



Water and effluent  
treatment solutions



When it comes to water and effluent treatment, we have the solution that you need.

## **ABOUT A&E**

A&E Equipment and Service is a company composed of a team of professionals with vast experience in water and effluent treatment solutions, with products manufactured through the Fiberglass (FRP - Fiberglass Reinforced Plastic) production process. The factory has a total area of 18,000 m<sup>2</sup>, located in the industrial district of Natal, Rio Grande do Norte, from where it can competitively serve the entire country.

Committed to its values, A&E counts on its talents and partners for a continuous improvement process aimed at offering the best water and effluent treatment solutions to the market.

The company has its own Research and Development (R&D)

area that, in partnership with the best professionals and educational institutions, constantly seeks the improvement and development of the products and solutions offered by A&E.

The sum of these capabilities makes the company a reference in its market, offering high performance solutions, easy installation, greater durability, low cost of implementation, operation and maintenance.

# WHY A&E?

- Wide range of products and solutions, from isolated components to complete treatment stations, with or without automation, also in turn key regime.
- Attendance and solution of customer problems with punctuality, professionalism and competence, always offering the best cost-benefit alternative.
- Research and Development Committee, in which multiple professionals work, such as biologists, economists, civil engineers, sanitarists, mechanics and administrators.
- Partnerships with manufacturers and various companies related to the sector, in order to keep up to date with market news, to apply them in the products it develops, manufactures and deploys.
- Wide range of technological solutions, which allows to meet the most diverse demands for water and effluent treatment.
- Diagnosis and design for technological readjustment or expansion of existing treatment systems.
- Mastery of deadlines, due to the multidisciplinary action of its team of employees and suppliers.
- Control of the techniques and maintenance of the water and effluent treatment plants provided, serving the customer at all stages of the process.
- We make the most of what glass fiber reinforced plastic (FRP) technology has to offer by producing modern, compact water and liquid effluent treatment systems that meet small to high demands.

## How can we serve?

- Advice: assistance in defining the most appropriate equipment and systems for the client;
- Implementation of systems: rigorous pre-operational treatment and testing, both performed by qualified staff;
- Training: training of teams for the operation of WTPs and ETPs;
- Technical Support: in the operation and maintenance of treatment systems, on demand;
- Automation: ETPs and WTPs;
- Operation and maintenance.



# WATER TREATMENT



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## CLARIFIBER

### Direct Filtration

Aimed at better quality waters such as wells, fountains and some reservoirs, which have low to intermediate turbidity. Within this line there are two options:

- Simple filtration, using only the upward filtration, suitable for waters with a maximum turbidity of 100 uT, where in 90% of the time, they remain with a value  $\leq 25$  uT; and maximum true color of 50 uH, which in 90% has a value  $\leq 25$  uH;
- Double filtration, consisting of ascending and descending filtration, which must be applied in waters with a maximum turbidity of 200 uT, where in 90% of the time they remain with a value  $\leq 100$  uT; and maximum true color of 100 uH, which 90% of the time has a value  $\leq 75$  uH.

When dealing with groundwater, which may contain iron and manganese content higher than 3.0 mg / L, the use of a tray aerator is necessary.



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## ETAFIBER

### Conventional or Full Cycle

Conventional WTP, also called full cycle. It includes the stages of flocculation, decantation and filtration.

Intended for very turbid waters, supporting a load of up to 600 uT, and for higher values, provided the upstream pre-sedimenter is used. Turbidity is an essential factor for the application of this technology, as a concentration below 50 uT makes it impossible to form a heavy core for the flakes, making decanting inefficient and overloading the filters. Therefore, the relationship between color and turbidity parameters must be at most 8.

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# FLOTFIBER

## Dissolved Air Flotation (DAF)

In the FLOTFIBER line the decanter is replaced by the dissolved air float. This technology is intended for waters with a high concentration of natural organic matter and algae, which are difficult to settle. At WTP FLOTFIBER high water color greater than 100 uH can be treated.



