



“Specialists in water intake solutions”



[www.power.estrugua.com](http://www.power.estrugua.com)

More than 100 projects carried out worldwide...



**ESTRUAGUA** has extensive experience in the manufacture for global customers (EPCs, End Users,..) of water intake solutions in projects for power generation plants (combined cycle, thermal, nuclear, etc.), water intakes for desalination and potable drinking water plants, and water intakes for cooling and process systems in petrochemical plants and refineries.

Our company offers its customers its accumulated experience of more than 40 years in the sector. During its long history, it has supplied a large

amount of equipment to both the public and private sectors. Among our fundamental objectives are to offer our customers optimum equipment performance and the maximum guarantee of quality and durability of this equipment with the aim of achieving full satisfaction. In order to achieve these targets, Estruagua provides experienced professionals to advise our customers.



### **ESTRUAGUA - OUR COMMITMENT**

We design, manufacture and install solutions for water intakes in open channels (seawater intakes, river water intakes, intake from reservoirs, etc.). Estruagua adapts all equipment to the project requirements.

The **WATER INTAKE** division is focused on large energy plants, desalination plants, oil and derivatives process and production plants that require water intake for their cooling and production processes.

Tailored systems designed and manufactured for long operation and with a maintenance cost appropriate to the projects and operation of the plants.

### **ESTRUAGUA - WHAT SERVICES DO WE PROVIDE**

Estruagua designs and manufactures solutions for water intake in open channels (seawater intake, river water intake, intake from reservoirs), and we offer an integrated service in each project:

- Analysis according to technical specifications (datasheets, drawings, etc)
- Studying and quoting of the project
- Civil works construction drawings
- Technical and commercial proposal

A team of more than 70 people at your service.

**ESTRUAGUA WATER INTAKE SOLUTIONS**, experts in water intake for power, chemical/oil plants and desalination/potable drinking projects.

#### **DESIGN**



#### **MACHINING**



#### **ASSEMBLY**



#### **NDT/ TESTING**



#### **PAINTING**





## QUALITY AND GUARANTEE

We are aware of the importance of quality in all our products. Our company works to a quality procedures and continuous improvement system (ISO : 9001- 2010) which ensures quality, process traceability and satisfaction for each and every one of our projects. This is very important to us at **ESTRUAGUA WATER INTAKE SOLUTIONS** Division.

All our company systems (ERP, CRM, etc.) are guided by and coordinated under the company quality plan and project focus.

All the products are designed and manufactured with an operating life expectancy of 25-30 years, as minimum, under standard operating conditions.

## ESTRUAGUA WATER INTAKE SOLUTIONS

Division guarantees the availability of original spares during the entire expected life of its installations.



## AFTER SALES SERVICE

So that our customers and equipment are properly cared for, we have a Technical Support System, TSS, that is responsible both for preventive maintenance, repair, spare parts supply, etc. so that the plant is always in the best operating conditions.



## TECHNICAL SERVICE

For Estruagua, our most valuable assets are our customers and their satisfaction is the goal on which all our efforts are focused.

Our range of services starts with the supply of Installation, Operating and Maintenance Manuals for each machine (assembly and transport of the equipment, installation, testing, start-up and operation) and training of the operators.

A team of engineers and technicians (both from our representing agents and partners in each country and from the factory) are responsible for providing telephone support in each of the phases above and this is complemented with the option of in place support all around the world, carried out directly by specialised and experienced technicians who work in the company in order to supervise the assembly, testing and maintenance of the supplied equipment.





## AQUILLES System - Removal of heavy and large solids

### INTRODUCTION

The large water intake systems for cooling towers or processes have extensive protection and filtering mechanisms from their inlet. The purpose of retaining and removing large solids during water intake for the electrical generation plant is to protect the screens that later filter solids and fine particles, so that large and heavy debris that could damage the plant equipment are removed for high quality of the intake water (river water, seawater intake,...).

Estruagua designs and manufactures a full range of removal systems for coarse, medium and fine solids within the open channel of the water intake works.



