



**IRIDE**  
ACQUE

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# IRIDE ACQUE

Innovation and Circular Economy for industrial wastewater treatment

TECHNICAL INFORMATION

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**IRIDE**  
ACQUE

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# Reference Sectors

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Our clients are FINAL USERS, EPC CONTRACTORS, and MULTIUTILITIES.

The selection of our clients is the result of careful analysis of the business sector's growth trends for which the application of our technology has been particularly effective.

Our main national, and international focus is on the following sectors:

- **AGRICULTURAL AND FOOD INDUSTRY**
- **CHEMICAL AND PHARMACEUTICAL INDUSTRIES**
- **OIL&GAS INDUSTRY**
- **TEXTILE INDUSTRY**
- **PAPER INDUSTRY**
- **LANDFILL LEACHATE TREATMENT INDUSTRY**
- **THIRD PARTY WASTE TREATMENT INDUSTRY**
- **Others**



# Our Clients



**Acque Bresciane**  
Integrated Water Service Manager



**Caseificio Sociale il Battistero**  
Food & Beverage - Dairy products



**Niagara**  
Industrial wastewater treatment platform



**Azienda Servizi Integrati Lambro**  
Integrated Water Service Manager



**Tintoria Emiliana**  
Textile & Fashion  
Textile Dyeing



**Iren**  
Industrial wastewater  
treatment platform



**Panama Trimmings**  
Textile & Fashion  
Producing fashion accessories



**Trivium Packaging**  
Manufacturing packaging  
materials and metal containers



**Rosa dell'Angelo**  
Food and Beverage Industry  
Meat processing



**Mutti**  
Food and Beverage Industry  
Preserved Foods



**Ambienthesis**  
Industrial wastewater  
treatment platform



**Cantina Colle Moro**  
Food & Beverage  
Winery



**Birificio del Ducato**  
Food & Beverage  
Brewery

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# Benefits of our solutions

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## Effective treatment

Our solutions can treat even the most recalcitrant wastewater, for which normal technologies are not effective.



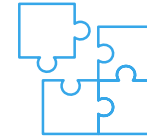
## Automation

Our plants are automated in compliance with the requirements of the Transition 4.0 Plan.



## Control from a distance

Although very simple to operate, our installations are both remotely controllable and tele-manageable.



## Adaptability to pre-existing installations

Our systems integrate seamlessly with pre-existing installations by supporting their operation.



## ON-OFF

Our plants can operate only when needed.



## Small size

Our solutions can accommodate any flow rate that needs to be treated.



## User-friendly

Our plants are designed and automated for anyone to use.

# XS

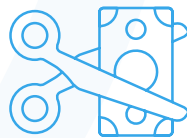
## Reduced size

Up to 85% smaller than those using alternative technologies.



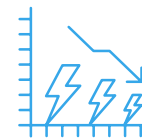
## Modularity

Our plants can grow with the company or adapt to different needs related to changing production.



## Cost Reduction

A saving of up to 75% in Capex compared to other technologies.



## Reduced energy consumption

Save up to 70% in energy consumption compared to other technologies.



## Sludge disposal reduction

Reduction of sludge production up to 65% compared to the use of other technologies

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# Catalytic oxidation: the response to demands of productive world

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Our **CATALYZER REDUCES THE TIME** of chemical oxidation reactions aimed at degrading pollutants, and consequently **THE TOTAL SIZE** of the plants, with the same flow rate of the wastewater to be treated. This is the technology that has been used to purify air, applied to wastewater as well. Moreover, it reduces **THE COMPLEXITY** of the machinery involved in the treatment process .

## ADVANTAGES



Treatment of wastewater with high levels of pollution



Shorter treatment time and Smaller plants



Easy management of the plants

# Our patents

## 2020: THE PATENT N. 102017000149010

The innovation that characterizes **IRIDE ACQUE** comes from the development of an inexpensive, **IRON BASED NANO TECHNOLOGICAL CATALYZER**.

