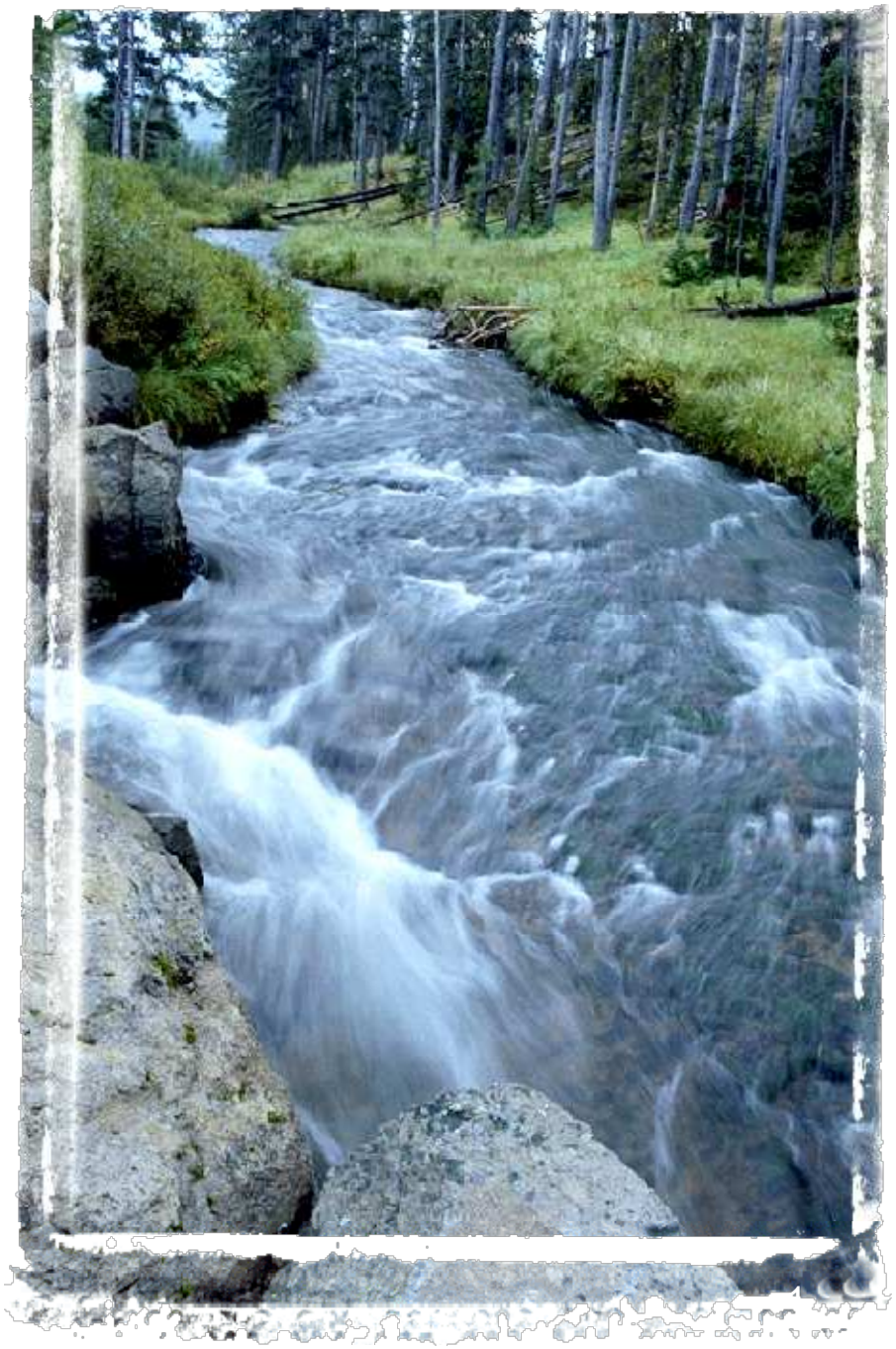
ANTIPOLLUTION TECHNOLOGIES FOR METAL FINISHING INDUSTRIES



TECN. A.

antipollution technologies

Since 1988 Tecn.A. provides solutions for water, wastewater treatment and process, for the metal finishing industry

Our priority aim it to satisfy the customer's needs, with due regard to running costs and discharge limits, giving priority - when possible - to water savings.

