



## INDUSTRIAL WATER TREATMENT TECHNOLOGIES

# sarralle<sup>TM</sup>

Environment & Energy

The future as BUSINESS OPPORTUNITIES for  
“Water Treatment Plants”

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## SARRALLE OVERVIEW

Founded in 1965, and nowadays with more than 55 years' experience on international projects, SARRALLE is your partner in the Environment, Energy & Steel Worlds.

We are an innovative Design, Engineering, Manufacturing and Installation company, with more than 700 dynamic, highly-qualified and multicultural employees.



### Steel Melting Plant

- Scrap Cleaning Machine
- Electric Arc Furnaces (AC/DC EAF)
- Secondary Metallurgy (LF/VD-VOD/VIC/RH)
- Continuous Casting Machines (CCM) billet, bloom and slab
- Fume Extraction Systems (FES)
- Waste Heat Recovery System
- Material Handling Systems (MHS)
- Hydrogen Technologies
- Water Treatment Plants
- Electrical, Control & Automation
- Auxiliary Equipments
- Spares & Service Solutions

## ABOUT SARRALLE

### 700 EMPLOYEES

Dynamic, highly-qualified and multicultural team.

### 4 BUSINESS LINES

Environment, Energy and Steel sectors.

### 10 LOCATIONS

Spain, Italy, USA, Mexico, UAE, India, China.

### OWN MANUFACTURING FACILITIES

Europe and India

### TAILORED SOLUTIONS

Greenfield or Brownfield

### TECHNOLOGY & INNOVATION

Constant research for smarter, automated, environment friendly, efficient and safe plants.



### Rolling Mill

- Medium Section Mills
- Heavy Section Mills
- Merchant Bar Mills (MBQ) / Bar Mills
- SBQ Mills
- Wire Rod Mills
- Reheating Furnace (Green Hydrogen)
- Hot Charging System
- Water Treatment Plants
- Electrical, Control & Automation
- Spares & Service Solutions



## WHY SARRALLE?

### SERVICE

The best during and after sales service.

### CLOSENESS

Direct relationship.

### ADAPTABILITY & FLEXIBILITY

What do you need? We can adapt for you. Tailored solutions.

### TECHNOLOGY & SUSTAINABLE SOLUTIONS

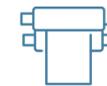
Our solutions and products with the latest technology.

### COST EFFECTIVE

Best balance between the best technology with a correspondence price offer and perfect after sales.

## OUR SERVICES

- EPC Projects
- Greenfield & Brownfield Project
- Management & Control
- Engineering & Design
- Process Consultancy
- Own Manufacturing & Assembly
- Factory Acceptance Test
- Logistics
- Site Construction
- Comissioning & Start Up
- Training
- Spare Parts & After Sales Service



### Processing Lines

- Cut-to-length Lines (CTL)
- Slitting Lines (SLL)
- Recoiling and Inspection Lines
- Packaging Lines
- Pickling Lines
- Tension leveling Lines
- Electrical, Control & Automation
- Spares & Service Solutions



### Environment & Energy

- Industrial Water Treatment
- Waelz Oxide & Metal Recovery
- Hydrogen Technologies
- Waste Treatment



One THIRD of the WORLD's Population does not have access to SAFE DRINKING WATER

SARRALLE IS COMMITTED TO HELP WITH THE WORLDWIDE PRESERVATION OF DRINKING WATER

### 1 Optimizing Water-based Industrial Processes:

Heating, Cooling, Processing, cleaning and rinsing of untreated water. Depends on the contact with the manufactured material:

- 1.1 Non-Contact Water: example - Meltshop
- 1.2 Direct-contact Water: example - Continuous Casting

### 2 Purifying Industrial Waste-water

Removing impurities and ensuring that generated water is fully compliant with regional industrial wastewater standards.

- 2.1 Customized Water Treatment Plants
- 2.2 Innovative Treatment Systems (GEM)

