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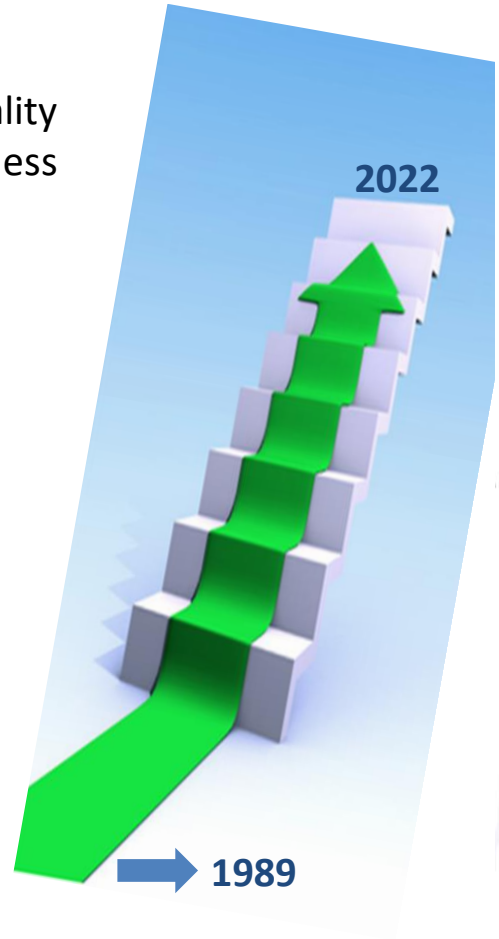
SIRMET
ENGINEERING & MANAGEMENT

Find us :

History

SIRMET was established in year 1989 in order to provide high quality products and services in the field of Energy, Environment and Business Plans.

- Combining professional experience, expertise and expertise in environmental consulting and engineering services.
- Having developed a wide customer base that extends throughout Greece, to the countries of the European Community, but also to some Eastern countries.
- Having an active participation as an Environmental and Energy Projects Manager of the European Union for Research and Development projects.
- Having Engineers of various specialties with long experience in environmental issues.



has been steadily rising in a highly competitive and changing business environment, providing services for every environmental issue.

Field of activities

Having in its potential Engineers of various specialties with long experience, it operates in the following sectors providing services certified according to International Standards :

ISO 9001 : 2015

ISO 14001:2015

OHSAS 18001:2007

ENERGY SECTOR / Renewable Energy Sources

- Photovoltaic parks
- Hydroelectric projects
- Windmill parks
- Energy optimization
- Biogas / Energy production

ENVIRONMENTAL SECTOR

- Water Treatment
- Waste Treatment
- Gas Treatment
- Anaerobic Digestion/ Biogas

BUSINESS PLANS

- Public Competitions
- Business Plans
- R&D Programs
- Marketing plans / Feasibility studies

SIRMET is a member of:

- ✓ Technical Chamber of Greece,
- ✓ Panhellenic Association of Environmental Protection Companies
- ✓ German-Greek Chamber of Industry and Commerce
- ✓ International Water Association Network