## OPERATION

One or more screens are installed in the channels with their corresponding sliding rails supported by columns, which provides the movement and displacement of the solids removal pincer. This construction consists of a carriage and a hanging pincer that runs across the sliding rail.

The specially designed and reinforced screen is constructed so that the screen bars fall between the sieve bars during descent in order to remove any clogged material.

When the bottom of the channel is reached, the pincer is closed hydraulically and then the equipment with the rejected material rises to the top.

The screen runs along the length of the rail to the disposal area or container.

The movement of the pincer is fully automated and does not require an operator.



## CONSTRUCTION

All the models have the same basic construction and can be supplied with the same special features, such as:

- Wider or narrower screen
- Greater working depth
- Double speed motor for lifting and movement
- Construction is in stainless steel, duplex, super duplex, etc.

This system is highly recommended for installations with several channels, as it is not necessary to install solid separation screens in each channel. We simplify the installation by having only one solid removal pincer and several fixed manual screens, so there are less parts that require maintenance and it is simpler to operate.



## Experience

**ESTRUAGUA** has supplied more than 100 **Aquilles** systems in projects all around the world.

**ESTRUAGUA** has complete knowledge and experience in the supply and installation of Aquilles system equipment for removing large solids in water intakes for power plants.





## TITAN System - Removal of coarse and medium solids

### INTRODUCTION

Water intake systems in electrical generation, desalination, gas treatment, refineries etc. plants have extensive protection and filtering systems from their inlet. The purpose of retaining and removing solids in water intake for the power (combined cycle, thermal, etc.) or desalination plant is the protection of screens that later filter solids and fine particles, so that large/medium size strange objects that could damage the equipment are removed and the quality of the intake water (river water, seawater intake) is ensured.

There is differentiation between coarse/medium and fine solids, according to the sieve size and type of solids to remove. The removal of coarse/floating solids is the first phase in the filtering and protection of the intake system water (Ranges 15-100 mm).

Estruagua designs and manufactures a complete range of screens and removal systems for coarse, medium and fine solids in the open channel of the water intake works.



## OPERATION

The purpose of screening, among others, is to separate and protect the plant or process from the possible unwanted arrival of large objects, it separates and easily removes large solids. The usually discontinuous operation of the cleaning device can be actuated by an electric adjustable timer or by a differential head loss indicator, or a combination of both systems. This equipment is recommended for screens with continuous and automatic cleaning that are installed in very deep channels.



Cleaning is carried out by several cleaning scrapers that detach and transport the solid waste deposited on the screen, which is lifted and discharged at the top of a container, belt conveyor, screw conveyor, hydraulic compactor, etc.



## CONSTRUCTION

All the models have the same basic construction and can be supplied with a wide range of special features, such as:

- Wider or narrower screen
- Adaptation to the channel or civil works
- Construction in Stainless steel (SS 304-316 / Duplex – Super Duplex) in all ranges and finishing options



## Experience

**ESTRUAGUA** has supplied more than 1000 **TITAN** systems in projects throughout the world. **ESTRUAGUA** has considerable knowledge and experience in the supply and installation of **TITAN** system equipment for removing large and medium solids in water intake for power plants.





## PEGASUS and PEGASUS PRO system Removal of fine solids

### INTRODUCTION

Water intakes systems in electrical generation, desalination, refineries and gas treatment plants have extensive protection and filtering systems from their inlet.

The purpose of retaining and removing fine solids in the water intake for the power (combined cycle, thermal, etc.) or desalination plant is for protection through removal of small strange objects that could damage the equipment and quality of the intake water (river water and seawater intake). There is fine and microfine differentiation according to the sieve size and the type of solids to be removed. The removal of fine/floating solids is the second phase in the filtering and protection of the intake system water (ranges 2 mm – 15 mm)

ESTRUAGUA designs and manufactures a full range of screens and removal systems for coarse, medium and fine solids in the open channel of the water intake works.