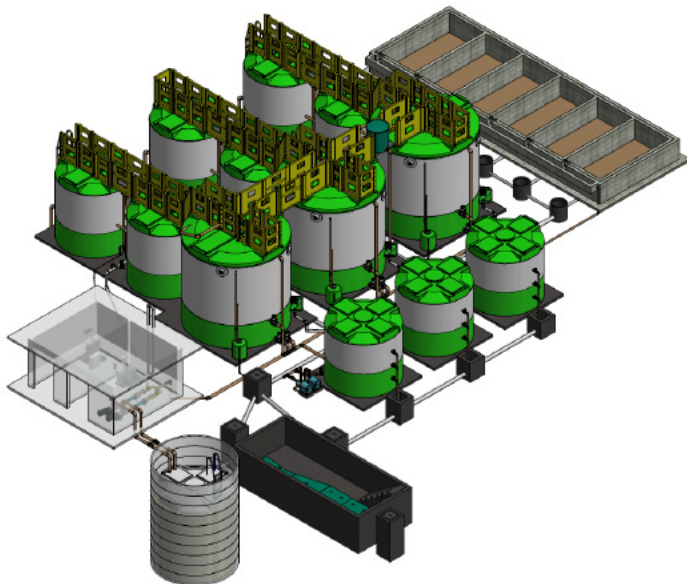
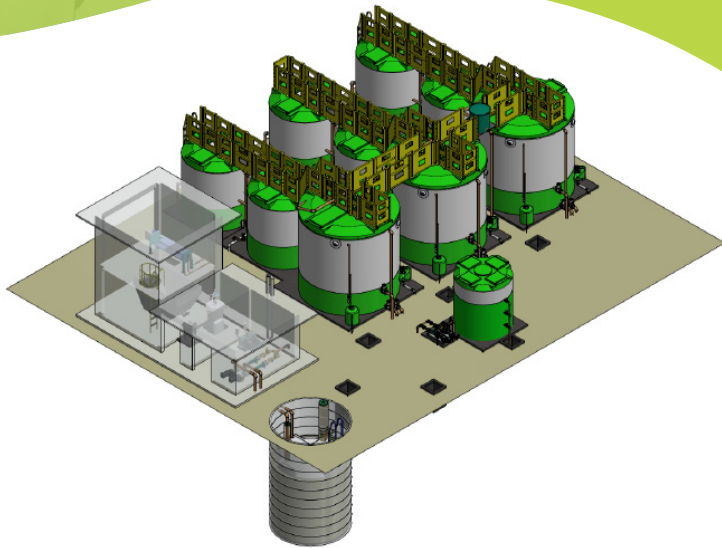
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# WASH WATER RECOVERY

With a view to preserving the environment, A&E also has the WTP sludge densification and dewatering system, and the recirculation of the wastewater from the filter washes for the beginning of the treatment. According to several studies, the return of these effluents to the system for 24 hours, obeying the limit of 10% of the WTP flow, does not harm the treatment, on the contrary, it considerably benefits the aquatic bodies and their biota, by not receive these instantaneous discharges.



# EFFLUENT TREATMENT



## BIOFIBER SMART Anaerobic Reactor + Aerated Biological Filter + Secondary Decanter + Contact Tank

The new BIOFIBER SMART line was developed to replace the old BIOFIBER line. A more modern and efficient solution, based on the principles of regulatory standards, experience gained and lessons learned, prioritizing:

- Standardization of treatment modules, facilitating step-by-step installation;
- Easy installation, operation and maintenance, reducing the cost of these steps;
- Logistics, considerably reducing the cost of transportation;
- Space, with equipment that best suits small spaces and environments;
- Design, with a more modern appearance and aligned with the concept of sustainability.

It consists of the following main treatment units:

- Anaerobic sludge mantle reactor (primary treatment);
- Aerated biological filter;
- Secondary decanter coupled to contact tank.

It is a vertical line installed separately, on a concrete base above the ground. ETP BIOFIBER is intended for medium to large enterprises, including condominiums, industries, universities, neighborhoods and municipalities.

