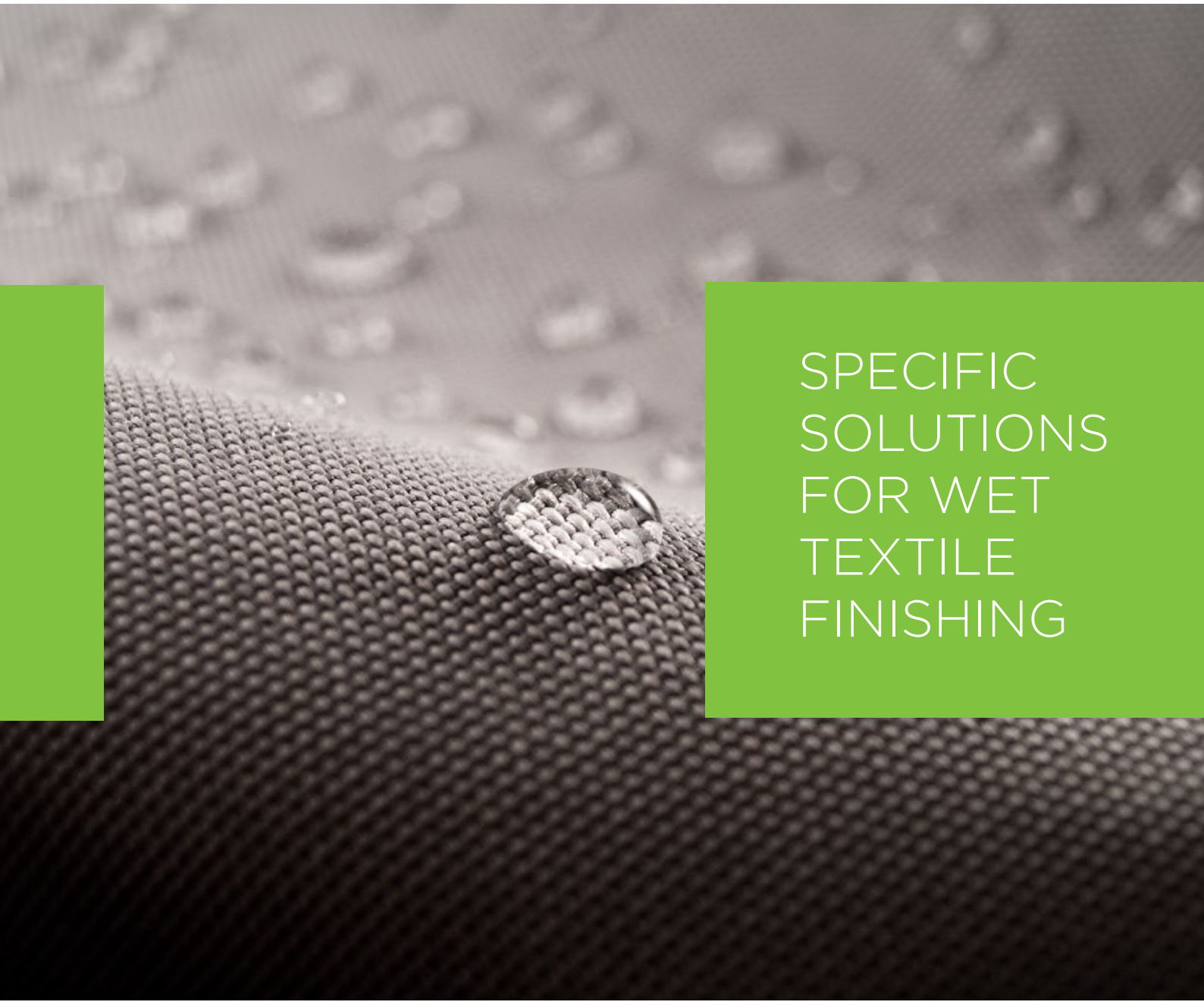
www.tve-escale.com



# SPECIFIC SOLUTIONS FOR WET TEXTILE FINISHING

TVE ESCALE
MACHINERY FOR THE TEXTILE INDUSTRY

# TVE-ESCALE renews its corporate image

TVE ESCALE
MACHINERY FOR THE TEXTILE INDUSTRY

The leading textile technology company is committed to a business image that highlights the modernity of its equipment, commitment to its partners and respect for the environment.

