



INDIA



ITALY

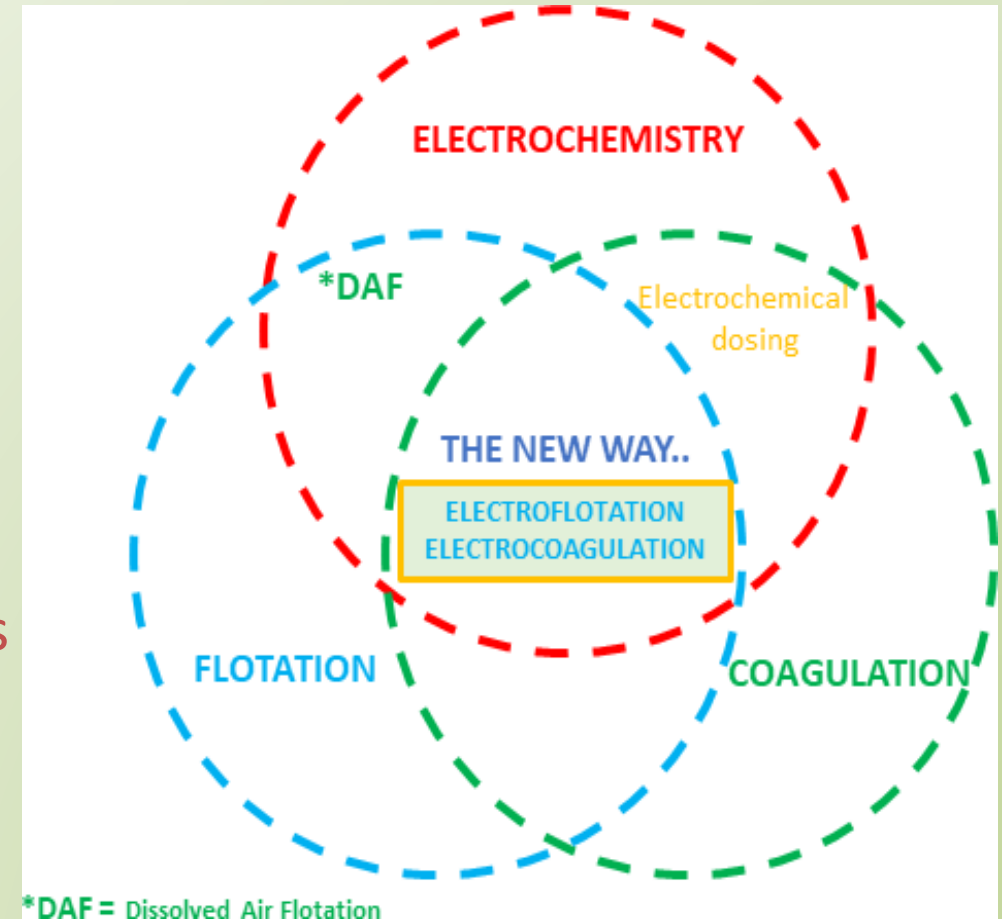
PRESENTATION

INDUSTRIAL WASTE WATER TREATMENT

PURITY- ECF® TECHNOLOGY

CIRCULAR ECONOMY

- Our philosophy follows this principle in SMART MANUFACTURING: if you need to use water in a production cycle, why use drinking water instead of industrial water? With our system you can be self-sufficient and avoid waste of precious drinking water.
- Another innovative strength of ECF[®] technology is its central positioning, compared to every traditional water purification system



EXPERIENCE

Compared to direct competitors, PURITY's experience is A WINNER: Purity **are the only company able to supply references dating back twenty years**, with plants operating with Electroflotation/ Electrocoagulation technology designed and installed by Mr. Sommariva.



First series of water recirculation systems from Vibro finishing waste water -1992



Water recirculating plant from impregnating process LOCTITE®, installed and running since 1995 in Sala Bolognese (BO) c/o MARTINI & C. S.r.l.

