



IRIDE  
ACQUE

ECOMONDO  
The green technology expo.

TRATTAMENTO ACQUE INDUSTRIALI  
INDUSTRIAL WATER TREATMENT



Circular economy in our DNA

## THE CLOSING OF THE CIRCLE "EMER": ONE WASTE CATALYZES THE TREATMENT OF ANOTHER

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### INDUSTRIAL WASTES & FENTON PROCESS

*Iride Acque SB srl*, with the aim of promoting a culture of sustainability, has focused its R&D activities on:

- **Spent batteries**, containing, in all versions, metals (particularly Fe, Mn, Zn ) that are highly harmful to the environment

- **Industrial wastes**, particularly those with a high "bio-refractory" organic load (non-biodegradable, toxic or microorganism-inhibiting compounds). Their treatment is critical in traditional biological oxidation systems.

Starting from the insight that some metals present in spent batteries are the ones capable of catalysing the formation of hydroxyl radicals, Iride Acque has developed and patented the "[EMER- \(Enhanced Magnetic Heterogeneous Reactor\) technology](#)", a secondary product patented by Iride to help realizing circular economy model in wastewater industry. Core of this technology is the innovative catalyst used for the implementation of a heterogeneous Fenton process.

Fenton process has been applied to industrial wastewaters with the result of significant reductions of toxicity, improvement of biodegradability, colour and odour removal. Its benefits (among other processes): shorter reaction time, ambient pressure and temperature, use of cheap and easy-to-handle reagents, easy integration in existing water treatment processes.

### EMER - «Enhanced Magnetic Heterogeneous Reactor»

Several studies have been conducted by leading Universities on the EMER catalyst, and the main results are:

- On bio refractory pollutants EMER catalyst process showed better performance than homogeneous Fenton (from +25% to +35%)
- EMER not alter the qualitative characteristics of the wastewater (in particular for the concentration of metals), maintain the effectiveness of the catalyst unchanged and significantly reduce the chemical sludge produced compared to the traditional Fenton process
- EMER treatment brings to a significant increase in the biodegradability of residual pollutants (32% to 58%).

The EMER process, in addition to being one of the most effective and efficient, represents a virtuous example of circular economy.

### Advantages of our Emer technology compared to the traditional ones

	biological oxidation	chemical oxidation	EMER
Efficacy	✓	✓✓	✓✓✓
Ease of use	✗	✗	✓✓
Capex	⏰ 85% more	⏰ 50% more	⏰
Energy use	⚡ 70% more	⚡ 40% more	⚡
Plant size	●	●	●

### EMER MODULE CONFIGURATION

Two categories of plant have been installed in industrial scale, depending on the application:

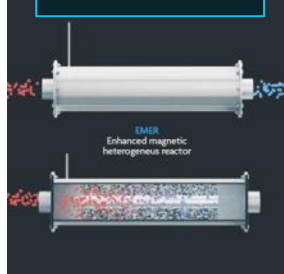
- "**recirculation**" plant: where the wastewater, conditioned and equalized in a mixed tank, is recirculated in special reactors where are installed the catalyst rods (. This includes "tower" and "vessels" plants.

- "**immersed bars**" plants: systems where catalyst bars are directly installed in the equalization and conditioning tank. This category includes the coming soon "Global Reactor".

EMER – Vessels



Inside a vessel



EMER – Tower



[Read the full article](#)