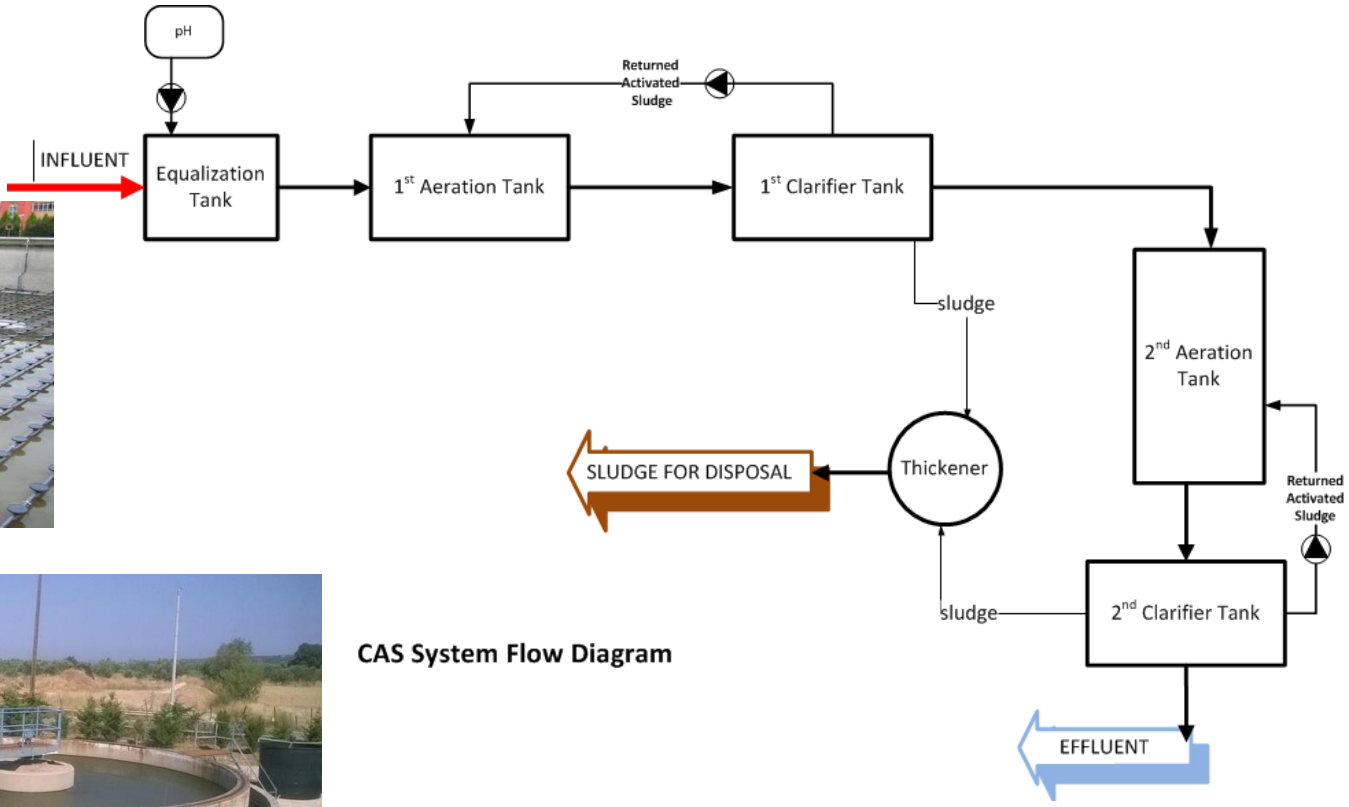
ΠΑΣΕΠΠΕ

AHK Ελληνογερμανικό Εμπορικό και Βιομηχανικό Επιμελητήριο Deutsch-Griechische Industrie- und Handelskammer

IWA the international water association

Industrial Waste Water Treatment

SIRMET has completed a lot of turn-key projects (study, construction, installation, start-up, maintenance) on Waste Water Treatment plants in some of the largest industries in recent years using either CAS system (Conventional Activated Sludge) or MBR system (Membrane Bio Reactor).



