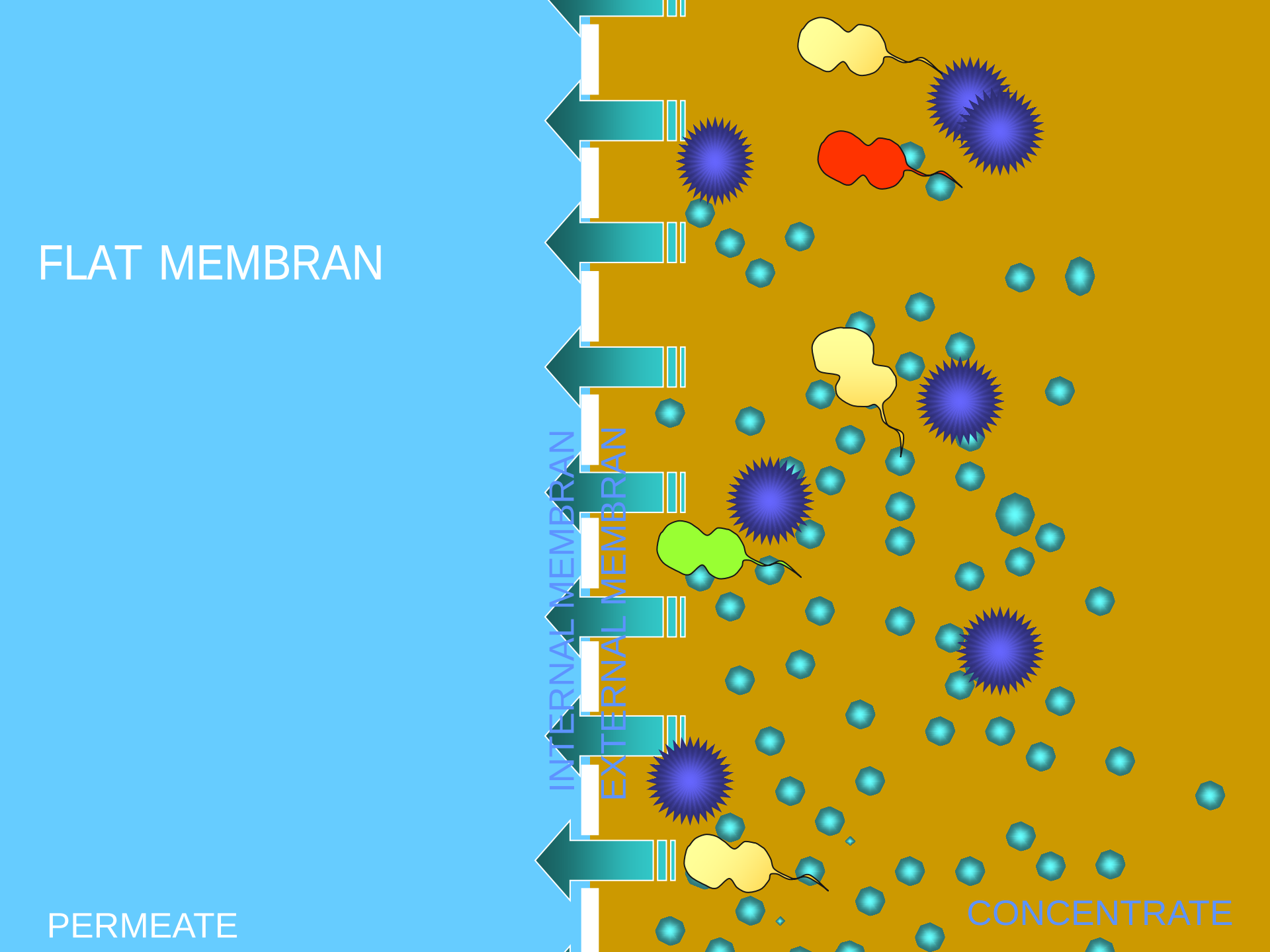
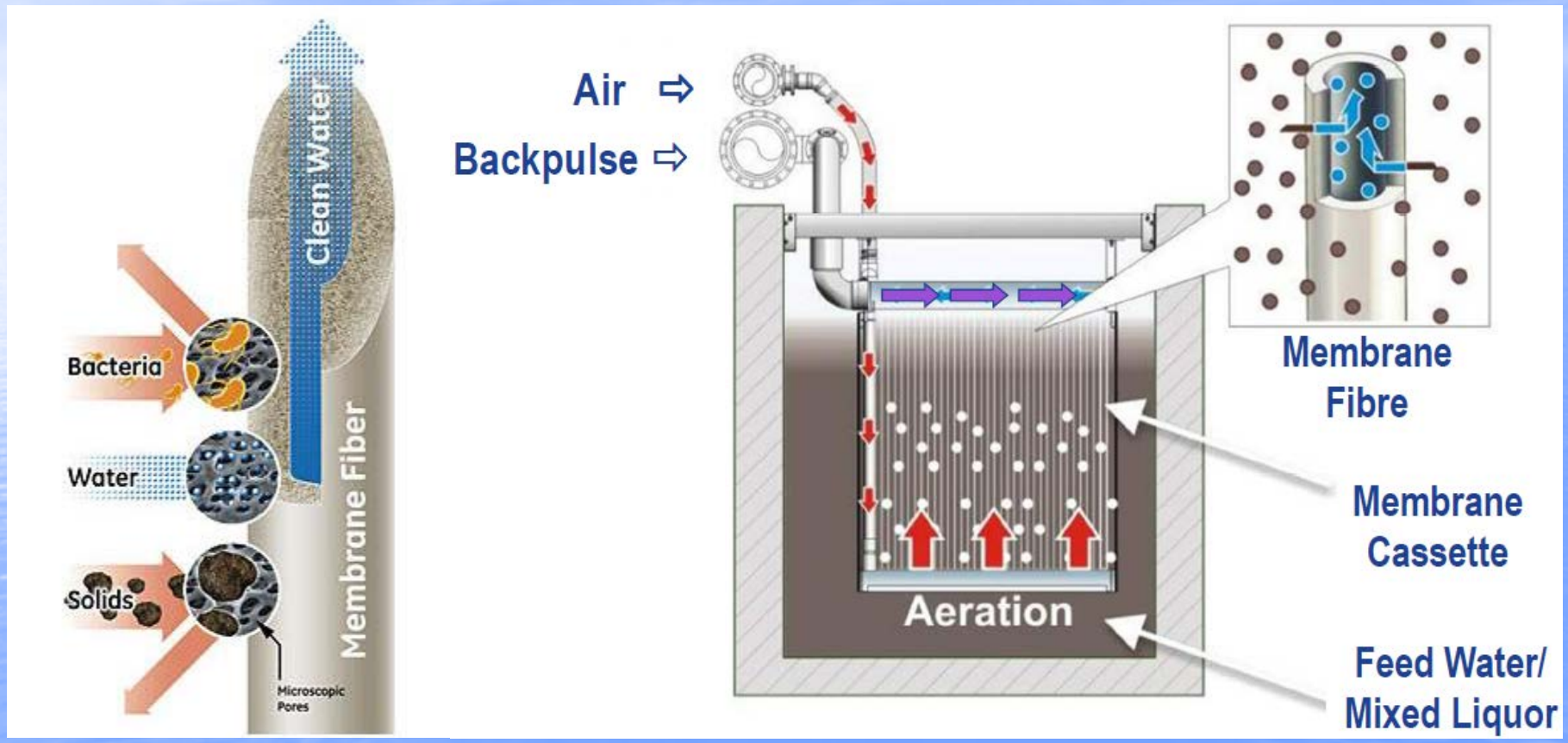