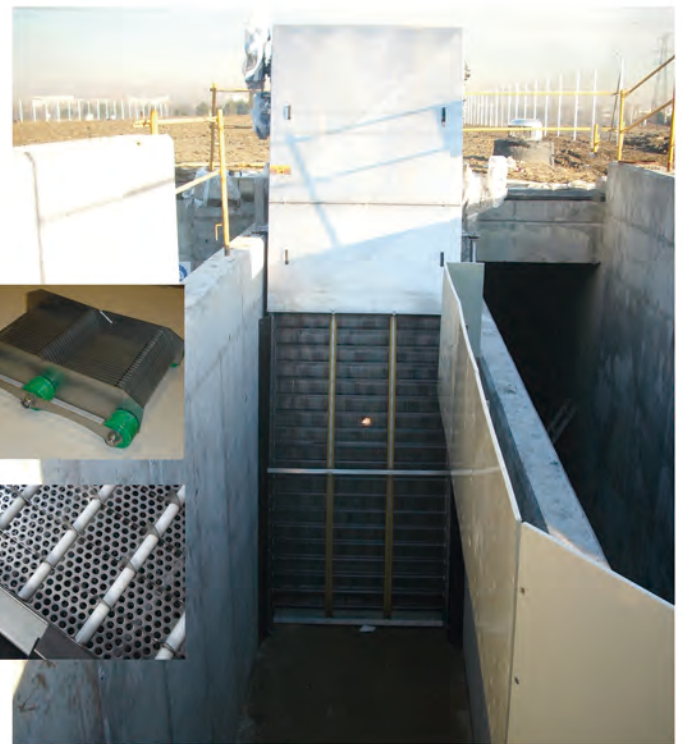


## OPERATION

The purpose of screening, among others, is to separate and protect the plant or process from the possible unwanted arrival of large objects, it separates and easily removes fine solids etc.

The usually discontinuous operation of the cleaning device can be actuated by an electric adjustable timer or by a differential head loss indicator, or a combination of both systems.

This equipment is recommended for screens with continuous and automatic cleaning that are installed in very deep channels.



The PEGASUS and PEGASUS PRO equipment are equipped with automatic cleaning which has a continuously moving mesh that retains the solids, lifts them to the top part and discharges them. The equipment has a filter screen washing system that uses pressurised water and a rotary brush to remove the solids, which are then taken from the filter screen to a container, conveyor belt, screw conveyor, hydraulic compactor, etc.

## CONSTRUCTION

All the models have the same basic construction and can be supplied with a wide range of special features, such as:

- Wider or narrower screen
- Adaptation to the channel or civil works
- Construction in stainless steel (SS 314-316 / Duplex – Super Duplex)
- Perforated plate sieve and plate mesh of different sizes. Always metal
- Protection systems for operation (fully closed)
- Odourless systems

## Experience

**ESTRUAGUA** has supplied more than 800 **PEGASUS / PEGASUS PRO** systems in projects all around the world. **ESTRUAGUA** has considerable knowledge and experience in the supply and installation of **PEGASUS / PEGASUS PRO** system equipment for removing medium and fine solids in water intake for power plants.





## PREDATOR system – Removal of fine and microfine solids

### INTRODUCTION

Water intake systems in electrical generation, desalination, refineries, gas treatment plants have extensive protection and filtering systems from their inlet. The purpose of retaining and removing fine and microfine solids in the water intake for the power generation plant is for protection through removal of small strange objects that could damage the equipment and quality of the intake water (river water, seawater intake), with fine and microfine differentiation according to the sieve size and the type of solids to be removed. The removal of fine/ microfine and floating solids is the last phase in the filtering and protection of the intake system water (ranges 0.2 mm – 10 mm).

ESTRUAGUA designs and manufactures a full range of travelling band screens and extraction systems for medium and fine solids in the open channel of the water intake works.



## OPERATION

The purpose of screening, among others, is to protect the plant and all the processes from the possible unwanted arrival of large and small solids in suspension and even fish/algae.

The generally discontinuous operation of the cleaning device can be actuated by an electric adjustable timer, by a head loss measuring system or channel water level indicator.