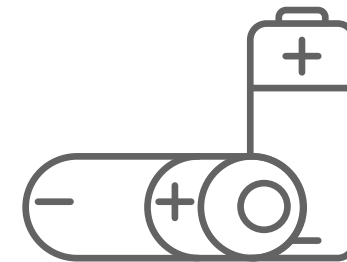
combined with properly sized magnet, avoids problems related to traditional technologies, such as the release of secondary pollutants and the production of sludge problems deriving from release of metals, and any induced pollution. Our company has, in fact, developed an innovative catalyzer, obtained from the waste materials of **EXHAUST CONSUMER BATTERIES** through a complex process that improves the performance of the oxidation reaction and makes it difficult

to reproduce. The catalyzer, with its exclusive composition, acts as an activator of an 'eco-friendly' reagent, the **HYDROGEN PEROXIDE**, accelerating its effect on the wastewater. In respect to other technologies, our technology reduces the operating costs to its minimum as well as treatment time and the plant size. Finally, our unique process, increases the biodegradability of the wastewater with the goal to make it easily treatable by any biological plant located downstream.

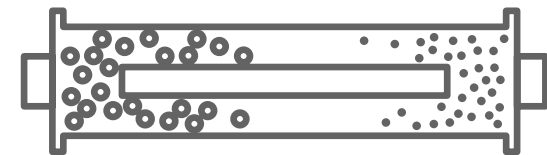


### IDEA

Catalytic oxidation at a «sustainable» price



Common use batteries



### SOLUTION

Iron based nano technological catalyzer

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Our process:

# Emer magnetic assisted catalytic oxidation

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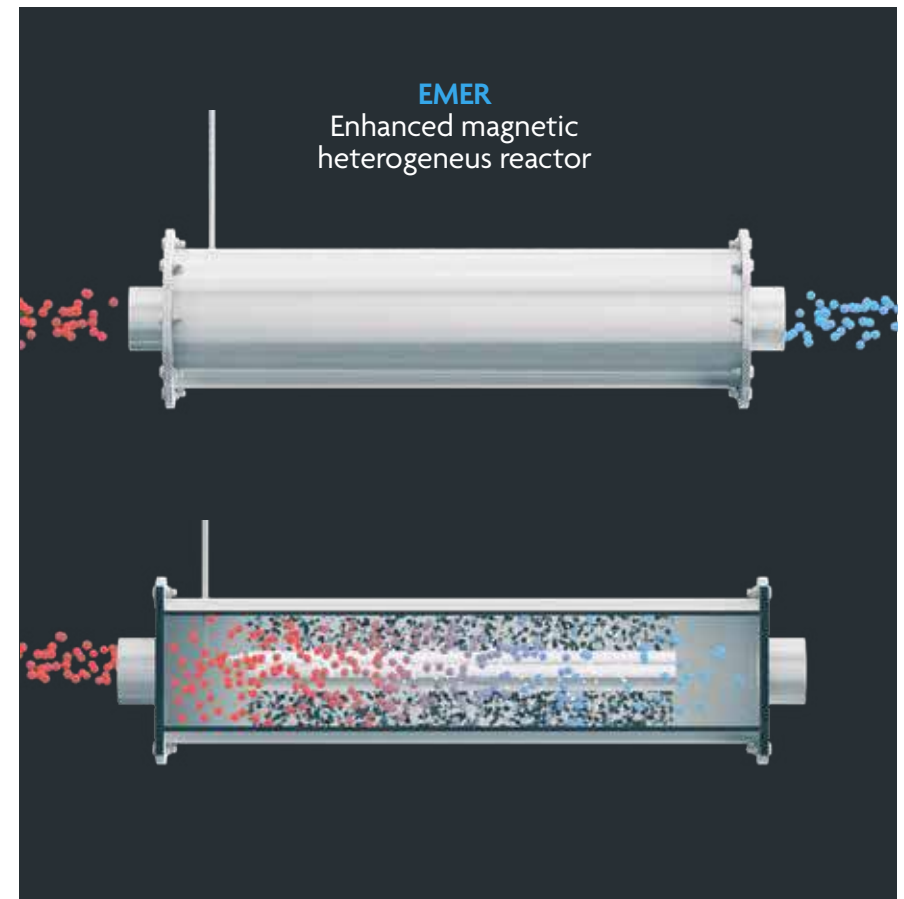
Our heterogeneous  
iron based Catalyzer