This line is capable of removing up to 95% of organic matter and suspended solids. Thus, the treated effluent is of sufficient quality to be reused in non-potable urban purposes, after complementary treatment (coagulation + descending filtration + disinfection), or to be disposed in a receiving body, according to CONAMA Resolution 430/2011.

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# FLOTFIBER

## Anaerobic Reactor + Flocculator + Dissolved Air Flotator

Used in both water and sewage treatment, the FLOTFIBER line is suitable for domestic and industrial effluents. It can be applied as anaerobic reactor pretreatment in the case of effluents with high concentration of Chemical Oxygen Demand (COD); as well as his post-treatment to assist in the removal of soluble Biochemical Oxygen Demand (BOD); or even in tertiary treatment to remove nutrients such as phosphorus.



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# ECOPREMIUM

## Anaerobic Reactor + Aerated Filter + Secondary Decanter (single module)

The ECOPREMIUM corresponds to the line BIOFIBER SMART, however, in the horizontal version. The differential of this line is that it is a single module, in which the treatment units are internally subdivided into chambers. This configuration results in operational convenience and installation versatility and can be supported, or under ground.

It consists of the following main treatment units:

- Anaerobic sludge mantle reactor (primary treatment);
- Aerated biological filter;
- Secondary decanter coupled to contact tank.

This line is intended to serve from small homes as well as commercial buildings, restaurants, shopping malls, industries, etc.

Treatment promotes a removal of up to 95% Biochemical Oxygen Demand (BOD) and suspended solids, and a final ammonia nitrogen concentration of less than 20.0 mg / L. Thus, the final effluent of the ETP ECOPREMIUM is of sufficient quality to be reused in



non-potable urban purposes, after complementary treatment (coagulation + descending filtration + disinfection), or to be disposed in a receiving body, according to CONAMA Resolution 430/2011.



# ECOFIBER

## Digester + Anaerobic Filter (single module)

The ECOFIBER line was conceived from the perspective of environmental preservation, from the home. A&E has these ETPs to serve from a single residence, to schools, restaurants, hotels, etc.

The ECOFIBER station is also part of the horizontal hyper-compact line. It combines the digester and anaerobic filter into a single module, making it practical, easy to transport, easy to install, and can even be buried in garden areas, fields and playgrounds, saving even more land. All this combined with a high efficiency of organic matter removal, between 75% and 85% for Biochemical Oxygen Demand (BOD), much higher than those obtained in the conventional sewage + filter system.

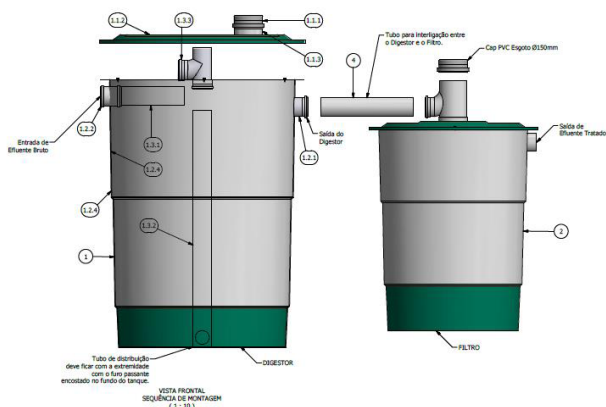


# ETPCO

## Digester + Anaerobic Filter

The ETPCO line has been designed from the most cost-effective point of view. It has the same technology of the ECOFIBER line, in separate modules, which allows the customer to buy only the DIGESTOR or DIGESTOR + FILTER. A&E has these ETPs to serve from a single residence, to schools, restaurants, hotels, etc.

Its shape makes transportation and installation easier and more economical, and can even be buried in garden areas, fields and playgrounds, saving even more land. All this combined with a high efficiency of organic matter removal, between 75% and 85% for Biochemical Oxygen Demand (BOD), much higher than those obtained in the conventional sewage + filter system.