TVE-ESCALE renews its image and bets on a more modern, sophisticated and innovative identity. Its new institutional focus aims to highlight its most important attributes, among which stand out the use of cutting-edge technology, responsibility with its partners and consideration for the environment.

The change of slogan is part of the company's institutional renewal. 'Your reliable partner'. It is the new tagline that emphasizes the commitment with its clients and the trust that its equipment gives thanks to its expertise.

This change leads to a new era for the firm within the textile world, with equipment that improves efficiency and productivity. TVE-ESCALE represents state-of-the-art technology, at the service of our partners and the planet.

## YOUR RELIABLE PARTNER

# History

| | |
|---|---|
| **1986** | "Sistemes Industrials Escale, S.A." is born to offer facilities for continuous treatment lines for open-width fabrics. ESCALE begins to offer lines for: Washing, Bleaching, Dyeing. |
| **1989** | 1989 – ESCALE becomes one of the main textile machine builders in Spain |
| **1991** | ESCALE launches the first jigger with electric motors, "JIGG-TRONIC". This meant several technological awards to the brand as well as becoming a benchmark for the rest of the builders. |
| **1993** | TVE-ESCALE was born as a result of the collaboration agreement between "Sistemes Industrial Escale S.A." and the American company, leader in the implementation of vacuum systems, "Textile Vacuum Extractor Co." |
| **1995** | TVE-ESCALE launches the new high-performance washing unit "SHARK-2000" with which it achieves enormous success. |
| **1998** | TVE-ESCALE continues its bet with vacuum and submerged suction technologies with the new patented product for impregnations "VAC-BOOSTER". |
| **1999** | The previous successes were followed by the new "TURBO-JIGG" patent, with which TVE-ESCALE once again claimed as a reference in the construction of jiggers and in world leader in suction technology. |
| **2001** | TVE-ESCALE sells its first HT Jigger |
| **2004** | New causticizing lines for Denim with excellent results achieved. |
| **2008** | New jigger model "ECOMATIC" special for the dyeing of delicate fabrics with minimum tension. |
| **2011** | After 25 years of experience, TVE-ESCALE Engineering is born to respond to the problems of its customers and offer a wide variety of customized solutions. |
| **2015** | TVE-ESCALE launches the new washing unit "ROTOPRESS" for elastic and sensitive fabrics. |
| **2017** | New patented line for enzymatic oils washing-off, "OPTIMUS". |
| **2019** | Presentation at the ITMA of Barcelona of the new patented solution for the semi-continuous line for preparation and washing open-width fabrics, "HYDRA". |








# Index

# **Open-width** continuous lines

TVE-ESCALE has been designing and producing open-width continuous lines since its beginning. Because of its innovative vocation, TVE-ESCALE has close collaborations with customers and chemical companies in order to become a world reference in this field.

For this reason, TVE-ESCALE has developed an advanced technology and conceptual innovation in traditional processes that establish a new standard for the industry.

TVE-ESCALE offers the market a range of impregnation and washing units, which incorporate the latest technology in performance and control of fabric tension. These units provide the efficiency and flexibility to cover all the requirements and needs in the continuous processes.

**All TVE-ESCALE continuous ranges guarantee:**

- Outstanding finish
- Minimum water consumption
- No creases and controlled tension
- Maximum energy efficiency
- Robustness and easy maintenance

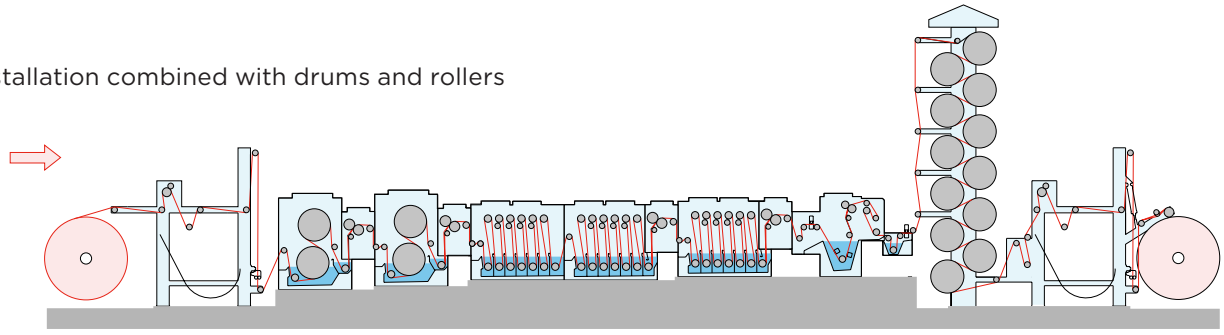
Using vacuum and submerged suction technologies created by TVE-ESCALE ensures maximum efficiency during the impregnation and washing process and allows a reduction in the overall length of the installation.