H<sub>2</sub>O<sub>2</sub>: eco friendly  
and soluble oxidant reagent



Magnetic bar for supporting the catalyst  
and enhancing the catalyzing effect





# Advantages of our Emer technology

compared to the traditional ones

	biological oxidation	chemical oxidation	EMER
Efficacy	✓	✓✓	✓✓✓
Ease of use	✗	✗	✓✓
Capex	 85% more than Emer	 50% more than Emer	 up to 85% less than biological oxidation <hr/> up to 50% less than chemical oxidation
Energy use	 70% more than Emer	 40% more than Emer	 up to 70% less than biological oxidation <hr/> up to 40% less than chemical oxidation
Plant size	●	●	●

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# Our products

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Our technology is available both in “TOWER” VERSION and in “VESSEL” VERSION based on the flow rate to be treated. We have 5 DIFFERENT SIZES able to satisfy the treatment from 5 to 30 m<sup>3</sup>/d. It can be guaranteed that the sequence of towers or vessels would treat up to 5 TIMES HIGHER QUANTITIES of wastewater.

We also produce a compact plant named Global Reactor. Moreover, we are structured to design “tailor made” plants for higher flow rates.



VERTICAL VESSEL



TOWER

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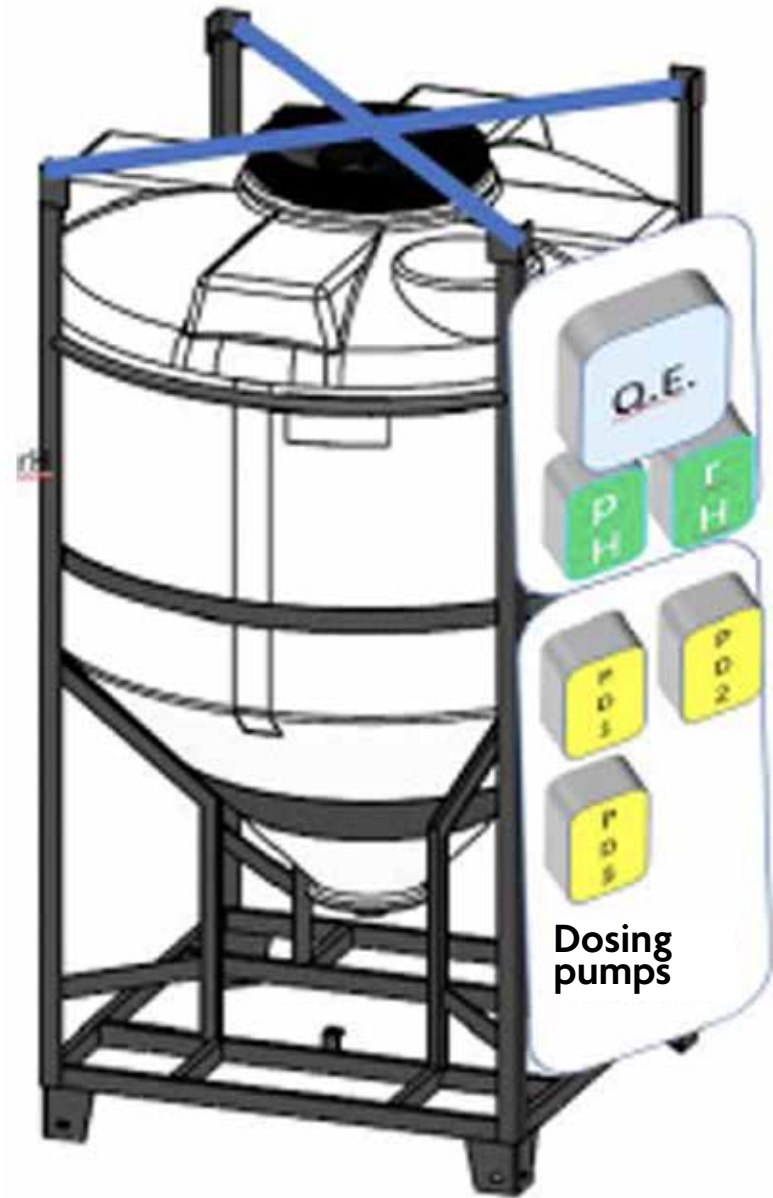
# Coming soon