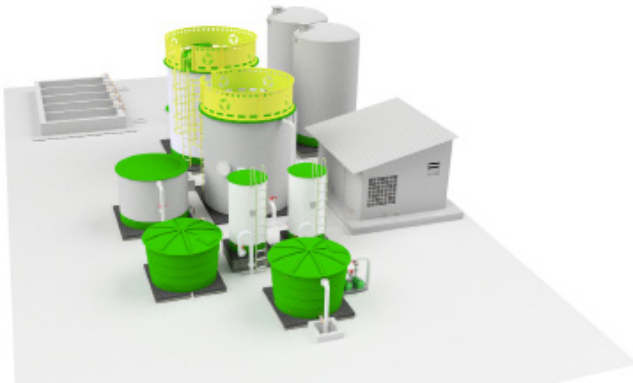
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# REUSE

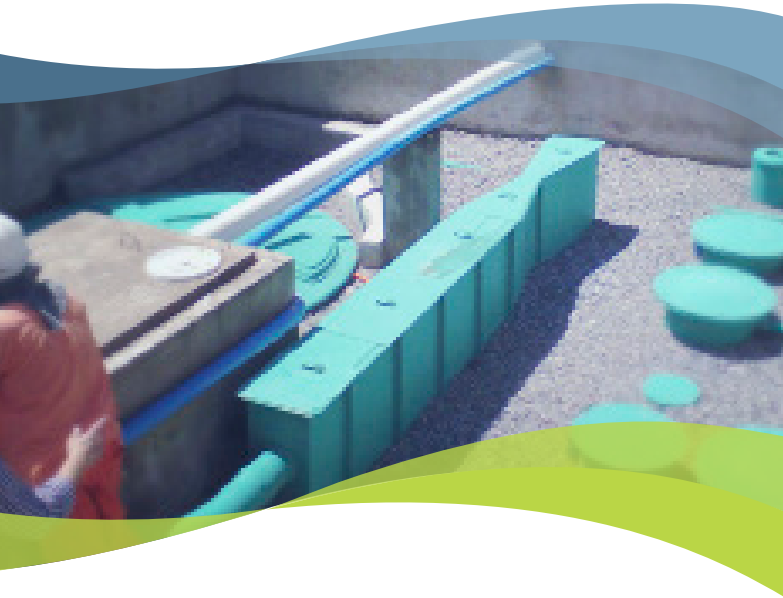
## Anaerobic Reactor + Flocculator + Dissolved Air Flotator

The reuse system should be implemented as post-treatment, applicable to the BIOFIBER SMART AND ECOPREMIUM treatment lines.

REUSE SYSTEM - descending filtration + filter washing system + disinfection.



# EQUIPMENT

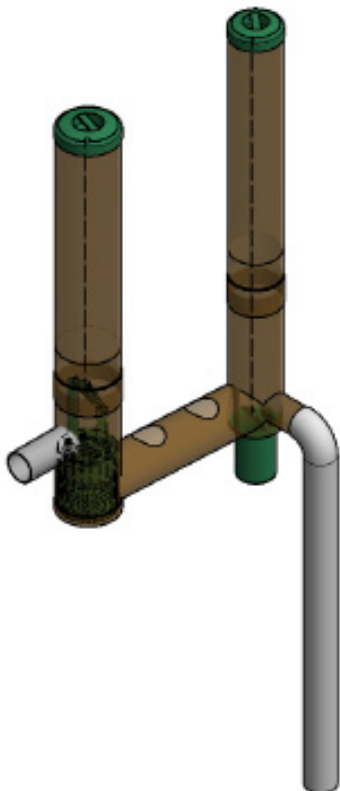


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## HP

### Horizontal pretreatment

HP is ideal for pre-treating restaurant, guesthouse, condominium, etc. systems with flow rates up to  $40 \text{ m}^3 / \text{h}$ . It includes low-cost railing, disarming and flow measurement units (Vertedor or Parshall Gutter), which are easy to transport and install.



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## VP

### Vertical Pretreatment

The pretreatment is designed to be installed inside the suction pit to remove solids and sand. It consists of two tubes, which are interconnected by the desarenation channel. In the first tube there is a basket, which contains a grid for removal of coarse solids. In the second, there is the basket for sand accumulation, which was sedimented in it, thanks to the slope dimensioned to the channel.