To ensure the best results, TVE-ESCALE only works with the best global suppliers.

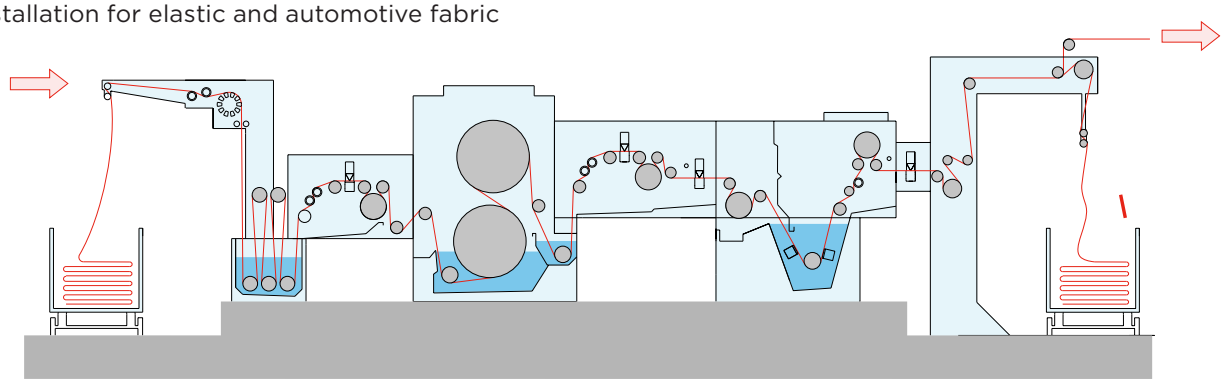
# Washing

## Washing Process

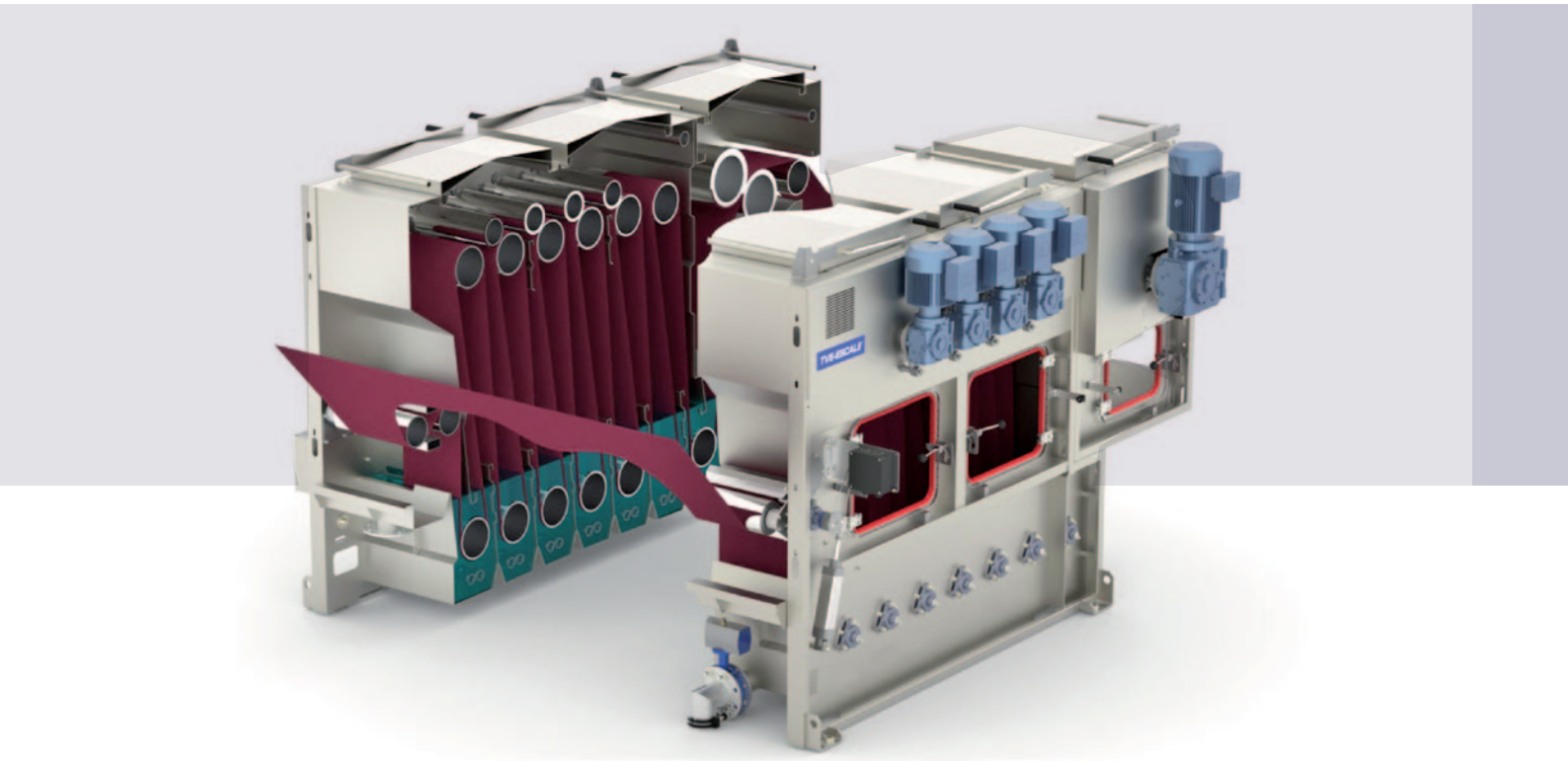
Installation combined with drums and rollers