Cleaning is carried out by water injectors that detach and transport the solid waste deposited on the sieve/mesh panels, which is lifted and discharged at the top to a container, belt conveyor, screw conveyor, hydraulic compactor, etc.



## CONSTRUCTION

The PREDATOR equipment can be manufactured in three layouts:

- Dual flow (outside to inside)
- Dual flow (inside to outside)
- Front flow

All the models have the same basic construction and can be supplied with numerous configurations and special features, such as:

- Customisable filter mesh or perforated sheet in different types of steel or plastic polymers
- Tailored construction of the frame (SS 304-316 / Duplex – Super Duplex)
- Adaptation to the channel and civil works

## Experience

**ESTRUAGUA** has supplied more than 100 **PREDATOR** systems in more than 50 projects throughout the world. **ESTRUAGUA** has considerable knowledge and experience in the supply and installation, start-up and training of operators for the **PREDATOR** systems for removal of fine and microfine solids in water intake in power generation, desalination and oil/gas treatment plants.





## OPTIMUS & STOP LOG Equipment - Conduction of water in water intakes and cooling towers

### INTRODUCTION

Throughout the water intake and conditioning stages in electric power plants or those for potable drinking water production, we find that during the operation of the equipment there is a need either to seal the channels or to temporarily stop the flow of water. This is the main purpose for the OPTIMUS & STOP LOG equipment family.

ESTRUAGUA designs and manufactures a full range of water intake, treatment and conduction systems within the open channel of the water intake works in power and desalination plants.



## OPERATION

The OPTIMUS equipment is normally opened channel and the STOP LOGs are located in the storage area to be put into operation when the equipment (like pumps, screens, filters, etc.) require maintenance or inspection. The following procedures can be used to actuate the OPTIMUS equipment:

1 - Manual operation - This is carried out by a bronze nut with trapezoidal thread spindle and an operating wheel.

2 - Gear motor operation - The gear motor to use will be sized based in the dimensions and hydraulic pressure on the penstock.

3 - Servomotor operation - Housed on the servomotor are the limit switch, the torque limiter and other gate regulation mechanisms.

The STOP LOG equipment, due to its dimensions, is normally operated by a hoist/bridge crane or manually.



## CONSTRUCTION

Estruagua OPTIMUS & STOP LOG equipment are designed and manufactured tailored, depending on the specifications of each unit:

- Wide variety of construction materials
- Extensive combinations of actuation drives and motorization

## Experience

**ESTRUAGUA** has supplied more than 2500 **OPTIMUS** and **STOP LOG** system units in projects all around the world. **ESTRUAGUA** has considerable knowledge and experience in the supply and installation of **OPTIMUS** and **STOP LOG** equipment in water intake and protection of power generation, desalination and oil treatment plant equipment.





**Penedrao Roxo hydroelectric power station - Portugal**  
**Hidroeléctrica Penedrao Roxo - Portugal**

**Main specifications / Datos principales:**

- Material: Acero inoxidable Aisi-304.  
Material: Stainless Steel Aisi-304.
- 2 rejas automáticas a cadena TITAN.  
2 automatic chain screens TITAN.  
Ancho canal: 3.500 mm.  
Width channel: 3,500 mm.  
Alto canal: 7.500 mm.  
Height channel: 7,500 mm.  
Paso: 10 mm.  
Opening mesh: 10 mm.
- 2 filtros a cadena PREDATOR.
- 2 chain filters PREDATOR.  
Ancho equipo: 2.800 mm.  
Width machine: 2,800 mm.  
Ancho canal: 3.500 mm.  
Width channel: 3,500 mm.  
Alto canal: 7.800 mm.  
Height channel: 7,800 mm.  
Luz malla: 0,2 mm.  
Opening mesh: 0.2 mm.
- Caudal por equipo: 10.260 m<sup>3</sup>/h.  
Flow per machine: 10,260 m<sup>3</sup>/h.
- Año suministro 2016.  
Delivery year 2016.
- Ubicación: Portugal.  
Country: Portugal.





