WATER TREATMENT

a new life for the wastewater

AQUAFUTURA

WHAT WE DO

Our Team-brand **AQUAFUTURA** , projects and builds WWTP, Waste Water Treatment Plant.

The availability of water suitable for use becomes more essential every day, and its recovery is the important last technological frontier.

OUR TARGETS:

"selects and designing innovative filtration processes attentive to energy saving"

"build with quality and durable products, in line with the needs of the international market"

"to close partnership creating synergies that strengthen AQUAFUTURA qualities"

"be updated on contemporary water treatment techniques"

OUR PARTNERS:

AQUAFUTURA is proud to recommend important players in the projects undertaken:

FLYGT	→ www.xylem.com	*leading lifting of fluids and marine water*
WTW	→ www.wtw.com	*high quality devices for water analysis*
OMC COLLAREDA	→ www.omc-collareda.com	*leader in water treatment machines*
+GF+ GEORG FISCHER	→ www.georgfischer.com	*leader in special plastic fittings*
CANCELLOTTI	→ www.cancellotti.com	*leader in the prefabrication of concrete tanks*
IMEC	→ www.imecimpianti.com	*industrial plant engineering leader since 1971*
SAPIO GRUPPO	→ www.sapio.it	since 1922 development leader of industrial and medicinal gases

OUR WORK

AQUAFUTURA guarantees the achievement of the treatment result requested by the Customer in the areas of:

- containerized plants for industrial and civil waste water and sewage on board
- collection and treatment of stormwater
- treatment of water bodies delivered within port areas
- drainage water from reclaimed tanks, oil separation, bilge or washing water
- water disinfection AOP (Advanced Oxidation Process)
- air flotation, decantation , clarification and potabilization plants
- filtration systems on sand, activated carbon or ion exchange
- membrane filtration plants (ultrafiltration, nanofiltration, reverse osmosis, etc.)
- sludge thickening and dewatering plants
- deionization plants using the EDI process



METODOLOGY

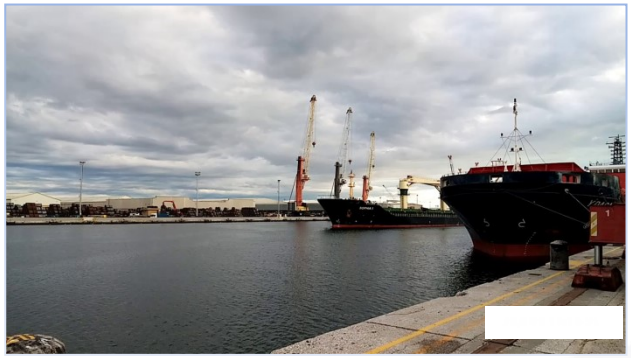
We have qualified our technical team to have the technical capacity and experience to carry out the mechanical and electrical design and to coordinate all project activities from the initial development through to the delivery and start-up of the equipment:

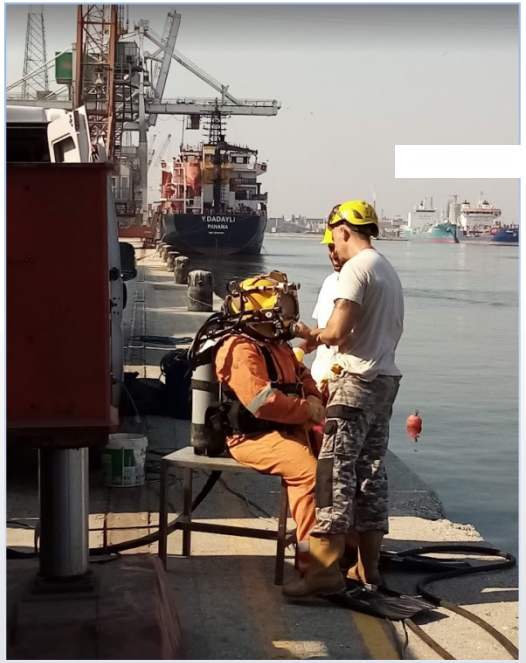
- Study and basic engineering design of the project and assignment to the project manager
- Commercial estimation
- Test on field through a specific pilot plant
- Realization and assembly of the devices, prefabrication of the hydraulics, QE realization
- Field assembly of carpentry and machinery
- Start-up assistance and training of the personnel involved
- Programmed service and extra-ordinary maintenance