Installation for elastic and automotive fabric



# **Smartex** Washing



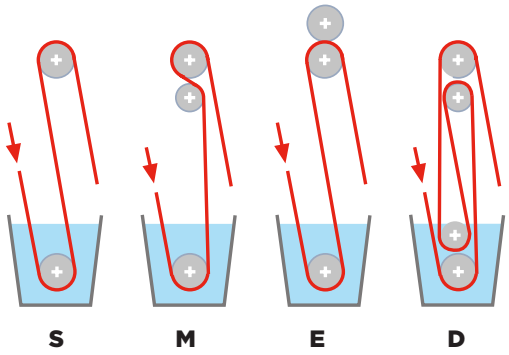
## Efficient washing

The SMARTEX washing unit is constructed of individual chambers with openings at alternate ends which forces the liquid to circulate inside with a “zig-zag”. This counter flow design means that the cleaning liquid flows in the opposite direction to the fabric ensuring maximum cleaning effect.

This circulation methodology coupled with the counter flow technology allows us to obtain an excellent quality wash finish and with a high degree of efficiency.

The numerous models of SMARTEX machines and the modular construction concept mean that the right combination can be found to provide the optimal solution for your needs.

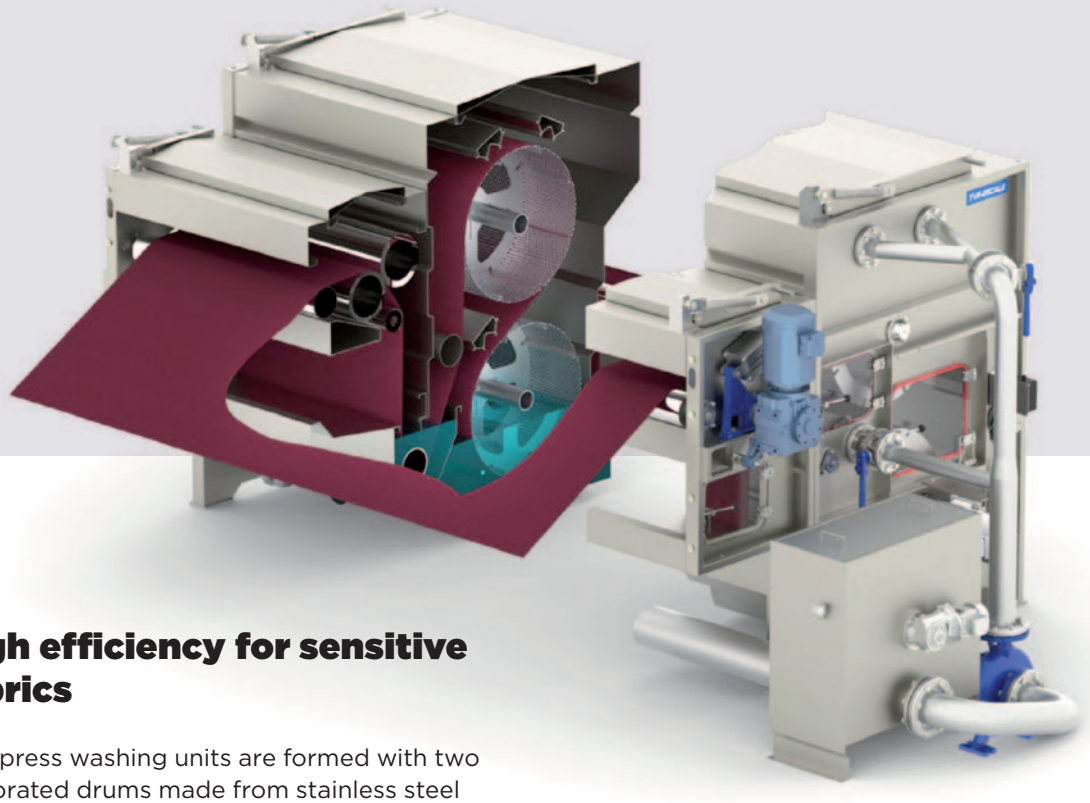
**Different models suitable for each process**