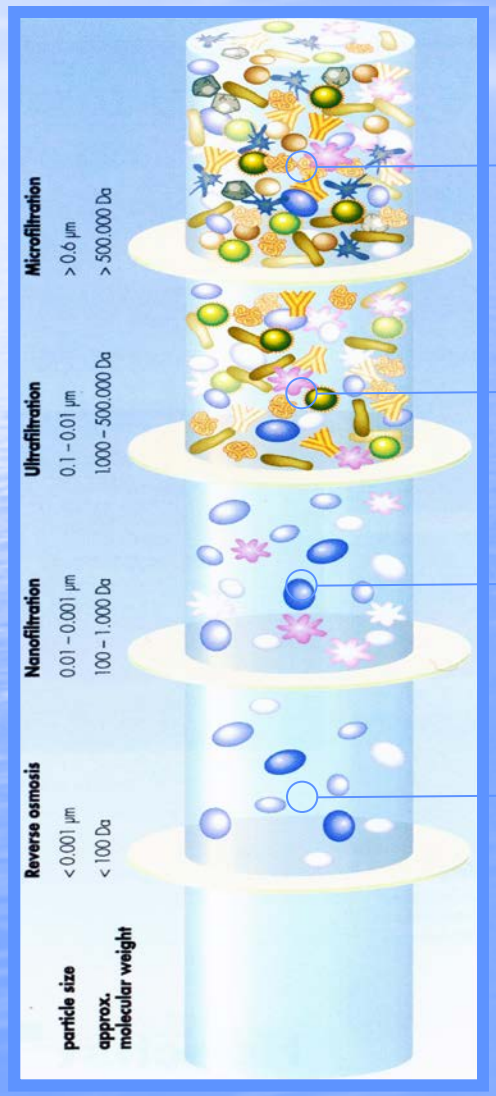
THE MEMBRANES