CAS System Flow Diagram

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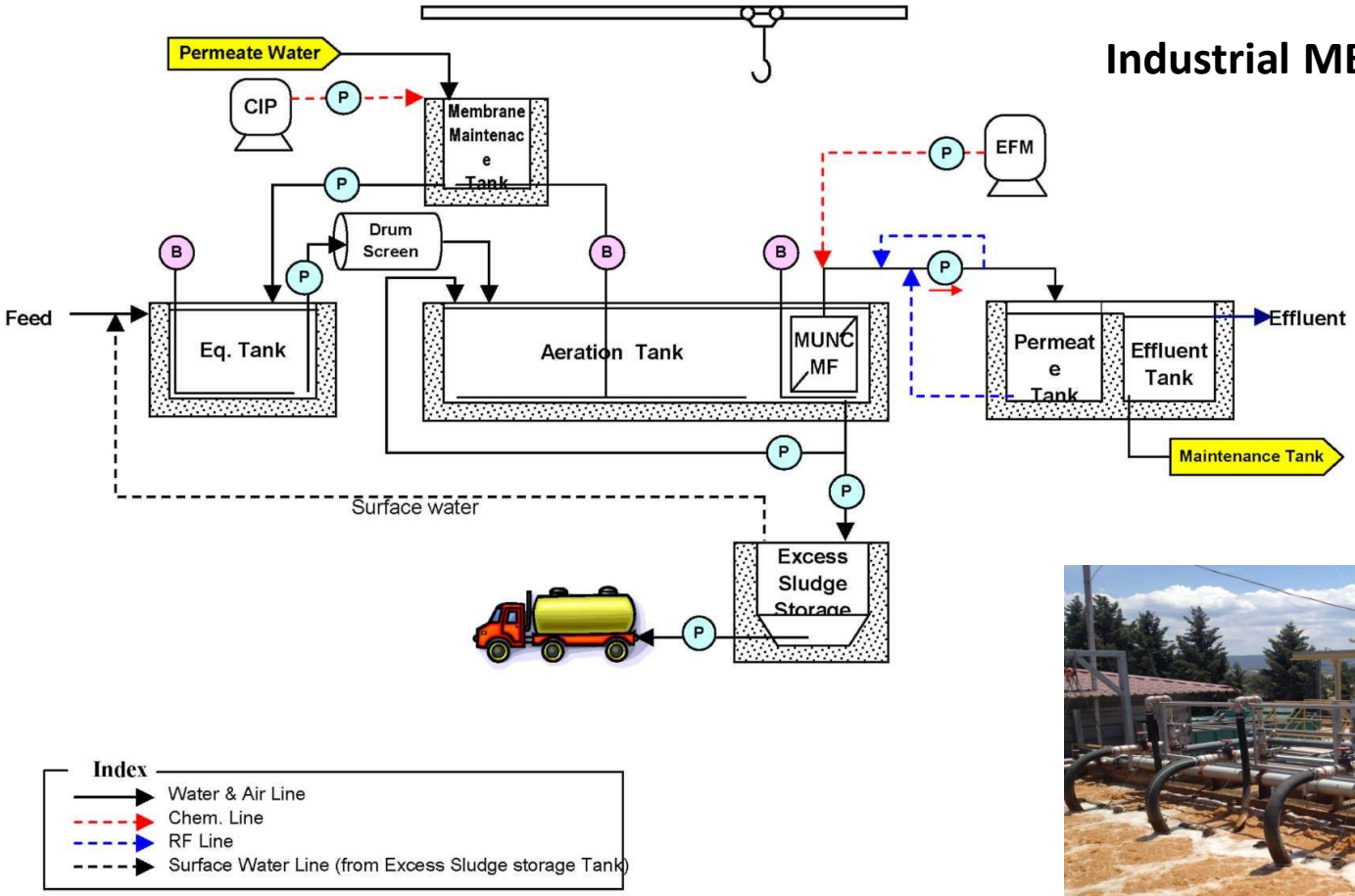
MBR technology is now widely used for municipal, commercial and industrial wastewater treatment and water re-use applications

Industrial MBR Flow Diagram



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Municipal Waste Water Treatment

SIRMET has constructed large sewage treatment plants in Greece and abroad using either conventional or MBR technologies, comprising pre-processing (screening, equalization, sand/grit/FOG removal, compact sewerage treatment), secondary (biological) and tertiary treatment (UV disinfection, chlorination, filtration).