### Features

- Individually driven rollers for better feeding of fabric without tension
- Separate chambers to reduce the level of contamination in the water
- Counter flow feeding system for a better bath exchange
- Large diameter rollers to avoid creasing
- Load cells to provide perfect tension control
- Easy access to all mechanical elements
- Minimum maintenance cost
- Low water and energy consumption
- Modular system, adaptable to any installation

# **Rotopress** Washing

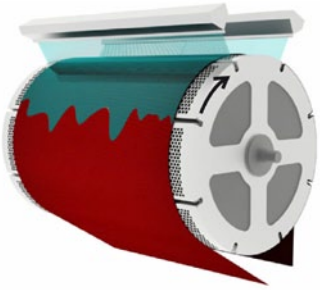


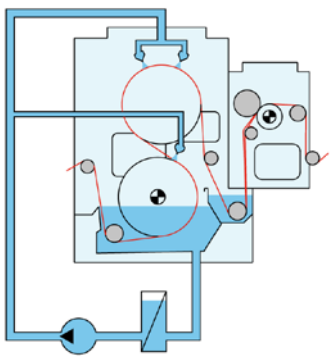
## High efficiency for sensitive fabrics

Rotopress washing units are formed with two perforated drums made from stainless steel which serve as a support for the fabric. These drums ensure a good fabric feed but also provide a careful advancement of the fabric. These drums have an adjustable drive to ensure minimal controlled fabric tension.

The spray pipes located around the perforated drums ensure effective cleaning with a thin film of water forming around the fabric while it is advancing.

The bath is constantly being recirculated with adjustable pump flow spray pipes. Flow regulation allows us to meet the needs of different tolerances of different fabrics.