The biorettori MBR can use membranes immersion of both the tubular type hollow fiber or flat panels. The flat membranes are composed of a support in ABS or PE on which is applied the membrane microfiltration or ultrafiltration. The membrane module is made from a block of elements and by a block of aeration. The block of elements contains elements distributed in series and equally spaced; each has flat membranes which adhere to the two sides of a support panel. Each element is connected to the collector of the permeate by means of a tube. The block consists of aeration diffusers for the supply of air. The membranes can be made of PE, PES or PVDF and have generally porosity which varies from 0.4 to 0.04 µ. The hollow fiber membranes instead, have no rigid support, the fibers, as made of "spaghetti", are free to fluctuate in the biomass. For their intrinsic characteristic of being made into wires, their filtering surface is extensive, therefore are "compact" in dimensions when compared with the flat membrane. Both the flat and the quarries, to maintain the level of efficient filtration by preventing the blockage, are equipped with a system for the insufflation of air which generates the so-called tangential flow filtration (effect "cross flow"). Periodically, one or two times a year, is expected activation of specific backwash cycles. Can be realized in PES or PVDF and their porosity varies depending on the brand, all generally fall in the field of UF.


FLAT MEMBRAN
INTERNAL MEMBRAN
EXTERNAL MEMBRAN
PERMEATE
CONCENTRATE

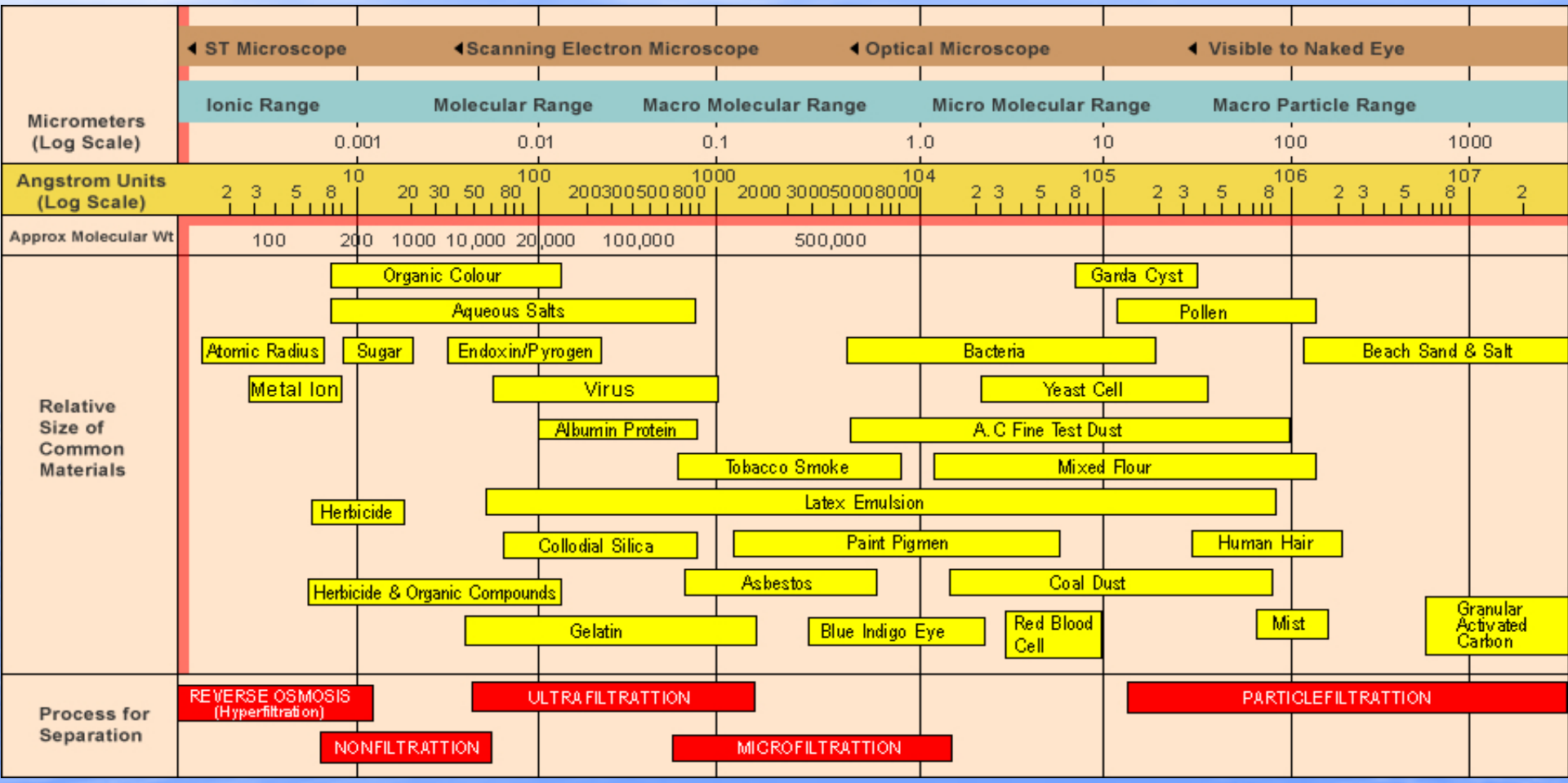
HOLLOW FIBER MEMBRANE





FILTRATION STADE

MEMBRANE FILTRATION SPECTRUM



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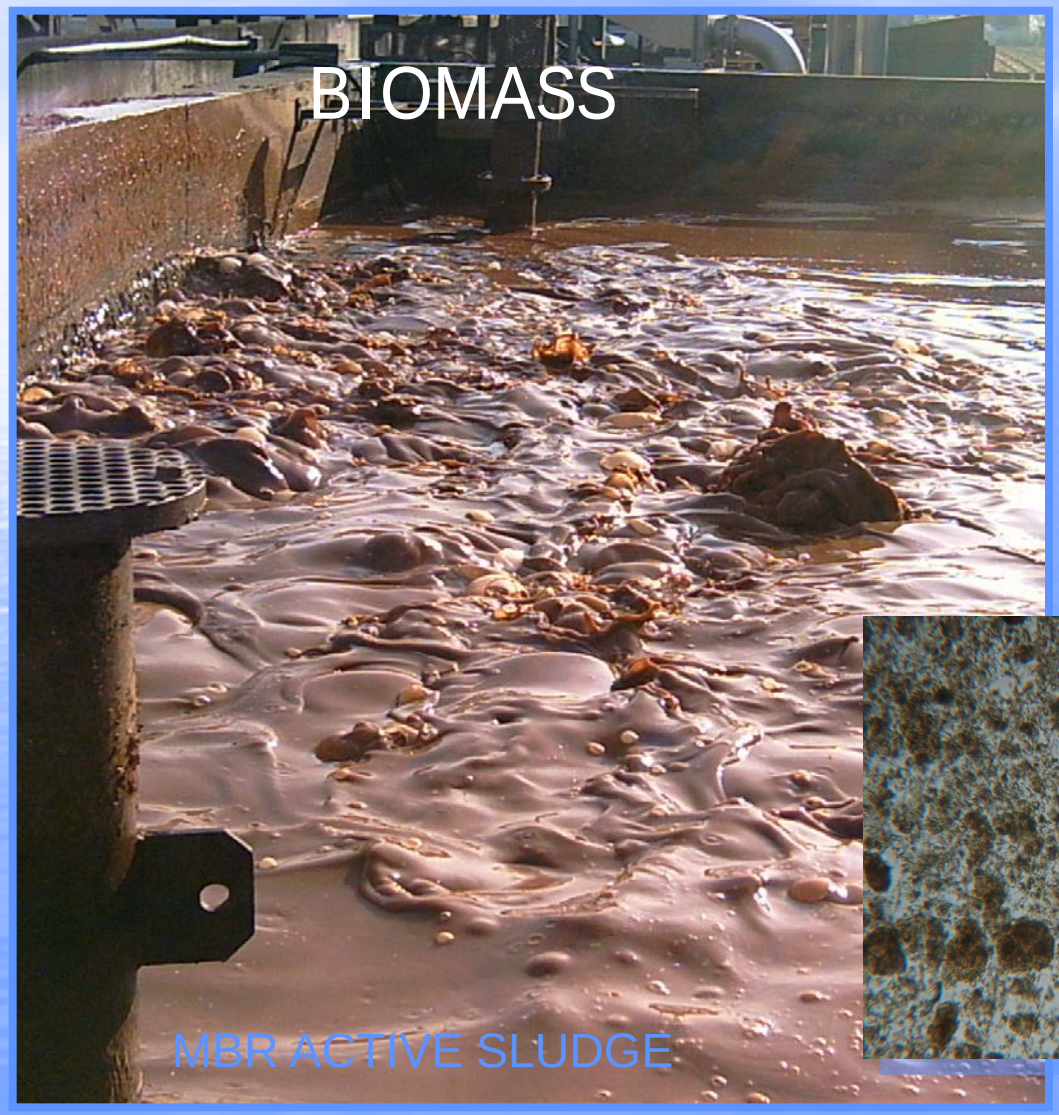
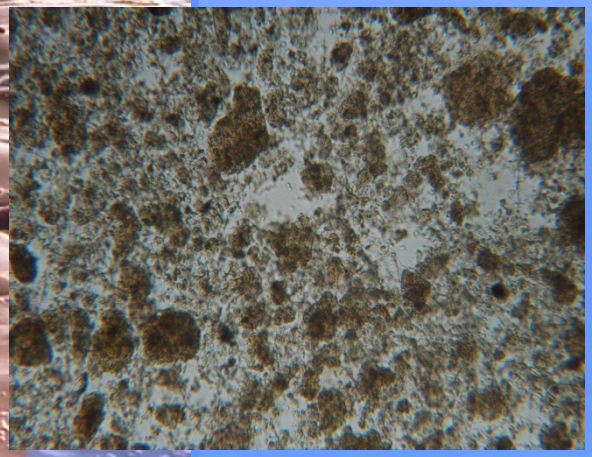
BIOMASS



MBR ACTIVE SLUDGE

In the processes of biological treatment combined with a system of separation of the solids in the membrane, the suspended biomass is retained by the filtering surface, regardless, both the characteristics of sedimentation of the biomass, and by the constitution in aggregates or individual cells.



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