Indicative projects is the following:

- Design – Supply – Installation – Start up for Technical and Electrical Works of Wastewater Treatment (WWTP)

- Construction and Installation of WWTP of Skalas (Island Patmos, Greece)

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Wastewater Treatment of Hotel Units

SIRMET can study and design the sewage treatment system for the hotel unit, based on the beds as well as the environmental disposal requirements. **SIRMET** has constructed large sewage treatment plants in Greece and abroad using either conventional methods or MBR (Membrane Bio Reactor) technology, which in each case includes:

❖**Pre-treatment stage** (sorting, balancing, sand / gravel / grease removal, solid waste water treatment)

❖**Secondary processing sta**ge (organic)

❖**Tertiary treatment stage** (UV disinfection, chlorination, filtration)

Depending on the treatment method, **effluent after treatment can be re used either for:**

- landscaping (golf courses, green area)
- facilities (mainly for cooling)
- urban uses (fire protection, air conditioning, water in toilets / cisterns)
- groundwater replenishment, by pouring into underground

Parameter	Units	Indicative values
BOD_5	mg/l	<10
TSS	mg/l	<10
pH		6.0-8.5
NTU	NTU	< 2
E-Coli	count/100 ml	<5

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COMPACT WWTP
(using MBR or MBBR Technology)

The plants are delivered ready for installation, connection and start-up with all equipment pre-installed into a compact container.

It is the ideal solution for the following facilities:

- Condos
- Small and medium sized hotel
- Tourist lodgments
- Camping and Camps
- Small or Medium-sized housing settlements
- Remote military camps

The systems offered can also be modified to treat sewage in the case of remote residences

Integrated, efficient and reliable compact biological treatment units for small hotels and lodgments with capacities ranging from 10 m3/d up to 1000 m3/d .

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2. PRODUCTION OF ENERGY FROM ANAEROBIC DIGESTION/ BIOMASS

Anaerobic Treatment is **an IDEAL SOLUTION** for Waste Food Industry as well as Farms, units in which:

- There is a huge volume of waste (solid and liquid). Because of health requirements, liquid waste is a multiple of raw materials.
- Their waste is characterized by a high concentration of organic load, multiple of urban waste water.
- Their treatment for safe disposal requires a combination of methods such as:
  - ❖ Mechanical methods (scraping)
  - ❖ Physicochemical methods (flocculation and flotation or sedimentation)
  - ❖ Biological methods - Combination of anaerobic and aerobic biological treatment

Liquid Waste

(milk processing, juicing, brewing, paper mills, etc.) with high organic loads that can not undergo aerobic biological treatment

Fast-paced - High-charge anaerobic digestion in fluid bed reactors.
HRT≤1d

Solid Waste

(manure, solid slaughter residues, animal / vegetable fats, etc.)

Anaerobic (co-) low-charge digestion in continuous stirring reactors.
HRT≥20d

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In anaerobic treatment, bacteria convert organic load into biogas (a mixture of methane and carbon dioxide) under oxygen absence conditions. anaerobic bacteria remove the pollution load of waste, reducing disposal costs, while at the same time producing “Green Energy”.

Organic compounds (COD) are converted to volatile fatty acids (VFAs), Acetic Acid (oxidation) and ultimately to methane (CH_4) + Carbon Dioxide (CO_2) + new Biomass

Ideal solution for High Waste Organic Waste Industries in organic load.