Our technical staff has more than 30 years experience in the field, with installations in Italy and all over the world.

The customization of each system is at the base of Tecn.A.'s efforts, in a field where needs are so different from one client to another.

Wastewater treatment

- The metal finishing industries, because of their numerous productive steps, generate wastewaters that, containing heavy metals, toxic chemicals, organic substances and surfactants, can be considered among the more polluting and the more difficult to treat.

- This is complicated by the simultaneous presence of different metals with different precipitation points, not always compatible with each other

Chemical-physical plants

- The dosage of Ca(OH)2 and NaOH at basic pH, allows the separation of most of the polluting metals contained in the effluent.
- When strong complexes are present , the hydroxides precipitation may not be fully satisfactory and proceeding with a sulfide process may become necessary.
- Organic substances and surfactants can be demolished (up to 90%) by the oxidation Fenton process, through the breakage of the long molecular chains by the radical OH* produced in the reaction among ferrous ions and hydrogen peroxide.

Chemical-physical plant 20 m3/h, with reaction sections
(Fenton, sulfide and basification)

Inclined plates clarifier

To obtain the separation of sludge from clear water, TECN.A. uses inclined plate clarifiers which offer a considerable clarifying surface with a reduced footprint

Inclined plates clarifier

Detail of an inclined plates clarifier 20 m3/h, where it can be observed the perfect separation solid-liquid over the inclined plates

Wastewater treatment plant

Chemical-physical plant 20 m3/h

Sludge dehydration

The sludge separated by the clarifier is first thickened in a sludge thickener and then dehydrated in a filter press and sent for the off site disposal.

Automatic filter press 800 x 800

Final filtration

Sand and anthracite filter, with automatic valves, 20 m3/h

SELECTIVE ION EXCHANGE SECTION

Especially in metal finishing, micro-electronic and printed circuit boards industries, the chemical-physical precipitation is not always enough to satisfy the Law's regulations for the wastewater discharge.
In such cases, it is necessary to carry out a consecutive filtration stage of the wastewater before the final discharge.
This final filtration section, called "Final polishing", is consequent to a multimedia filter and it is made of a activated carbon filter (GAC) and of two columns filled with selective resins.

Final polishing - 5 m3/h

Selective ion exchange section

Multimedia filters, activated carbon filter and double selective ion exchange filters – 20 m3/h

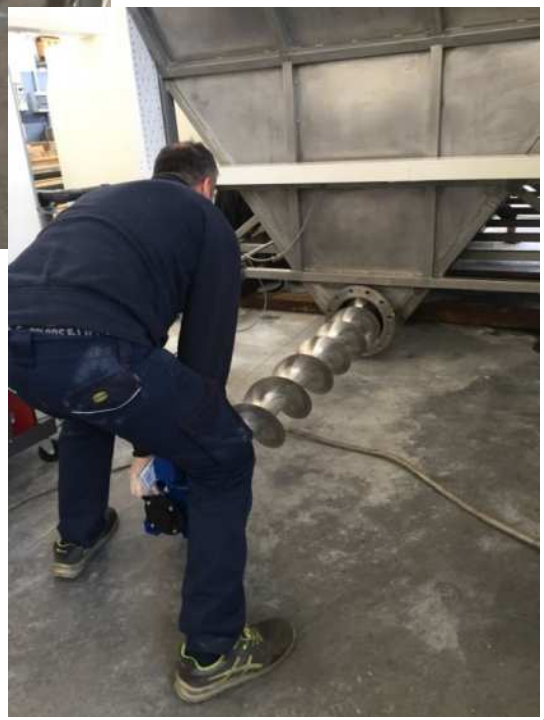
Pre- assembly

All Tecn.A.'s plants are pre-assembled at our facility and hydraulically and electrically pre-tested before shipment, for a fast installation and start up at the client's facility: reduced time for running tests after its on-site installation