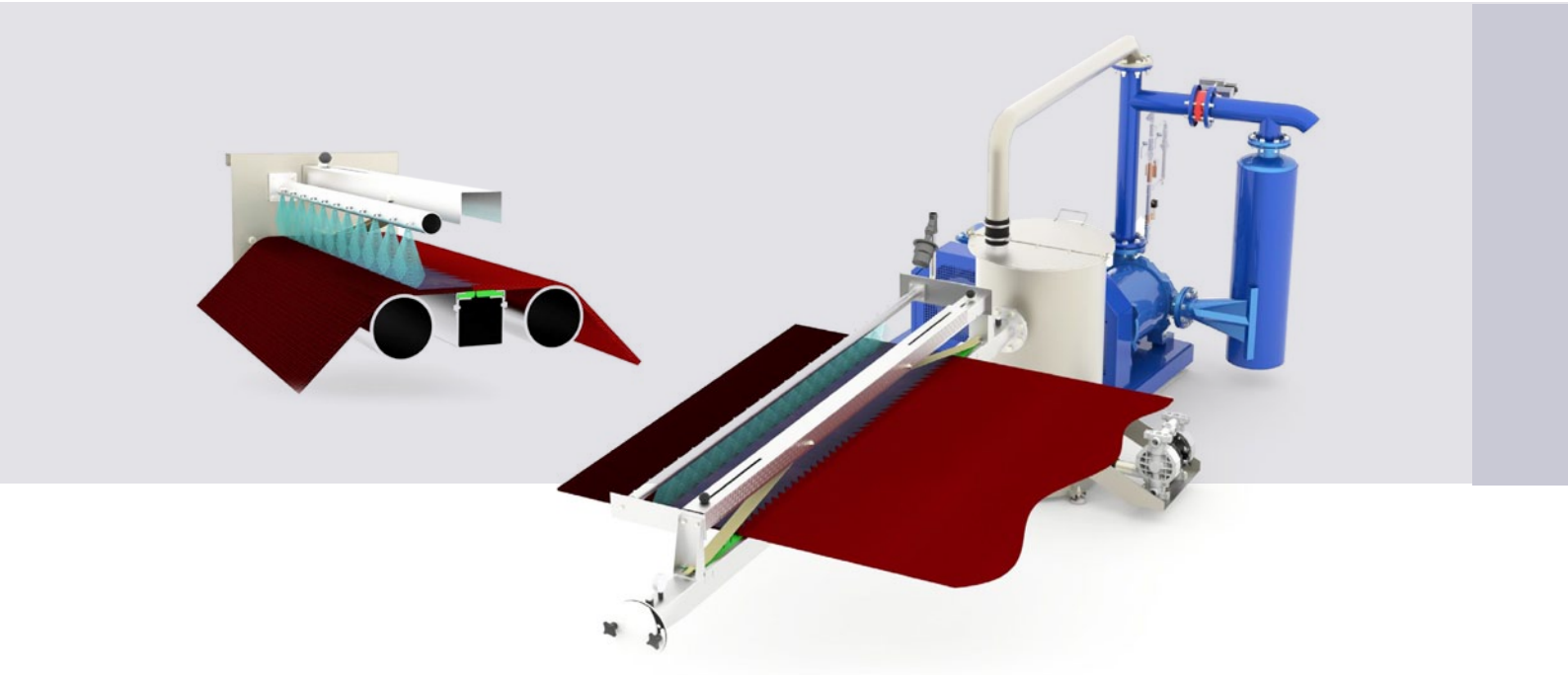


Bath recirculation

## Features

- Quality washing effect thanks to perforated drums and recirculation
- Lower water consumption
- Low and controlled tension
- Creaseless fabric feed, even with sensitive fabrics
- Minimum maintenance cost
- A modular system makes the Rotopress adaptable to any installation

# **Spray Vacuum** Washer



At the entrance of the washing unit the fabric is sprayed with clean (hot or cold) water on the upper face. Vacuum slot is installed underside of the fabric.

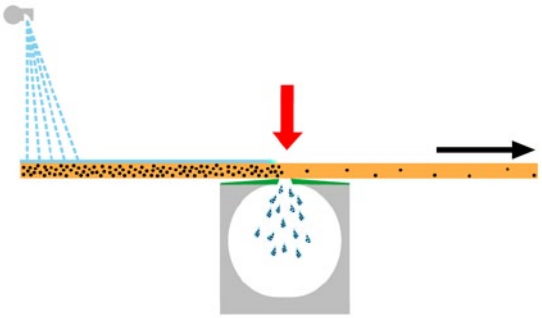
In this way sprayed water must pass through the fabric by means of vacuum. The high speed of the air when it passes through the fabric increases the speed of the water which is the vehicle used to remove contaminants form the fibers. The fabric comes out of the vacuum slot with a very low percentage of moisture. In this way, the fabric is ready to absorb the new bath in better conditions.

Spray Vacuum Washer unit is mainly used as accessory for washing improvements between traditional wash boxes. It allows to separate the different baths in each wash box, and also it helps to reduce contamination carried by the wet fabric into the range.

## Features

- High washing efficiency by sucking water through the fabric at high speeds
- Total elimination of unfixed contaminants
- Increased productivity due to increased bath exchange between washing units
- High productivity with tight spaces
- Uniform washing throughout fabric width
- Savings in the consumptions of water, taking advantage of it if it works by counterflow
- Modular system adaptable to any installation

Spray vacuum washer (SVW)



# **Submerged Suction** Washing


## Features

- Large amounts of bath pass through fabric
- Uniform and deep wash
- Recirculation of the filtered bath
- Maximum performance in the elimination of oils, chemicals and non-boud dyes.
- Space saving for the same washing effect
- Water consumption savings
- Modular system and adaptable to any installation

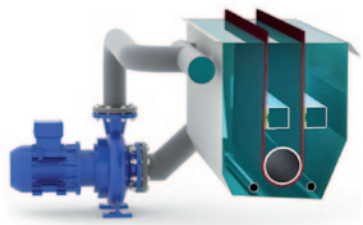
## The power of the water through the fabric

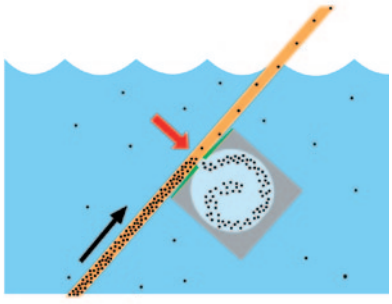
The bath is forced to pass through the fabric twice by means of two submerged suction slots connected to a special high performance centrifugal pump.