Fixed investment costs decrease as organic tonnage increases

Application Examples:

- Dairies
- Brewing
- Paper Mills
- Fruit & Juice Processing
- Potato Processing Plant

Using the biogas energy potential, the repayment period for investing anaerobic treatment ranges from 3 to 5 years (depending on the holding)

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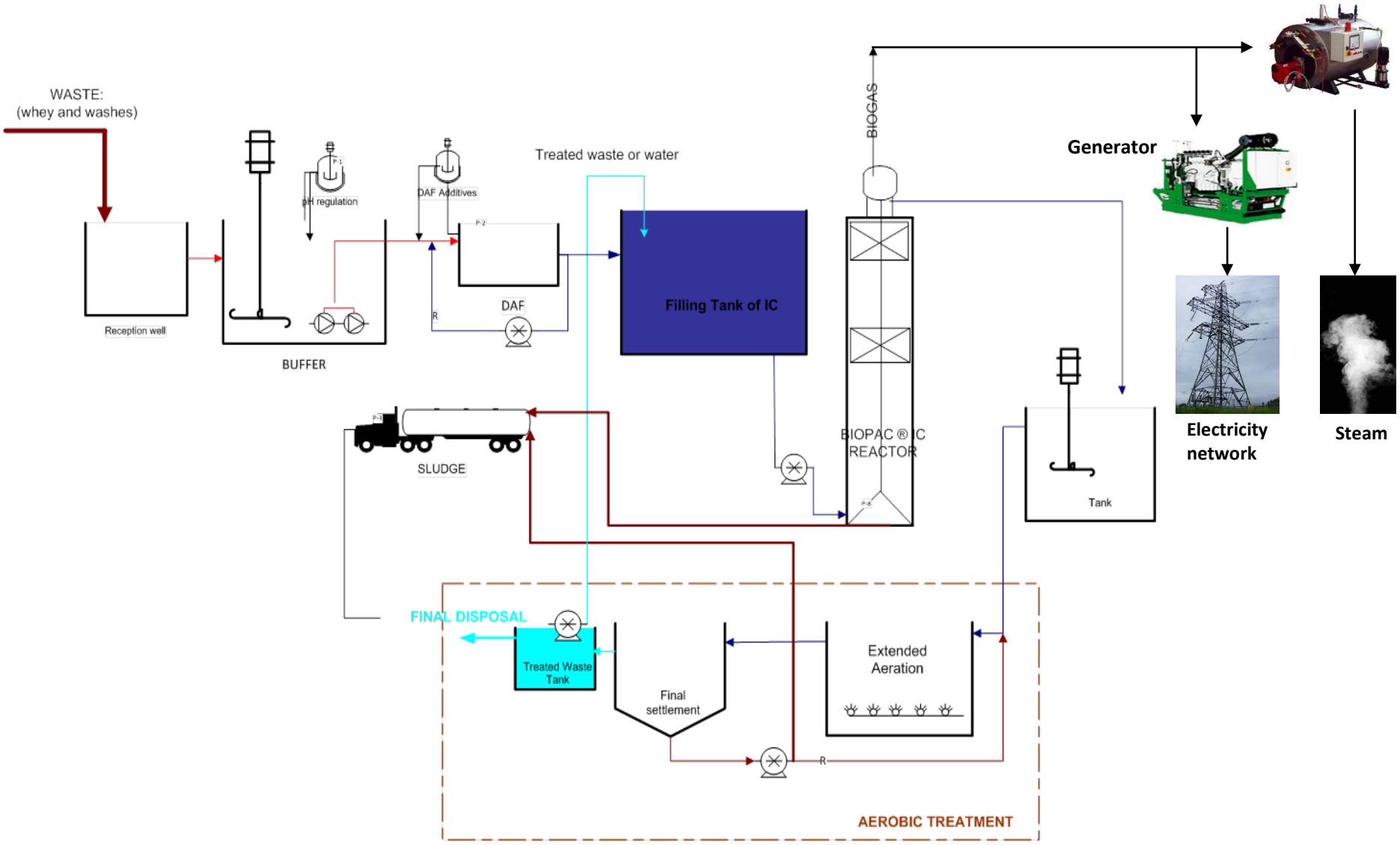
Anaerobic Digestion Diagram



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3. WATER TREATMENT (Potable / Industrial)

SIRMET specializes in the design, construction, installation and start-up of industrial and potable (surface) water treatment/reuse installations.