ANALYSIS OF WATER ENVIRONMENTS

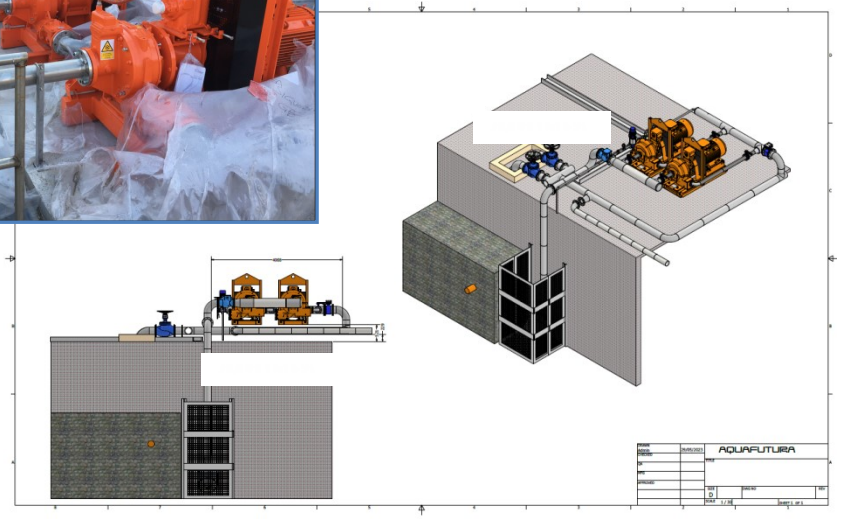
Having the ability to assist the Client in gaining knowledge of the water sectors involved in the project can be essential for completing the technical and economic assessments in the shortest possible time.

Our technical office assists the customer by providing consultancy for marine and coastal environmental projects, aquaculture, benthos study, underwater sampling, coastal strip protection and underwater interventions.





Intake plants for surface water:
from lake, river, and sea



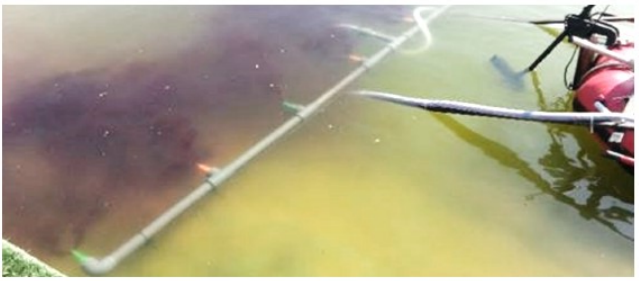
Filtering in every condition

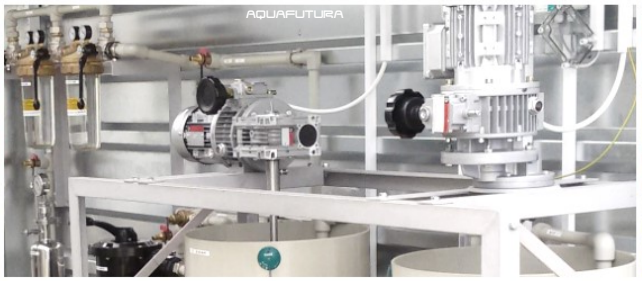
Lifting without limits of flow rate and fluid quality

Distribution controlling and monitoring the water network

DESIGN AND EXECUTION OF GROUNDWATER REMEDIATION

Industrial activities have unfortunately produced pollution still present in the area. Forms of nutrients, heavy metals or synthetic and organic molecules are inactivated through a technology of injection into the groundwater and surface sprinkling.





Sources of drinking water, water basins polluted by the presence of toxic cyanobacteria and cyanotoxins such as microcystin-LR (MC-LR), represent a serious risk to public health.

Industrial land and polluted groundwater are reclaimed using innovative products based on nano production technologies.

AQUAFUTURA supplies the nanotechnologies necessary for the rehabilitation:
Product availability: always available

Packaging: in pilot samples of 30g, and packs of 500g, 1000g, 5kg, packed according to all legal requirements.

Shelf-life: The product can be stored in the original packaging for a long time in a dry environment.

Shipping: The product is transportable by all means by road (ADR), rail (RID), sea (IMDG) and air (IATA) according to international standards.

We guide our Customer through the process of selecting the right material to solve their application, training staff in the handling of our products and, if necessary, assisting with our Technicians during the application.

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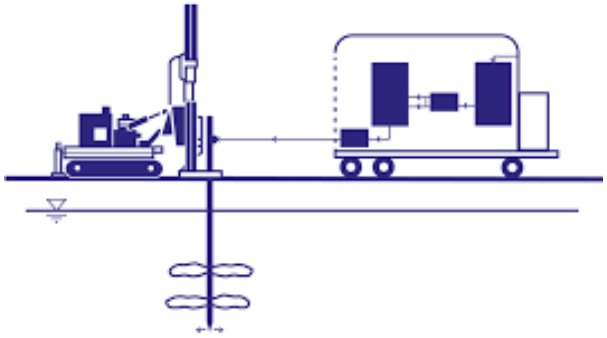
DESIGN AND EXECUTION OF GROUNDWATER REMEDIATION

Industrial activities have unfortunately produced pollution still present in the area.
The table summarizes the contaminant synthetic molecules treated with our technology:

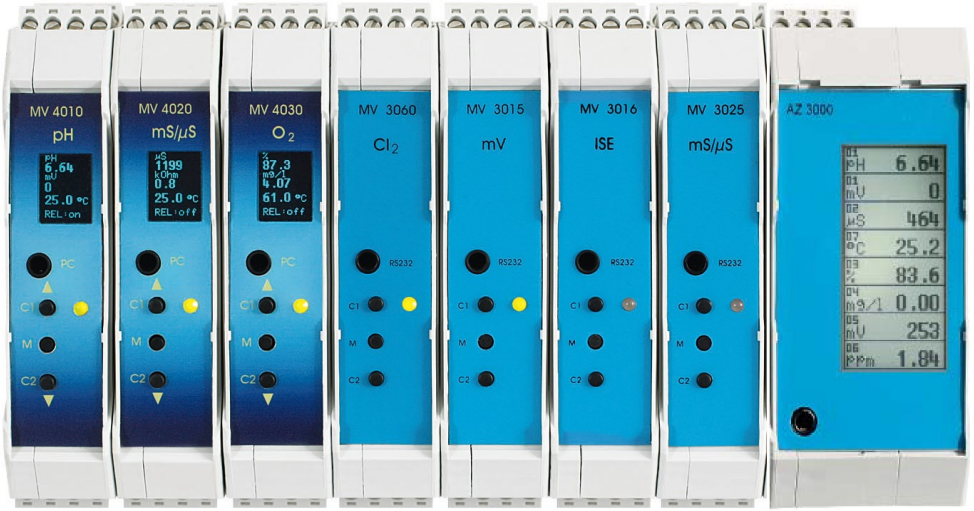


GRUPPO	CONTAMINANTE		Sali Inorganici di:			GRUPPO	CONTAMINANTE
ETILENI CLORURATI	Tetrachloroethane		Arsenico	As		INTERFERENTI ENDOCRINI	Estrone
	Trichloroethene		Bario	Ba			17α-ethinylestradiol
	1,1-Dichloroethene		Cadmio	Cd			17β-estradiol
	Trans-1,2-Dichloroethene		Cromo	Cr			Bisphenol A
	Cis-1,2-Dichloroethene		Rame	Cu		ERBICIDI e PESTICIDI	Atrazine
	VC, Cloruro di Vinile		Piombo	Pb			Iodosulfuron
ALOGENURI ALCHILICI	1,1-DCA, dicloroetano		Mercurio	Hg			4-chlorophenol
	1,1,1-Trichloroethane		Nickel	Ni			2,4-dichlorophenol
	1,1,1,2-Tetrachloroethane		Selenio	Se			2,4,6-trichlorophenol
	1,1,2,2-Tetrachloroethane		Uranio	U			2,3,4,5,6-Pentachlorophenol
	Hexachloroethane		Zinco	Zn		Altri ORGANICI	Triclosan
METANI CLORURATI	Diclorometano		Nitrati	NO3			Ethanedial
	Tetraclorometano		Nitriti	NO2			Trichloroacetaldehyde
	Cloroformio		Perclorati	ClO−4			Thioacetamide
	Chlorometano		Fosfati	PO4			Thiourea
TRIALOMETANI	Bromodichlorometano		Solfati	SO4			Trichlorofluoroethane
	Tribromomethane						1,2-Dibromoethane
	Dibromochloromethane						1,1,2-Trichlortrifluorethane
BENZENI CLORINATI	Chlorobenzene						1,2-Dichloropropane
	Dichlorobenzene						1,2,3-Trichloropropane
	Trichlorobenzene						Nitrobenzene
	Tetrachlorobenzene						Trinitroglycerin
	Pentachlorobenzene						2-Methyl-1,3,5-Trinitrobenzene
	HCB, Perclorobenzene						2,3,4,5,6-Pentachlorophenol
FARMACEUTICI	Sulfamethoxazole	SMX, sulfametossazolo					N,N-Dimethylnitrous amide
	Enrofloxacin	ENR, Baytril					Dichlorodiphenyltrichloroethane
	Ciprofloxacin	CIP, Ciloxan					1,2,3,4,5,6-Hexachlorocyclohexane
	Carbamazepine	CBZ, Tegretol					Molinate
	Diclofenac	Cataflam, Voltaren					Bifenili policlorurati
	Naproxen	NPX, Aleve, Naprosyn					Diossine
	Ibuprofen	IBU, Advil, Motrin, Nurofen					
	Atenolol	ATN, Tenormin					

WATER CHEMICAL PARAMETERS MONITORING

For the treatment of primary water, reused water and surface water, some continuous measurements are essential.
AQUAFUTURA offers the most suitable and performing solution as analogue panel instrumentation and sensors for online measurement:

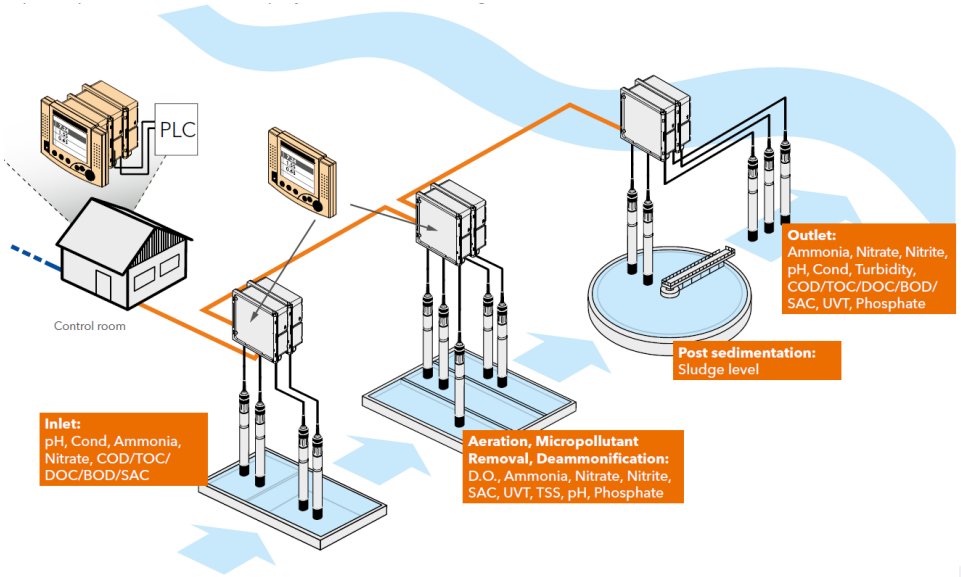
pH Redox Conductivity Dissolved Oxygen Chlorine ISE Turbidity