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# PLU

## Pretreatment and Lifting Unit

The PLU is composed of an equalization tank (with various volumes available), manufactured in FRP, structured to be buried directly into the ground without containment, to the depth established in the project. Accompany:

- Vertical pretreatment unit inside;
- Two submersible or helical pumps, according to the characteristics of each project;
- Control panel, with protection and control instruments.



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# SRSL

## Smart Raw Sewer Lift

Designed to be installed under concrete washer containment, SRSL may be a more economical alternative to PLU, depending on the installation characteristics of the project. It consists of an equalization tank (with various volumes available), manufactured in FRP. Accompany:

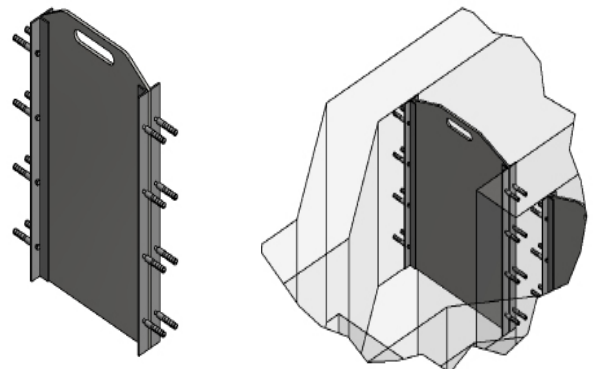
- Vertical pretreatment unit inside;
- Two submersible or helical pumps, according to the characteristics of each project;
- Control panel, with protection and control instruments.

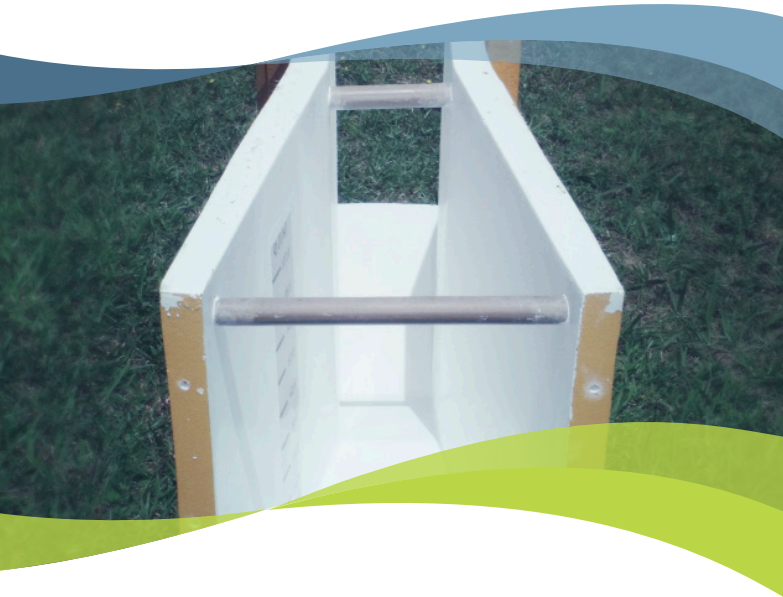


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# FLOODGATE STOP-LOG

A&E manufactures these equipment in FRP for installation in open channels to control fluid flow.





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## PARSHALL GUTTER

Used for rapid reagent mixing as well as open channel flow measurement. Developed to eliminate field reinforced concrete construction, which requires finishing and waterproofing, providing faster construction and greater precision in the result.



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## CHEMICAL SOLUTIONS PREPARATION AND DOSAGE KIT

Developed for the preparation, storage and dosing of chemical solutions required in water and wastewater treatment processes. It consists of FRP tank, mechanical stirrer and metering pump. The kits are designed for various flow ranges.