**FLOTATION (GEM)**  
**CLEAN WATER TECHNOLOGY**

**EVAPORATION**  
**ZEWATECH**



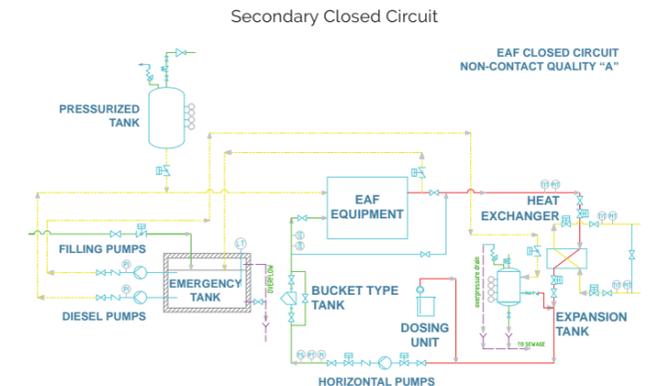
## 1. OPTIMIZING WATER-BASED INDUSTRIAL PROCESSES

### 1.1 Non-Contact Water Technology

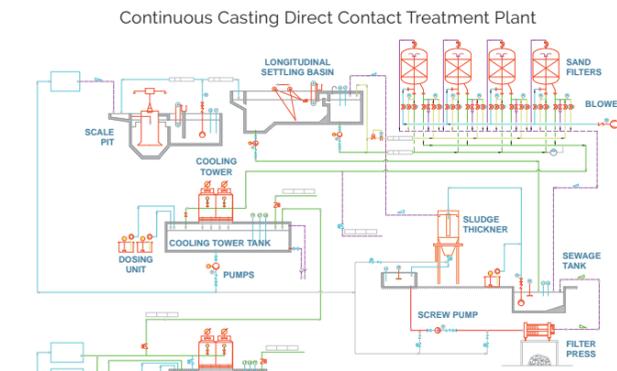
During the cooling process water heats up, but it stays clean.

The optimized process flow diagram is divided into two circuits: Primary open circuit and secondary closed circuits, which are interconnected through heat exchangers.

This definition allows to use the same set of cooling towers to dissipate heat from different processes in the meltshop (EAF, LF, FES...)



### 1.2 Direct Contact Water Treatment Technology

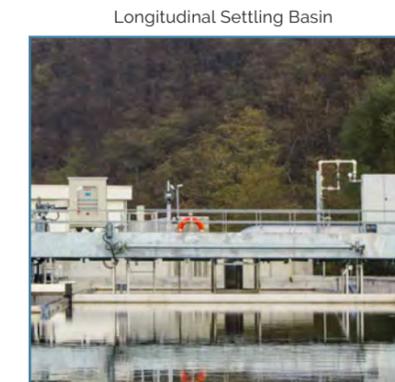
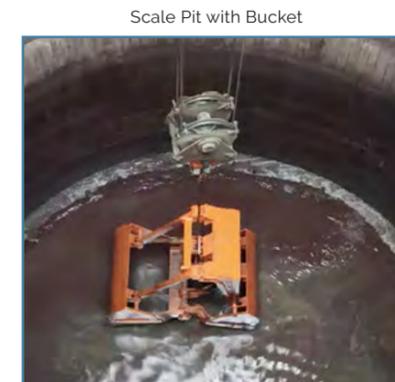


Direct contact treatment is used in continuous casters and rolling mill applications. During the cooling process water heats up and gets dirty. The water needs to go through cleaning treatments.

The water quality required is different to the one used in the meltshop, so it requires its own cooling system.

Removed pollutants are: scale, sludge, oil & grease, etc.

There are other cool water requirements in continuous casting process, which use the Non-Contact Water Technology as described above.





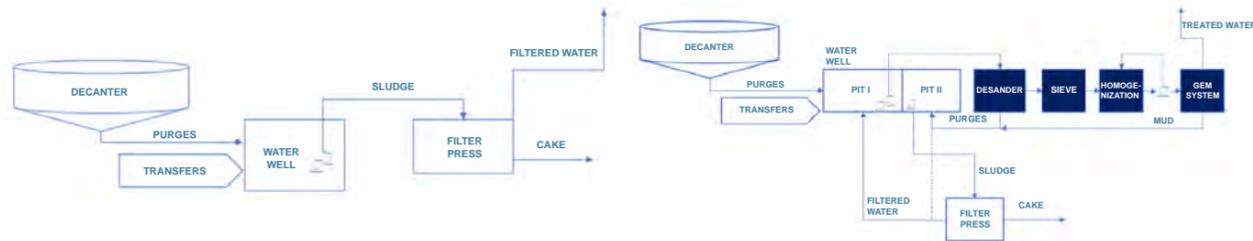
## 2. PURIFYING INDUSTRIAL WASTE WATER

### 2.1 CUSTOMIZED WATER TREATMENT PLANT

### 2.2 INNOVATION: OIL REMOVAL PROJECT (GEM SYSTEM)

Technology developed with the collaboration of: CWT (CLEAN WATER TECHNOLOGY)

Efficient technology for the removal of oil & grease, suspended solid, turbidity and COD and BOD (non solved).



Standard Process Flow Diagram

Process Flow Diagram with GEM Technology integrated

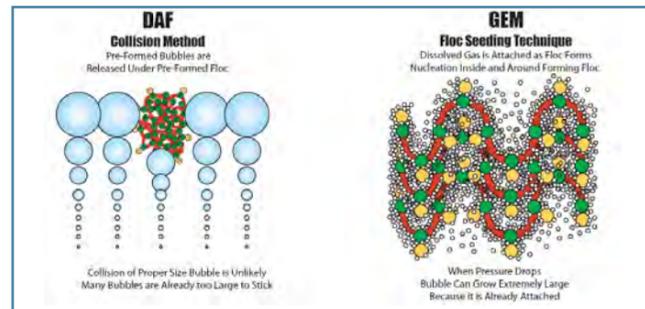
#### Advantages of the standard flotation technology:

- The system requires 50% less space than traditional DAF process.
- It is flexible in terms of flow and solid content of the water. Industry will go to the less quantity of water with bigger contaminant content.
- The required chemical products are around 20-80% less depends on type of water.
- Able to work in discontinuous processes.
- Less required human resources.