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## EMER GR

The future: it's "in motion," with projects already in place and a new system, EMER, currently under development, designed to continuously treat wastewater flow. With EMER GR, we could reduce loading and contact times of wastewater in tanks and perform all operations in a single reactor where the wastewater is kept in motion by an agitator blade and constantly in contact with the catalyst. EMER GR is the result of IRIDE ACQUE's ongoing research and development efforts aimed at providing operational solutions to space-related issues and COD reduction in the wastewater of our customers.

Thanks to this special plant configuration, the EMER GR allows to add further treatment phases to the process with the simple and economical insertion of optional equipments and the reprogramming of the operating logics via APP.



**GLOBAL REACTOR**

SECTOR

# Mixed industrial wastewater treatment platform

## SPERIMENTAL TESTS WITH MOBILE PLANT AT CLIENT FACTORY

### Analytical results

	Initial value	Final value	Reduction %
COD (mg/L)	5,445	987	82
BOD5	2,516	780	69
BOD5/COD	46%	79%	
MBAS	62,5	2,31	96
IAS	288	2,32	99

### Visual results

Before filtration



After filtration



SECTOR  
**Dairy**

## LABORATORY TESTS

### Analytical results

	Initial value	Final value	Reduction %
<b>COD (mg/L)</b>	8000	160	98
<b>BOD (mg/L)</b>	3000	40	94,66
<b>Suspended solids</b>	950	80	91,57
<b>Oil and fats</b>	130	12	90,77

### Visual results

Pre-treatment



Post-treatment



SECTOR

# Textile dyeing - 1

## LABORATORY TESTS

### Analytical results

	Initial value	Final value	Reduction %
<b>COD (mg/L)</b>	18700	1650	91,7

### Analytical results

	Initial value	Final value	Reduction %
<b>COD (mg/L)</b>	737	100	86,4
<b>Surfactans (mg/L)</b>	47,6	21,5	54,8
<b>Phenols (mg/L)</b>	0,41	0,2	51,2

### Visual results





SECTOR

# Textile dyeing - 2

## SPERIMENTAL TESTS: PURIFICATION & CHLORIDE RECOVERY

### Analytical results

evree	Target color		
Dosing NaCl (g/L)	Olive	Antracite	Black
Traditional formula	70	80	100
Chloride recovery	0	10	30
Savings NaCl	100%	88%	70%

### Visual results

Pre-treatment



Post-treatment:  
UF + EMER + NF



Result of dyeing with recovered chlorides



Results control  
palette



SECTOR

# Tannery

## LABORATORY TESTS

### Analytical results

	Initial value	Final value	Reduction %
COD (mg/L)	4000	611	84,72
BOD (mg/L)	840	245	70,84
Fluoride	25	4	84
PFAS	87,6	<0,000001	100

### Visual results

Pre-treatment



Post-treatment





SECTOR

# Cosmetics and Skincare industry

## LABORATORY TESTS

### Analytical results

	Initial value	Final value	Reduction %
COD (mg/L)	18114	2100	76,25

### Visual results

Pre-treatment



Post-treatment



SECTOR

# Meat processing industry

## LABORATORY TESTS

COD (mg/L)	Analytical results		
	Initial value	Final value	Reduction %
Washing of structures	245	96	60,8
Washing of hams	312	111	64,4
Washing salami	2170	128	94,1

## Visual results

Post-treatment



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# Let's meet up!

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Iride Acque offers a **free check-up** on water used in production processes to optimize its quality, maximize its reuse and minimize its consumption. Upon request, a specialist from our team will contact you to gather initial information and arrange a visit to your site.

The goal is to assess the needs of your business together and propose the most suitable solutions, **including customized solutions**.

You can also follow updates on our social media channels and check out our website.

**f** <https://www.facebook.com/Irideacquesrl/>

**in** <https://www.linkedin.com/company/i-ri-de-s-r-l>

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