AQUAFUTURA

WATER CHEMICAL PARAMETERS MONITORING

Today's technology offers the possibility to carefully analyze and control the state of the water with online supervision.
AQUAFUTURA offers the most suitable and performing solutions as digital instrumentation to be placed in the field for the analysis of the operating parameters of the WWTP, through the continuous and unmanned measurement of the bio-chemical parameters of the water.



D.O. / pH / ORP / CONDUCTIVITY' / TURBIDITY' / TSS / NH4 / NO3 / NO2 / COD BOD/TOC SAC-UV_{254} / SLUDGE LEVEL

WATER CHEMICAL PARAMETERS MONITORING

AQUAFUTURA offers the continuous and unattended measurement of the bio-chemical parameters of the surface, potable or wastewater.
HYDRONOVA 2010/P is the compact colorimetric analyzer that performs analyzes with

IRSA recognized official methods:

- designed to be placed in the field
- continuous and parallel analysis of 3 parameters
- chosen from over 40 parameters
- possibility of also analyzing the same parameter but collected from up to 3 different sampling points (e.g.: COD in. out. out)
- allows to measure Ani/Cati/Non ionic surfactans
- thanks to the proprietary oxidation process allows the measurement of TN TP and Total heavy metals
- calibration on double standard
- self-cleaning photometric cells
- analysis cycle with Self-Calibration and Self-Washing
- reaction kinetics of the analytical process visualized in realtime

Dimensions & Weight: 80 x 60 x 30 cm (H x W x D), 30 kg

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WATER CHEMICAL PARAMETERS MONITORING

pH	Blu di timolo
ALLUMINIUM	Pyrocatecolo violetto (PCV)
ALLUMINIUM	Eriocromocianina R
AMMONIA	Nessler
AMMONIA	Fenato
AMMONIA	Salicilato
NITROGEN Total (TN)	Ossidazione Fotochimica UV + Cromotropico
BORON	Acido carminio
BORON	Azometina H
C.O.D.	Bicromato-Ag
CYANIDES free	Cloramina T + Barbiturico
CHLORINE residual	DPD
CLORIDE	Mercurio Tiocianato + Fe
COLOURS	Trasmittanza su Standard (CaBe)
CHROMIUM VI	Difenilcarbazide
HARDNESS	EDTA + Calmagite
PHENOLS free	4-amminoantipirina
IRON soluble	Ortofenantrolina
IRON soluble	TPTZ
PHORMALDEIDE	Acido cromatropico
PHORMALDEIDE	MBTH
PHOSPHATE Tot.inorg	Idrolisi+Blu Molibdeno
PHOSPHORUS Tot. (TP)	Ossidazione Fotochimica UV + Blu di molibdeno
KUBEL	Ossidabilità al permanganato
MANGANESE	Leucomalachite-green
MANGANESE	Ossidazione periodato a freddo
NICHEL	Dimetilgliossima
NITRATE	Acido Cromotropico
NITRITES	Griess 2
NITRITES	Griess 1
ORTO-PHOSPHATE	Blu di molibdeno
ORTO-PHOSPHATE	Vanadato
COPPER	Batocuproina disolfonato
SILICATE	Blu di molibdeno
SULPHATE	Torbidimetrico
SULFITES	p-Rosanilina
SULFITES	Ossidazione ioduro-iodato
SULFIDES	p-amminodimetilanilina
Surfactans ANIONIC	MBAS
Surfactans CATIONIC	Blu di Bromofenolo
Surfactans NO IONIC	TBPE-AS
TURBITY (sst)	Fotometrico (cabe)
UREA	p–dimetilamminobenzaldeide
UREA	Diacetil-monoxima
ZINC	Zincon-tiosolfato

- ✓ **IRSA METHOD COMPLIANCE**
- ✓ **FULLY AUTOMATIC**
- ✓ **CHOOSE FROM OVER 40 PARAMETERS**
- ✓ **REPEATABLE ANALYSIS EVERY 15'**
- ✓ **LARGE TOUCH PANEL**

AQUAFUTURA

WATER CHEMICAL PARAMETERS MONITORING

AUTOMATIC SAMPLER:

- ✓ STAND-ALONE AT THE PICK-UP POINT
- ✓ CONFIGURED WITH 24 1 LITER BOTTLES
- ✓ REPEATABLE ANALYSIS EVERY 15'
- ✓ SUCTION LINE 7.6 M LONG
- ✓ COMPLETE WITH PERISTALTIC PUMP AND STRAINER
- ✓ OPERATING RANGE SETTABLE FROM -29 TO 49 °C
- ✓ FULLY AUTOMATIC
- ✓ REMOTABLE ALARMS