Automatic selective filters - 7 m3/h

Section of reaction tanks, loaded on truck and ready for shipment

Pre-assembly



Chemical-physical plant - 20 m3/h

Pre-assembly

Chemical-physical plant - 2,5 m3/h

Pre-assembly

Chemical-physical plant - 7 m3/h

Automatization

All Tecn.A. systems are characterized by a high level of automatization, managed by PLC and with HMI for:

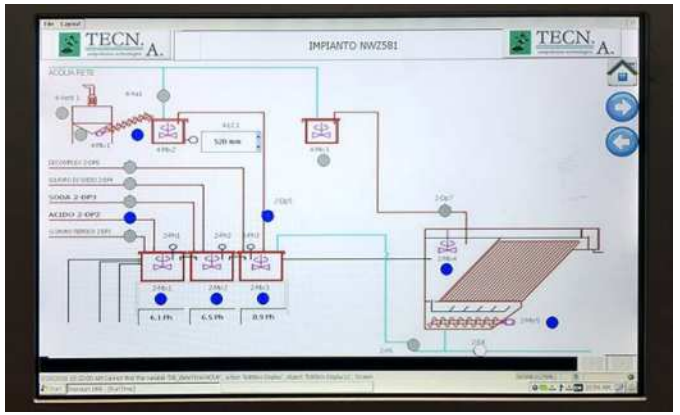
- setting of the operating variables

-control of working conditions and the display of alarms.

On request, we can provide the service of remote assistance, which allows you to:

-Check the operation of the plant remotely

-Operate directly on the touch panel (e.g. to change set points and display alarms);

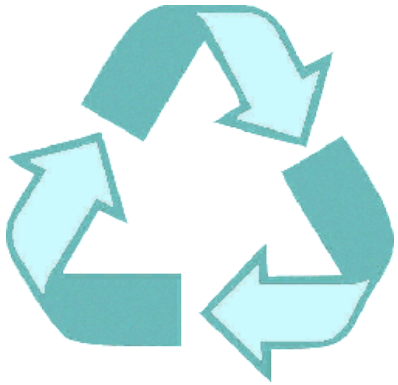


Zero Liquid Discharge (ZLD)

For the metal finishing industries (chromium, zinc, zinc-nickel plating, aluminum anodizing, etc….) TECN.A. has developed some «special» applications with membranes for the treatment and the recycle of the wastewaters (rinses).

Reverse osmosis technology applied to certain effluents (rinses whose pollution is due to the drag-out from the galvanic bath) allows to operate a very high concentration of the pollutants, thus producing deionized water with no organic substances and an ultraconcentrate that is periodically discharged and handed over to a third party for disposal or, as an alternative, further concentrated prior disposal using evaporation methods.

In this way "zero discharge" can be obtained.



In comparison with a reverse osmosis system for water demineralization, these reverse osmosis systems for wastewater are characterized by the fact that they work in a "closed concentrate loop", with mounting saline gradients and higher working pressures.

Of course, the most important advantage of the application of the reverse osmosis for the zero discharge is given by the fact that you will not have exposure to the Authority for the control of the quality of the final discharge (you will have no discharge). Furthermore, the total or partial recycle of water is of the most importance during drought periods or where there are problems of water supply or of water cost.

Reverse osmosis plant for wastewater

Capacity 15 m3/h

ZLD plant - 5 m3/h,
with ultrafiltration pre-treatment

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TECN.A. srl Strada Antica di None n.2 int. D1 - 10092 Beinasco (TO) - ITALY
Phone: (+39 011) 39.89.491 - Fax: (+39 011) 39.72.579 - www.tecna-italy.com
Sede legale: C.so Re Umberto, 84 - 10128 Torino - Capitale. Sociale € 13.000,00 int. versato - P.IVA IT05599740015 - C.C.I.A.A. 720823

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