Processing methods:

- Sand filters
- Fluidized bed filters
- Ventilated bio filters
- Chlorination / Dechlorination
- Ozonation
- Activated carbon filters
- Reverse Osmosis Systems

They stand out because they offer the following advantages:

- Low operating costs.
- Fast, easy and instant operation without odor.
- No monitoring needed and has minimal maintenance cost.
- Treated water is suitable for drinking
- They require minimal civil engineering – have little space requirement

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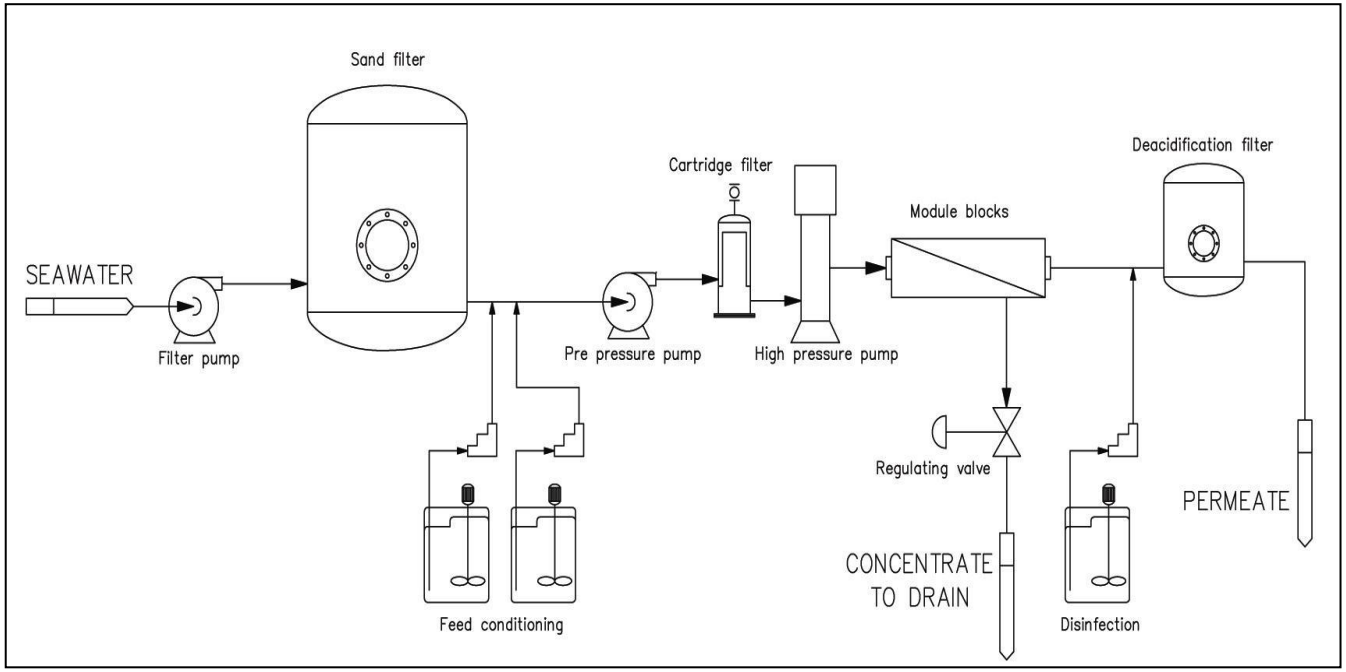
Desalination Units

Reverse Osmosis (RO), Nano Filtration (NF) and Ultrafiltration (UF) have been developed for the purification of surface water, groundwater, seawater or sewage.

These systems are the solution to many issues difficult with water and can provide drinking water or water for industrial use.