**Tuas III Desal Plant -  
Singapore.  
Desaladora Tuas III -  
Singapur.**

**Main specifications / Datos principales:**

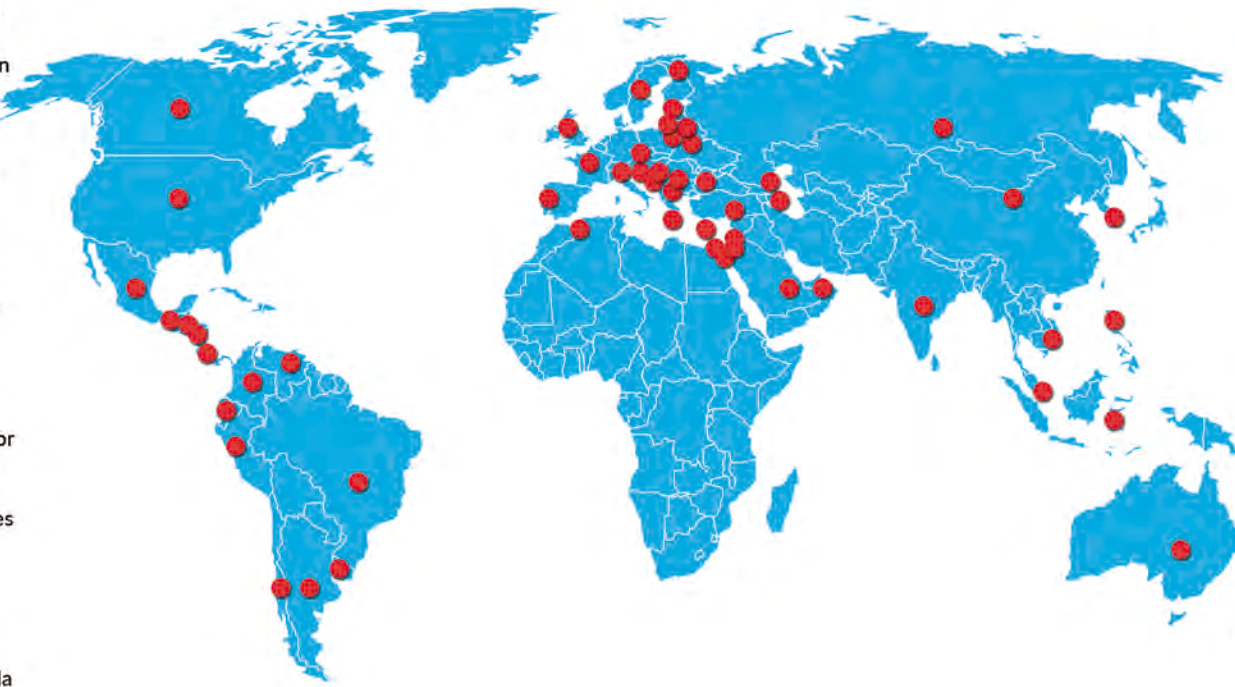
- 3 STOP-LOGS.  
3 STOP-LOGS.
- Material: Acero carbono.  
Material: Carbon steel.
- Ancho: 2 metros. Largo: 4 metros.  
Width: 2 meters. Length: 4 meters.
- 3 filtros a cadena PREDATOR.  
3 travelling band screens PREDATOR.
- Material: Superdúplex 2507.  
Material: Superduplex 2507.
- Paso: 3 mm.  
Opening mesh: 3 mm.
- Alto: 11,5 metros. Ancho filtrado: 1,5 metros.  
Height: 11,5 metres. Filtering width: 1.5 meters.
- 3 rejas automáticas a cadena TITAN.  
3 automatic chain screen TITAN.
- Material: Superdúplex 2507.  
Material: Superduplex 2507.
- Ancho: 2 metros. Alto: 11,5 metros. Paso: 20 mm.  
Width: 2 meters. Height: 11,5 meters. Opening mesh: 20 mm.
- Caudal: 6.446,83 m<sup>3</sup>/h.  
Flow: 6.446,83 m<sup>3</sup>/h.
- Año suministro 2016.  
Delivery year 2016.





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