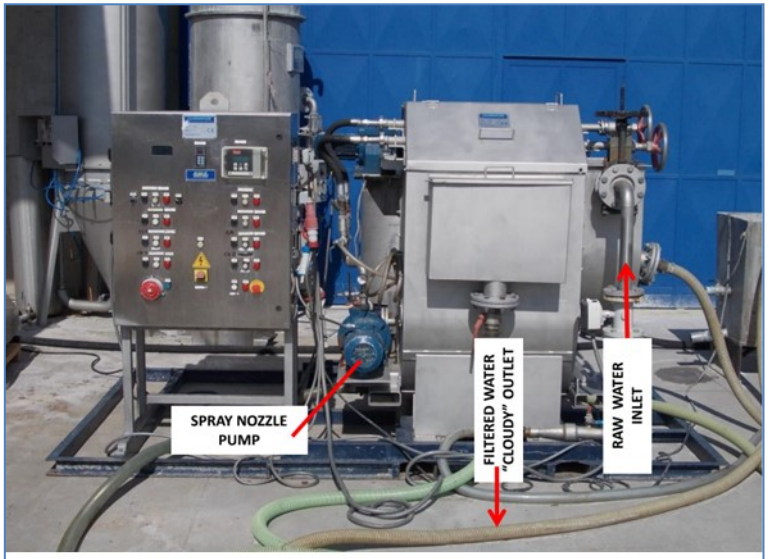
DESIGN and TEST in workshop or Customer's plant

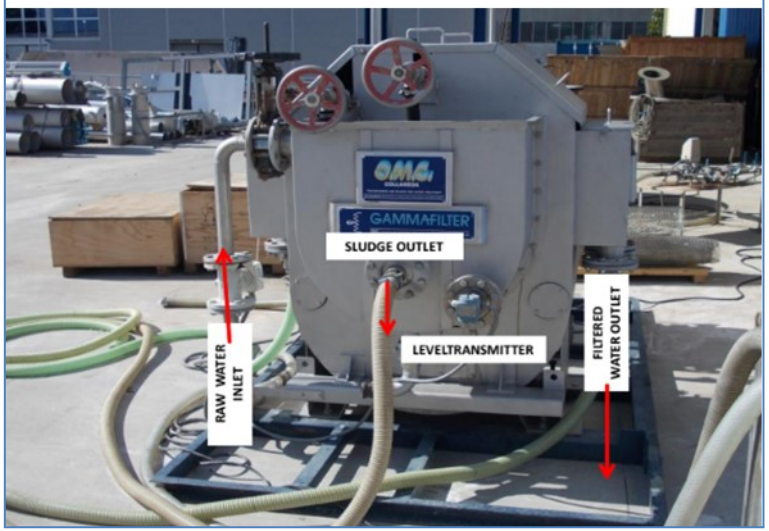
Having the ability to carry out treatment tests at the customer's site makes our work tailor-made and allows us to obtain the best possible result, optimizing it for the needs of the project.

In the following pages some pilot plants available to carry out the relative correct test activities:

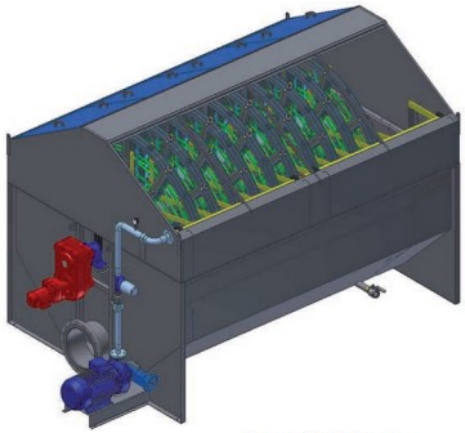
- Microfilter	microfiltration plant that separates molecules from 10 to 100µ
- Omega Filter	continuous self-cleaning filtration on sand
- Dissolved Air Flotation	flotation units for industrial and civil wastewater
- Reverse Osmose BW	iperfiltration for brackish water desalination
- Reverse Osmose SW	iperfiltration for seawater desalination
- Ultrafiltration	pilot plant for ceramic and polymeric membranes
- MBR bioreactor	ultrafiltration plant for complex wastewater, 0.2µ filtration
- Ozone reactor	10-50 g. O3/h, 4mt height contactor with micronized bubbles
- AOP advanced oxidation	UV-C pilot plant, OX dosing, control and data logger
- Concentrator	pilot plant for carrying out concentraion and evaporation tests