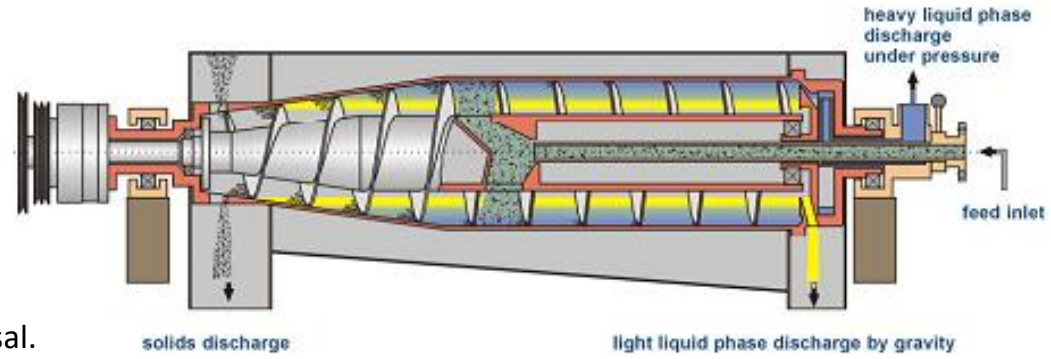


4. RECOVERY OF PETROLEUM RESIDUES

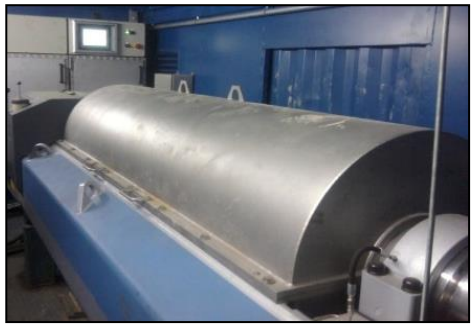
The treatment / separation of petroleum residues for recovery of recoverable hydrocarbons is for refinery units, slops, fueling stations and lubricant plants. The method is based on the pretreatment of the residues and their separation by centrifugation into their basic constituents.

In particular, by homogenizing, heating and flocculating the residues it is possible to separate into a three-phase centrifugal separator in the following phases:

- Oil - hydrocarbon mixture (slightly liquid phase)
  which can be used as a raw material
  for the production of other hydrocarbons,
  fuel or lubricant
- Water (heavy liquid phase) that can
  lead to the discharging network or a final unit
  and safely disposed of in the environment
- Sludge (solid phase), which may lead to final disposal.



SIRMET can offer complete proposals for this Treatment, since it has successfully completed the design, installation and final delivery after operation units up to 600m3 / d



5. LEACHATE TREATMENT PLANTS

In landfill sites, fermentation processes and prevailing compaction conditions create liquid leachates, characterized as heavy sewage, as they contain the dirt pollutants concentrated in small volumes of moisture.

These strains are collected from the collecting system of the landfill cell and then must be brought for treatment so that they can be safely disposed of in the subsoil and the aquifer.

The treatment combines:

- Physico-chemical treatment (pH adjustment, flocculation, precipitation separation).
- Biological (secondary) treatment to remove organic and ammoniacal load.
  In biological teratment can be also used micro-filtering technologies (MBRs)
  in order to limit the size of the installation.
- Tertiary treatment to remove residual pollutant load and toxic elements / compounds, consisting of ultrafiltration (UF) followed by a reverse osmosis unit (RO) for final reduction of the contained nitrogen, turbidity, heavy metals, color and conductivity.