New design ECF® 2016



ECF[®] PRINCIPLE :

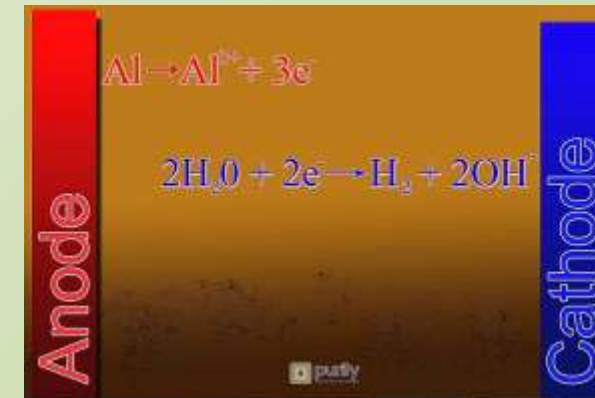
The ECF[®] Electroflotation technology is based on a particular electrolyte treatment of aqueous solutions in which a series of electrode and chemical reactions associated with physical processes are triggered to facilitate the transformation and subsequent removal of contaminants. **This does not require any addition of chemical agents with the resulting benefit of low maintenance costs as well as significant savings because of the reduction of waste sent to the inertia or landfill system.**

THEORY AND TECHNOLOGY OF THE

PROCESS :

The central idea behind the ECF[®] technology is to produce extremely gentle scrubbing systems, that is to exploit the action of the best existing precipitating agent (the electron!) with the **physical effect generated by the energetic development of micro-bubbles** (in the molecular state) within the solution.

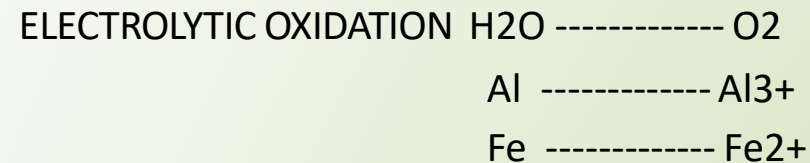
The core of the ECF[®] technology is represented by an electrolytic cell in which the solution to be treated **(NO pH correction if between 4.5 and 8.5 at the cell entry)** is injected. The ECF[®] control system applies a suitable voltage to the electrodes cell system which is essentially made of Cathodes (iron or other material such as Titanium) and Aluminum (or other material) Anodes (sacrificial)



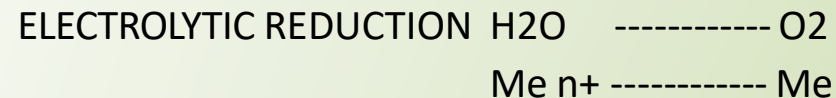
MAIN PHENOMENA

From the chemical point of view, **ANODE (positive electrode)** occur mainly (Often simultaneously) the following reactions:

Electrochemical and physical phenomena



In contrast to the **CATHODE (negative electrode)** under the following reactions:



Where Me^{n+} indicates any of several metal ions that can undergo reduction (such as Lead, Cadmium, Copper, Zinc, Nickel, Chrome, Silver, Gold, etc.) and therefore deposited at the cathode, being there by removed almost completely from the solution.

These phenomena, which they see as protagonists the electrodes, followed by a series of chemical reactions in the nature of which depends on the composition of the solution but which consist in general:

a) **Oxidative or reductive processes**, in particular in respect of the organic substances.

b) in the **processes of coagulation and flocculation**, favored by precipitation of hydroxides of iron and aluminum, which form spontaneously pH to work, as a consequence of slow dissolution of the anodes, which leads in solution the ions of the corresponding metals.

PHYSICAL PHENOMENA

Equally important, in terms of the entire purification process, are the **physical phenomena triggered by micro bubbles of gas (hydrogen and oxygen) that develop at the electrode.**

These bubbles, which are obviously the top of molecular size, are able to adhere to the most minute particles of pollutants present in the solution, therefore moving them to the surface.

The solid substances that for density or for their small size would otherwise precipitate or remain indefinitely in suspension in the solution are therefore brought up to the surface.

This phenomenon is called, not surprisingly, **“ELECTROFLOTATION”**, to **highlight the bubbles of gas that are generated by current.**

This is the main advantage of our system on the traditional flotation process which simply injects air in the form of bubbles which are not small enough to make the particles float.



RESULTS

The above mentioned factors lead to the creation of a two-phase system:

1 PHASE

Formation of a compact foam (floated) on the surface of the aqueous solution contained in an electrolytic cell which is discharged in the mixing section.

2 PHASE

The float and the precipitate - flocculated are subjected to filtration.

Depending on the pollutants treated in ECF[®] filtration process will be continuous or discontinuous.