#### Equipment Description:

The equipment will be installed in 3 movable skids.

- Platform 1: Sand Trap, Sifter, Homogenization tank.
- Platform 2: GEM System
- Platform 3: required chemical dosing unit.

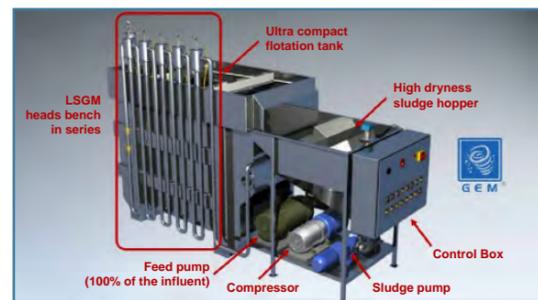


#### Project's results of the presented technology

Characteristics	Input Water	Output Water	Performance
Suspended Solid (mg/L)	1.426	10	99.20%
Turbidity (mg/L)	257	12	95%
Oil & Greases (mg/L)	625	<10	98%



1. Input
2. Treated Water
3. Obtained Sludge



### INNOVATION: EVAPORATION

Technology developed with the collaboration of Zewatech

- Distillation of water at reduced pressure.
- High Quality Distilled water is reintroduced into the production cycle
- The contaminant can be eliminated at a lower cost or valorized as a resource.

#### Advantages against other process.

- High reduction of liquid waste costs
- Reduced space and cleanliness of the work area.
- Low training of operators required (low opex cost)
- No addition of chemical products

Multiple sectors: Leachate treatment, Petrochemical, Textile, metallurgical, electroplating, cosmetics, graphic arts, chemical, pharma, sanitary waste, food, biogas, photovoltaic, Power industry.

#### CHARACTERIZATIONS:

	<b>VERTICAL HEAT PUMP:</b> EQUIPMENT GENERALLY RECOMMENDED for its flexibility and guarantee of performance and maintenance.	
	<b>VERTICAL MULTI-EFFECT EXTERNAL ENERGY</b> Requires an external source of energy: steam, hot Water/oil. It can pre-tailored in several stages 1-2-3 High volumes of water up to 150.000 lts/day.	
	<b>THERMOCOMPRESSION EVAPORATORS</b> Compresses the steam generated to increase the temperature. Accomplishing the technology with the lowest energetic cost.	

Taylor made solutions can be designed for each case with pre and post-treatment (Flotation, Crystallizers, falling film, fluidized bed...)

Zero Liquid Discharge using Evaporation as a goal

Different pilot plants of each technology for rent to previously guarantee any performance.



### 3. SARRALLE: EPC SOLUTION PROVIDER

- Engineering Service Capacity in the following disciplines:
  - Mechanical Engineering
  - Piping Engineering
  - Process Engineering
  - Electrical & Automation Engineering
  - Civil & Steel Structure Engineering
- Equipment definition, procurement and supply.
- Own steel & electrical cabinet workshops.
- Own erection & commissioning supervisors services for construction, commissioning and training.



### 4. PROJECT REFERENCES

- Project in 2022: WTP for 1.000 m<sup>3</sup>/h// Location: Fos Sur Mer (France)// Client: ARCELORMITTAL
- Project in 2021: Oil Removal in Continuous Casting Machine// Location: Olaberria// Client: ARCELORMITTAL
- Project in 2017: WTP for 2.000 m<sup>3</sup>/h// Location: Alba (Bahrein)// Client: Alba Bahrein (BEFESA)
- Project in 2014: WTP for 3.000 m<sup>3</sup>/h// Location: Monterrey (Mexico)// Client: FRISA
- Project in 2012: WTP for 30 m<sup>3</sup>/h// Location: Adana (Turkey)// Client: BEFESA STEEL
- Project in 2007: WTP for 900 m<sup>3</sup>/h// Location: Berrechid (Morocco)// Client: YNNA HOLDING
- Project in 2006: WTP for 600 m<sup>3</sup>/h// Location: Guápiles (Costa Rica)// Client: actually ARCELORMITTAL



ARE YOU INTERESTED  
IN LEARNING MORE  
ABOUT THE SARRALLE'S  
CAPABILITIES?

LET'S GET TOGETHER  
AND HAVE A MORE  
DETAILED PRESENTATION

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SARRALLE WEB  
FACEBOOK  
INSTAGRAM  
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**Contact**

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