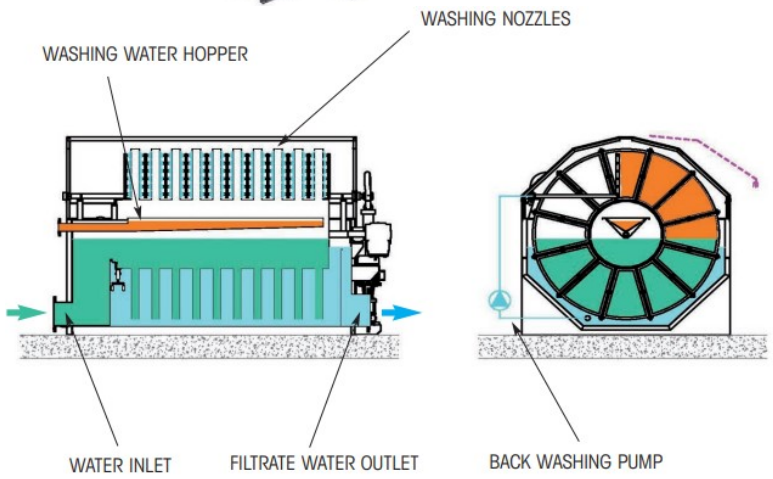
MICROFILTRATION pilot plants





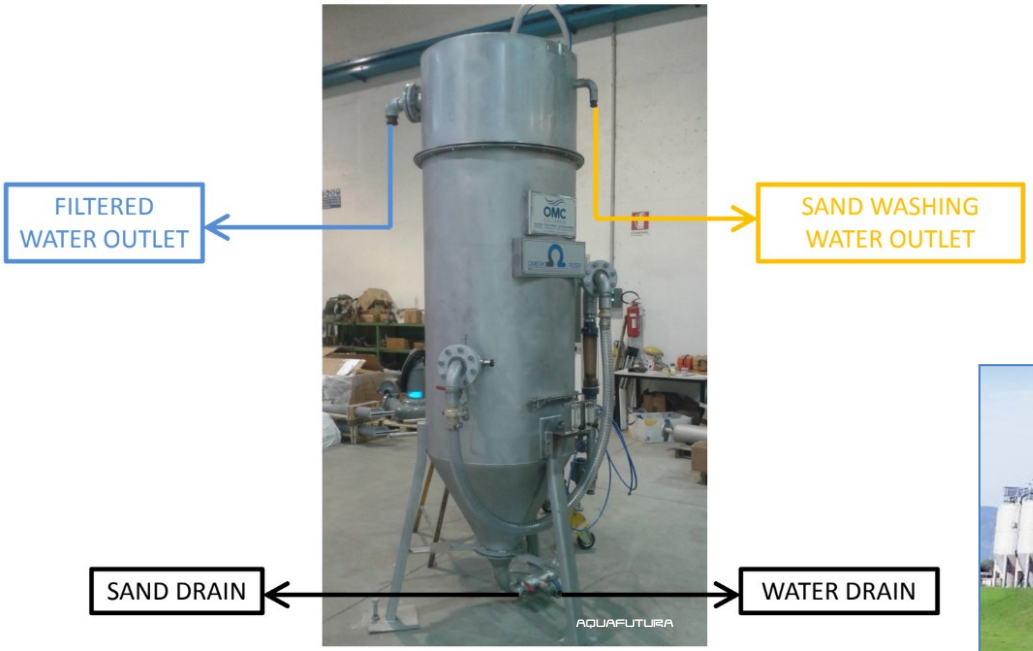
Automatic mechanical microfiltration from 10 to 100 microns





OMEGA FILTER pilot plant

Automatic reactor with continuous washing:
- energy-saver filtration
- does not work under pressure and does not require head
- does not require backwashing
- continuous work, always clean sand
- modular, infinitely modular



DAF Dissolved Air Flotation pilot plant

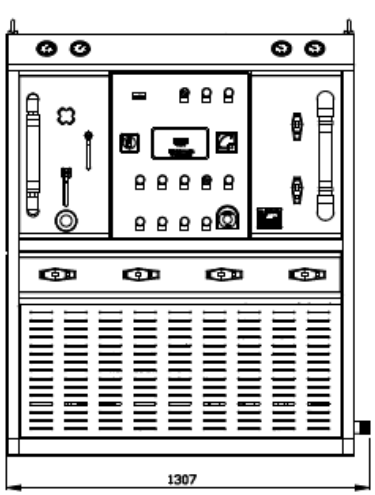
TIGERFLOAT with lamella

DELTAFLOAT circular shape

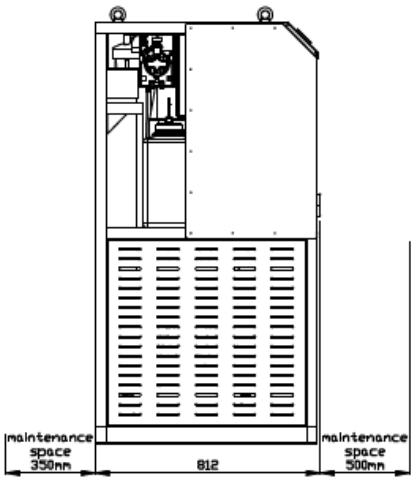
REVERSE OSMOSE BW pilot plant

The unit allows to solve the parametric issues that influence the process:
- flow rate of the fluid supply involved in the process
- achievable operating pressures and concentration
- obtainable quality of permeate and concentrate