✓ **BENEFITS OF ECF[®] TECHNOLOGY :**

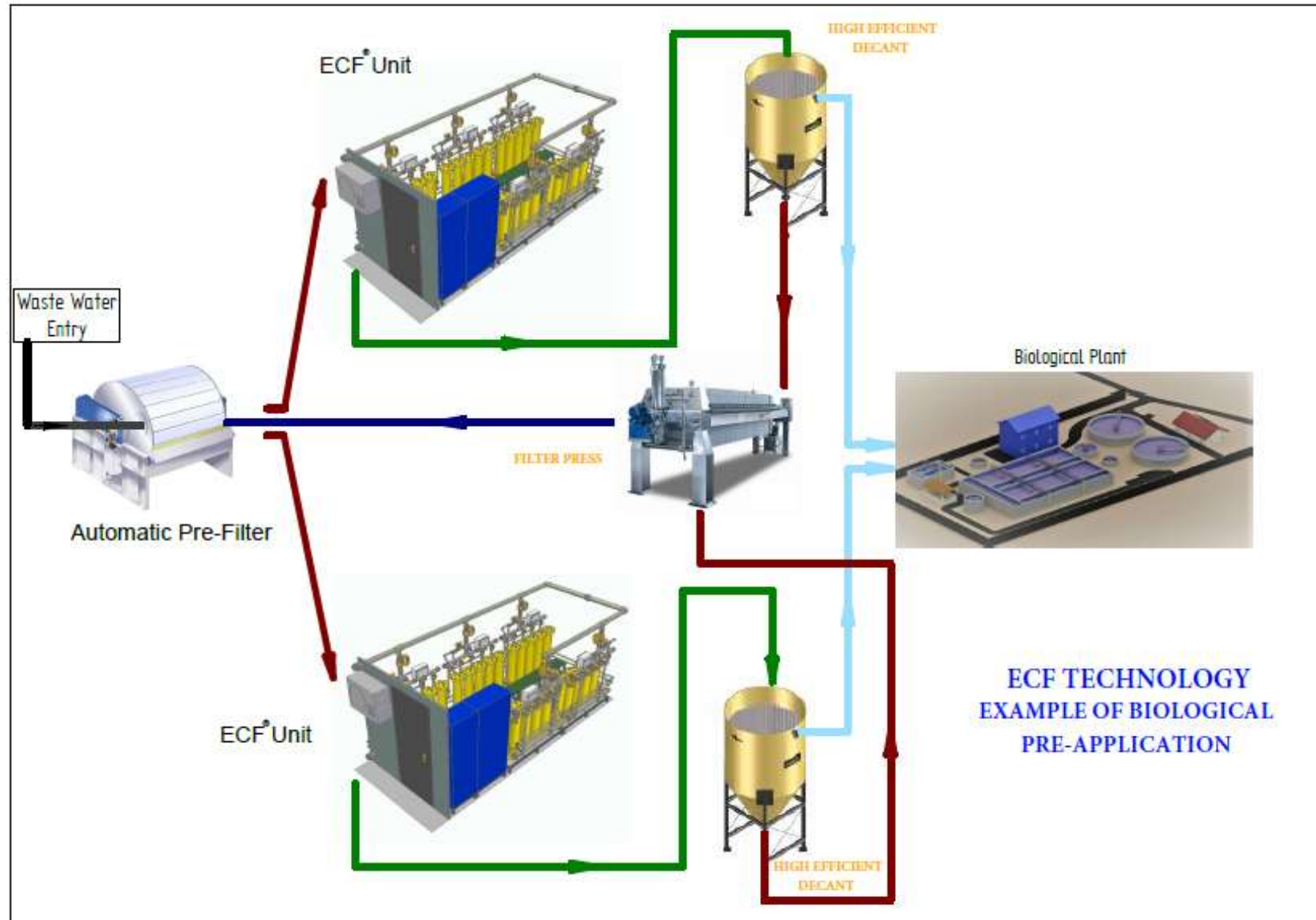
- ✓ **Positive Environmental Impact**
 - ✓ **Reuse of treated water**
 - ✓ **Meets Discharge Limits**
 - ✓ **No Chemicals Used**
- ✓ **On-site treatment helps solve capacity and volume problems at public facilities**
 - ✓ **Cost-Effective**
- ✓ **Modular technology building, allowing the ability to change over time**
- ✓ **Effective feed back & monitoring through Building Management System (BMS) for remote operations management**

Modular Construction, allowing the ability to change over time....