The pump suck the water through the fabric and is returned to the wash compartment by means of specially designed diffusers to prevent turbulence.

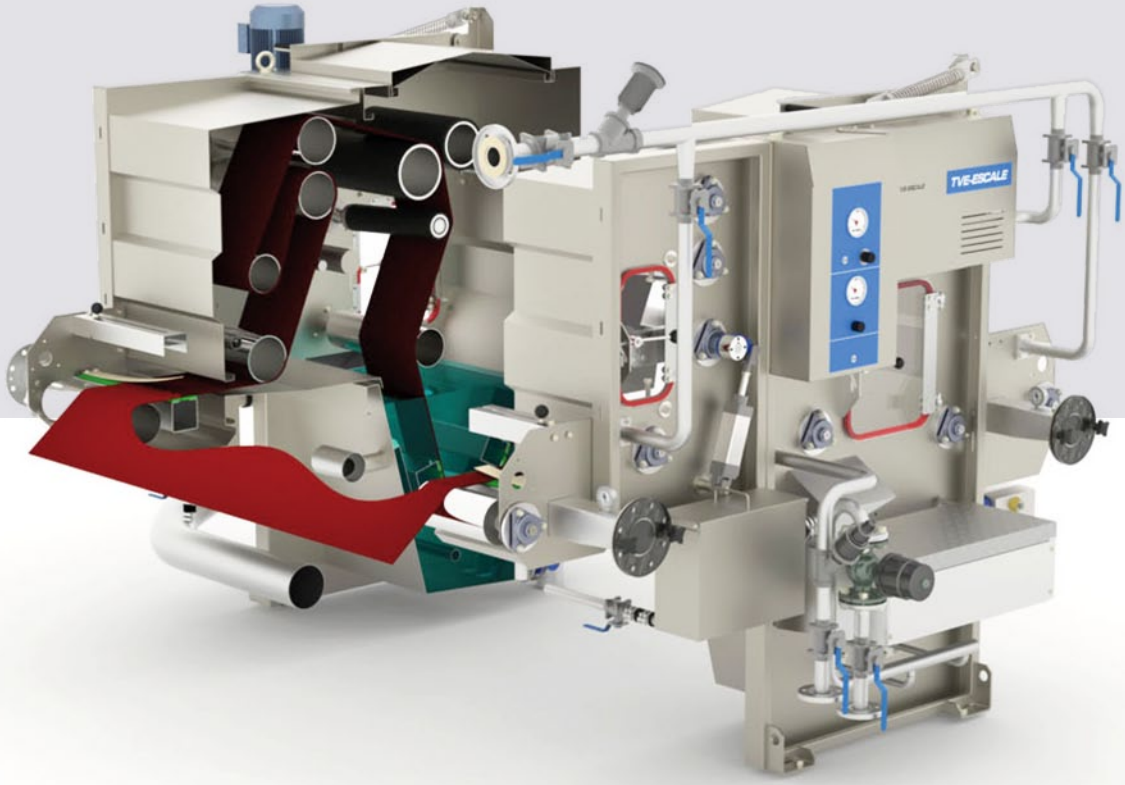
This recirculation of bath has changed the concept of washing, based on passing the fabric between a bath with chemical agents, for one of more efficient, to pass the bath through the fabric.

The maximum flow that this pump can achieve is 250.000 lts. per hour. The penetration of the bath will vary according to the permeability of each type of fibre (exchange). Also it varies according to the fabric weight and production speed.





# **Shark** Washing



**Highest performance combining vacuum and submerged suction technologies**

**1.** A Spray Vacuum Washer at the entrance removes the majority of contaminants from the wash cycle. This reduces the fabric contamination level and reduces the moisture content before it enters to the bath.