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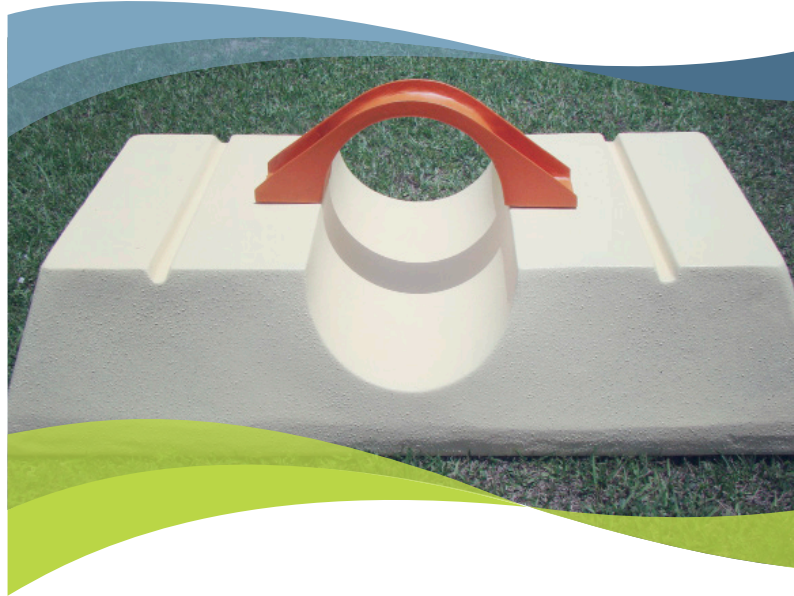
## FLOATCAP

Floatcap is the FRP floating float for the pump, which captures water from the spring and forwards it to WTP. It adapts to wide variations of levels and does not require the execution of works, such as: feeding channels, socket wells, protection shelters and lift assembly bases. It has lower implementation, operation and maintenance costs.

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# PIPE FLOAT

Made of FRP, with HDPE pipe cradle, to be installed with a spacing of up to 4.0 meters.



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# TRAY AIRCRAFT

Suitable for water with high iron and manganese content, which oxidize in the aerator (upon contact with atmospheric air) and precipitate, and are later removed in the filtering unit. The aerator also works as a loading tower, as it has sufficient height to overcome the pressure losses in the finishing filter career.



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# CHEMICAL STORAGE TANKS

FRP tanks for chemical accumulation, with structure compatible with the aggressiveness of the agents.





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## STORAGE RESERVOIRS

FRP reservoirs for water or effluent accumulation to meet various volumes.



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## WATER TANK RESERVOIRS

FRP water tank reservoirs, according to market standard. It can be structured to work under the ground.



# ACCESSORY EQUIPMENT

- Turbidimeter;
- Colorimeter;
- Conductivity meter;
- Residual chlorine meter;
- Flowmeters (electromagnetic, ultrasonic and insertion);
- Metering pumps;
- Gas chlorinators;
- Chlorine gas storage cylinders.

# ADVANTAGES OF A&E EQUIPMENT AND SOLUTIONS

- High chemical and mechanical resistance, resulting in high equipment life;
- Low weight of equipment, facilitating transportation and installation;
- Modular and portable design, allowing economic arrangements, execution of work in stages and change of location;
- Smaller area for installation, allowing the deployment of stations in malls, hospitals and any other urban area;
- Short delivery times;
- Technological accuracy in the design, manufacture and installation processes;
- Low power consumption;
- Collection and treatment of gases, thus avoiding the emission of the characteristic odors of sewage;
- Pre-operational testing and operator training services;
- Full 5-year warranty against any manufacturing defects in FRP equipment.

# OUR SOLUTIONS FOR WASTEWATER TREATMENT CAN BE COMBINED WITH THE FOLLOWING COMPONENTS:

- Pretreatment;
- Raw and / or treated sewage boiler;
- Chlorine or polymer solution preparation and dosage kits;
- Sludge accumulation and densification reservoir;
- Filter press for sludge dewatering;
- Drying bed for sludge dehydration.s







# OUR CUSTOMERS





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 **84 99199-6916**

  *aesaneamento*