**MODULAR FLOW CAPACITY :
FROM 1.000 LT TO 20.000LT/H
WITH SINGLE STANDARD
20' CONTAINER**







ECF Container - Tanning wastewater

CUSTOMERS: STEEL SHEET METAL FORMING - PLANT, ITALY



**FILTER PRESS AREA –
ECF- PLANT
(SLUDGE DEWATERING)**

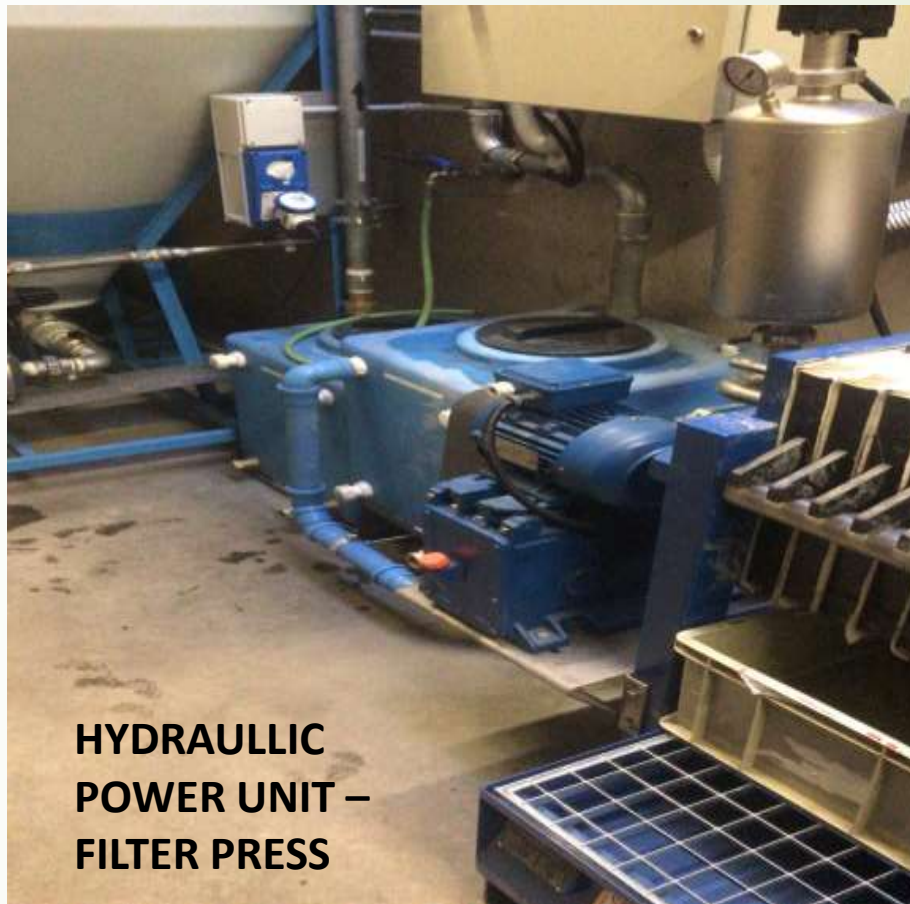


**BEFORE
ECF-EFFLUENT**



**AFTER
ECF-TREATED
WATER**

**CUSTOMERS: ECF® EFFLUENT TREATMENT
PLANT AT STEEL PARTS MANUFACTURER
ITALY**



**HYDRAULLIC
POWER UNIT –
FILTER PRESS**





**RAW EFFLUENT TANK –
LOOK OF EFFLUENT QUALITY**



**TREATED EFFLUENT WATER TANK –
LOOK OF TREATED WATER QUALITY**

**FIRST TIME
IN INDIA**

PILOT PLANT FACILITY –BASED ON PURITY ECF[®] TECHNOLOGY FOR EFFLUENT TREATMENT

**NOW ESTABLISHED AT TTGA- IMT MANESAR, HARYANA
PLANT**

**FOR TESTING & TREATMENT OF INDUSTRIAL WASTE WATER SAMPLES
(ON CHARGEABLE BASIS) FOR DEMONSTRATING THE FOLLOWING :**

- 1) Effectiveness of PURITY- ECF technology for Industrial Waste Water Treatment.**
- 2) For demonstrating the advantages of Purity ECF based ETP plants over the existing / conventional ETP plants being used in India currently.**
- 3) For helping the decision making process of potential industry clients of Purity –ECF based ETP plants in India**

CONTACT US IN INDIA

HEAD OFFICE ADDRESS :

TTGA Pvt. Ltd.
80/1, Block –II, WHS,
Kirti Nagar, New Delhi-110015

MANESAR WORKS ADDRESS :

TTGA Pvt. Ltd.
Plot no. 323 , Sector-8,
IMT - Manesar, Gurugram -122050
Haryana

TTGA -CONTACT PERSONS FOR PURITY-ECF

Vineet Chaudhri - Mobile : 9811065224 , email : vineet@ttga.in

Rakesh Sethi – Mobile : 9810079547, email : rakesh@ttga.in

Jasbir Singh – Mobile : 9560303816 email : edp@ttga.in

VISIT OUR WEBSITES FOR INFORMATION

WWW.PURITYTEC.COM

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Thank you for your
attention