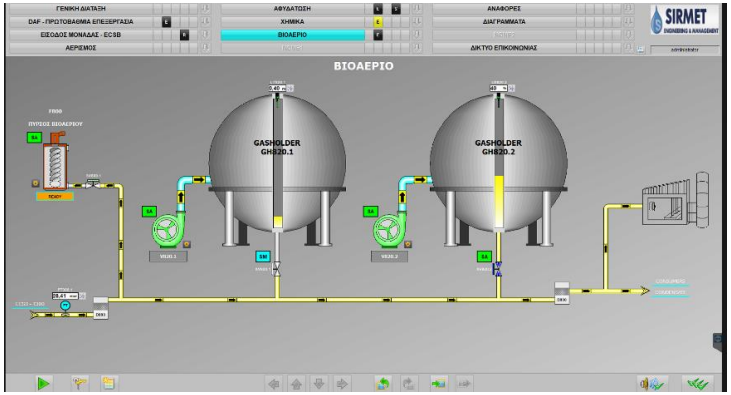
SIRMET can design and offer integrated solutions for leachate treatment, both in the form of a compact unit and in the form of a standard installation with tanks made of reinforced concrete

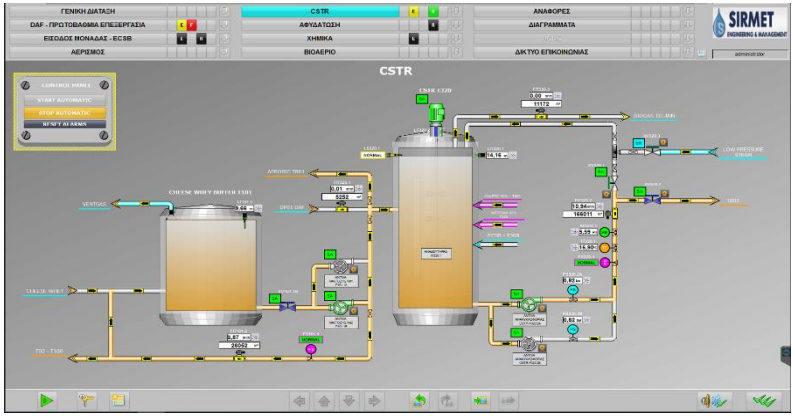
6. OPERATION, CONTROL AND MAINTENANCE

SIRMET offers integrated environmental protection solutions on Operation and maintenance of Sewerage Networks, Water and Waste Water Treatment Plants

The specialized scientific personnel of SIRMET has significant experience in water, waste water and solid waste treatment. By using its experience, SIRMET accommodates the needs of the following service sectors:

- Automation and Control via PLC and Scada
- Management
- Technical support
- Operation and maintenance





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7. INDUSTRIAL FOOD PROCESSING

Turn-key projects (design, installation and start-up) on the following food applications:

- **CHEESE**

  Design, Installation and Operation of
  Industrial Facilities (Plateon S.A./Thiva Viotias, Greece)

- **MEAT**

Design, Installation and Operation of
Industrial Facilities (Nikas A.V.E.E./Attika, Greece)

- **EDIBLE OILS**

Design, Supply, Installation, Start-up of
Oil processing plant and Refinery Unit
(Olix Oil Ltd/Industial Zone of Patras, Greece)

Design of Olive and Oil processing
and packaging Unit
(Alea S.A./ Sparti Lakonias, Greece)

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WINE

Design, Installation and Operation of
Industrial Facilities (Antonopoulos Vineyards S.A./Achaia, Greece)

ΑΜΠΕΛΩΝΕΣ
ΑΝΤΩΝΟΠΟΥΛΟΥ
ANTONOPOULOS
VINEYARDS

Design, Installation and Operation of
Industrial Facilities (Achaia Clauss S.A./Achaia, Greece)

ACHAIA CLAUSS
1861
FORTITUDO NOSTRA CLIENTIUM FIDES

RAISINS

Design, Installation and Operation of processing and packaging unit
(currants, cultanas as well as a variety of dried fruit)
(Couniniotis S.A./Achaia, Greece)

Couniniotis

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Collaborations with Suppliers

SIRMET continuously collaborating, exchanging Know How-Products-Services and improving results for its customers.

An indicative list of **collaborations – suppliers** in our projects :

Our experience – our Clients !

We are a highly respected company with so many satisfied well-known and respected clients. Our clients' satisfaction is our **only** advertisement!

…and many more