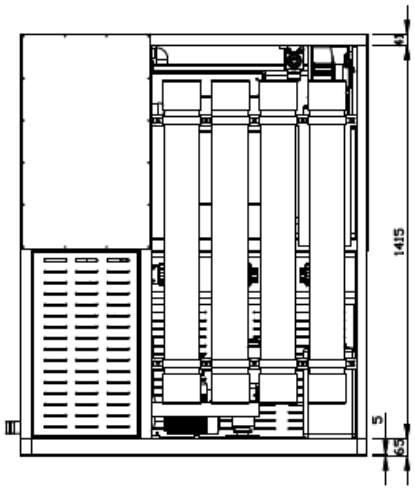
REVERSE OSMOSIS SeaWater pilot plant



FRONT VIEW



SIDE VIEW (LEFT)



REAR VIEW

The unit allows to solve the parametric issues that influence the process:
- ideal type of pre-filtration
- flow rate of the sea water supply
- achievable operating pressures and concentration
- obtainable quality of permeate and concentrate

ULTRAFILTRATION pilot plant

Ultrafiltration is a relatively new technology used for the removal of free-floating particles, colloids, bacteria and viruses from surface water and wastewater.
Ultrafiltration membranes are real porous membranes, which separate medium-heavy weight organic molecules.

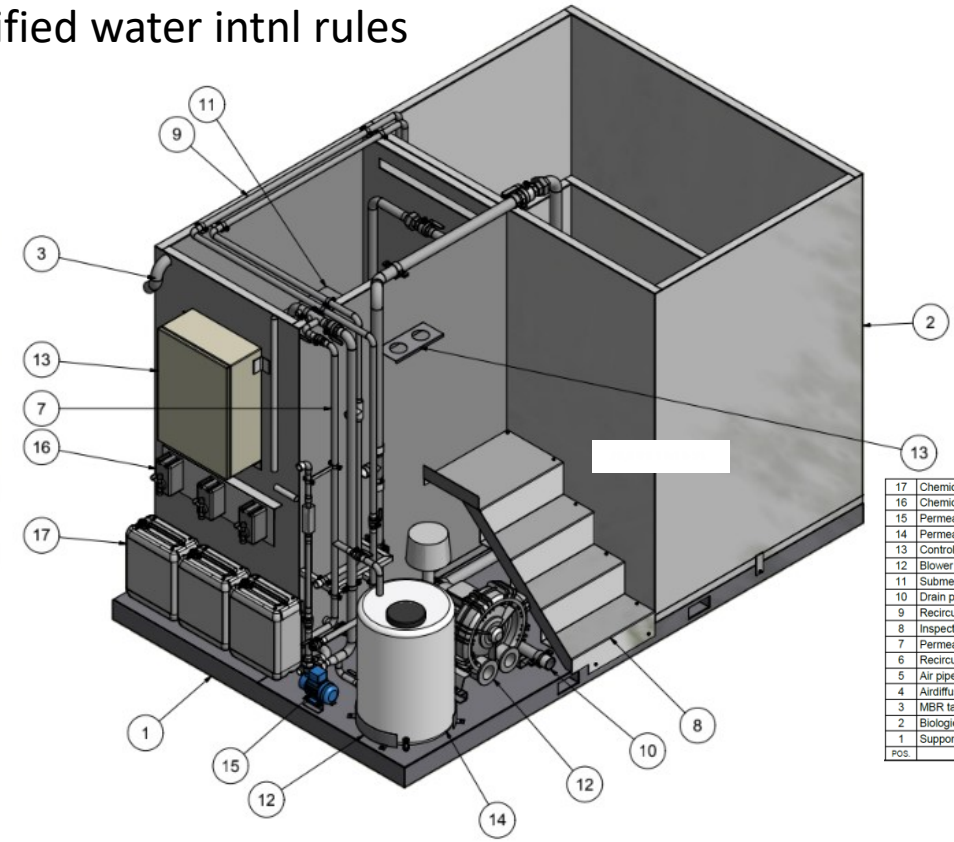
- uses simple additives
- consistency in terms of particulate removal
- process and plant compactness
- simplicity of automation

The unit allows to solve the parametric issues that influence the process:
- ideal type of pre-filtration
- flow rate of the wastewater supply
- achievable operating pressures and concentration
- obtainable quality of permeate and concentrate

MBR pilot plant

Why choose MBR technology:

- reduction of the floor space of the purification plant
- ability to manage hydraulic load fluctuations
- reduction of surplus sludge associated with higher sludge age values
- improvement of effluent quality (reduction of COD and pollutants)
- compatible with the reuse of purified water intnl rules



POS.	DENOMINAZIONE
17	Chemical storage tank
16	Chemical dosing pump
15	Permeate extraction pump
14	Permeate tank for cleaning
13	Control panel
12	Blower
11	Submerged membrane module MBR
10	Drain pipe biological tank
9	Recirculation sludge discharge pipe
8	Inspection ladder
7	Permeate aspiration pipe
6	Recirculation sludge pump
5	Air pipe
4	Airdiffusers manifold
3	MBR tank
2	Biological oxydation tank
1	Support structure MBR pilot

AQUAFUTURA s.r.l.
perfezioniamo l'acqua, innovando

OZONE pilot plant

Sometimes variations in the composition of the water, mean that traditional purification plants do not reach the discharge parameters required by environmental laws.

Ozone is used in industrial wastewater treatment to reduce discharge parameters, especially COD, SS, SD, phenols, heavy metals and color.

Our pilot is made up of:
- generator adjustable from 10 to 50 gr. O3/h w/oxygen gas
- contact micro bubbles column for tests
- 4 mt height SS steel column with base
- electrical panel and PLC for control and monitoring the test processes data

AOP Advanced Oxidation Process

pilot plant

The advanced oxidation processes for the purification of waste water are characterized by the formation of highly oxidizing hydroxyl radicals in the water.

Experimental evidences have demonstrated that in the application of AOP the oxidation capacity of numerous organic compounds is much faster and more efficient than that of the more widespread disinfection processes.

The most efficiency AOPs processes are those that involve in our test pilot plant the use of:

H_2O_2/UV	(Hydrogen peroxide and UV)
O_3/UV	(ozone and UV)
H_2O_2/O_3	(peroxide and ozone)
H_2O_2/O_3/UV	(peroxide, ozone and UV)
OH/UV	(hydroxyl radical and UV)

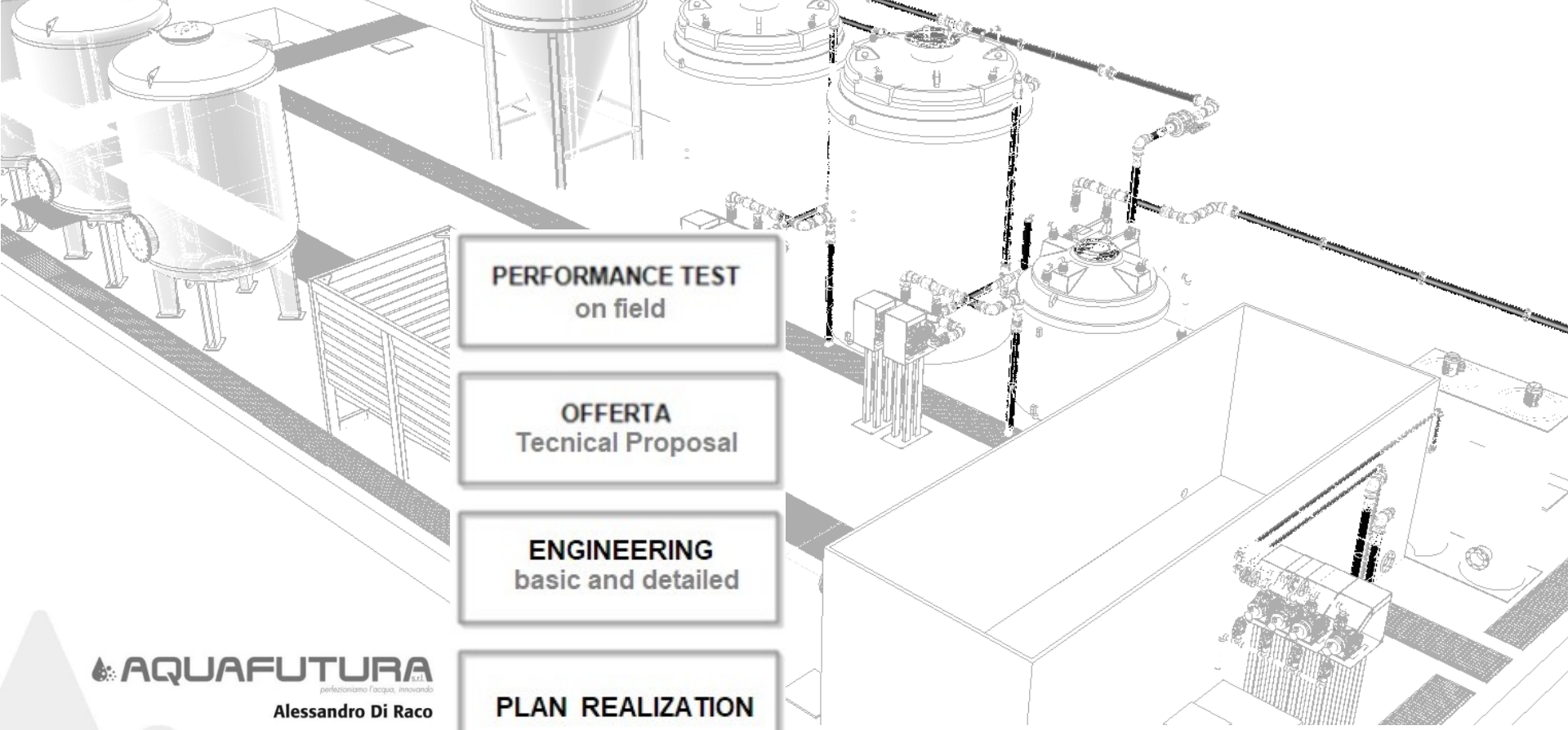
Concentrator pilot plan

To provide a truly tailor-made solution and respond to every need, we carry out laboratory tests on product samples supplied by the customer.

The analysis is performed directly by the R&D laboratory staff and, if necessary, in-depth with tests on a pilot plant in the field.

The most widespread concentration processes are those involving the use of:

- electric heat pump systems
- hot water or steam systems
- mechanical compression plants
- multiple effect thermals
- scraped or DRY implants



PERFORMANCE TEST
on field

OFFERTA
Tecnical Proposal

ENGINEERING
basic and detailed

PLAN REALIZATION

COMMISSIONING
and training

SERVICE
and management

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