**2.** Two submerged suction tubes inside the washing bath force the water through the fabric. The high-powered flow ensures a much more efficient extraction of contaminants than any other existing wash system

**3.** When the fabric comes out the bath, it passes to a spray and squeeze section, which at the same time allows the control of the tension and the feed of the fabric.

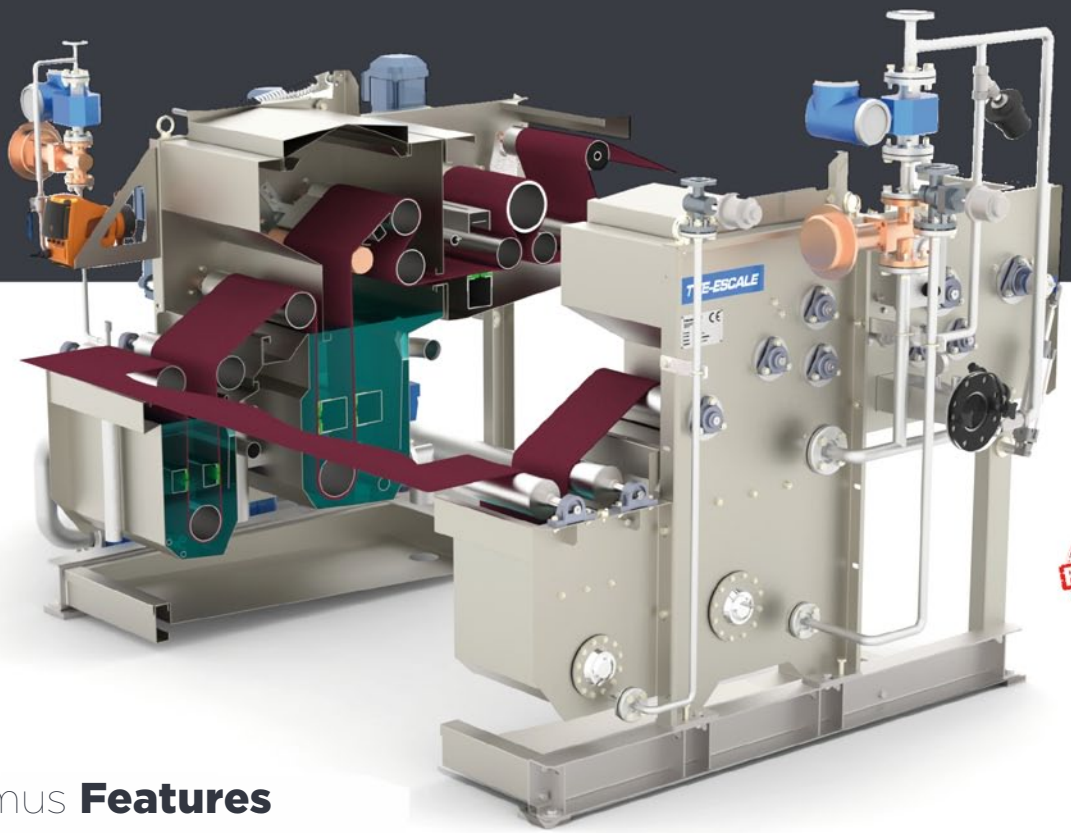
**4.** At the exit of the unit is the last Spray Vacuum Washer. This is responsible for the final rinse and to reduce the moisture content of the fabric before drying.

## Features

- Productivity increase thanks to vacuum and submerged suction
- Faster drying speed because of the latest vacuum system
- Improved fabric quality
- Lower water consumption
- Lower energy consumption
- Space savings
- Shorter payback periods on equipment
- Modular system, adaptable to any installation

# Optimus

**The best solution for the extraction of enzymatic oils**




PATENTED

## Optimus **Features**

**HIGH EFFICIENCY IMPREGNATION TANK**

- Detergent impregnation by submerged suction.
- Adjustable recirculation flow depending on fabric features.

**HIGH EFFICIENCY WASHING**

- High efficiency of washing by using submerged suction technology.
- Adjustable recirculation flow depending on fabric features.
- Controlled bath temperature up to 95ºC.

**SPRAY VACUUM WASHER**

- Deep and uniform final rinse.
- Reduction of residual humidity on the fabric programmable.
- Ideal for a pick-up reduction before finishing impregnation.

**FABRIC GUIDE**

- Driven rollers controlled by load cells.
- Scroll rollers.

**AUTOMATIC DOSAGE OF PRODUCTS**

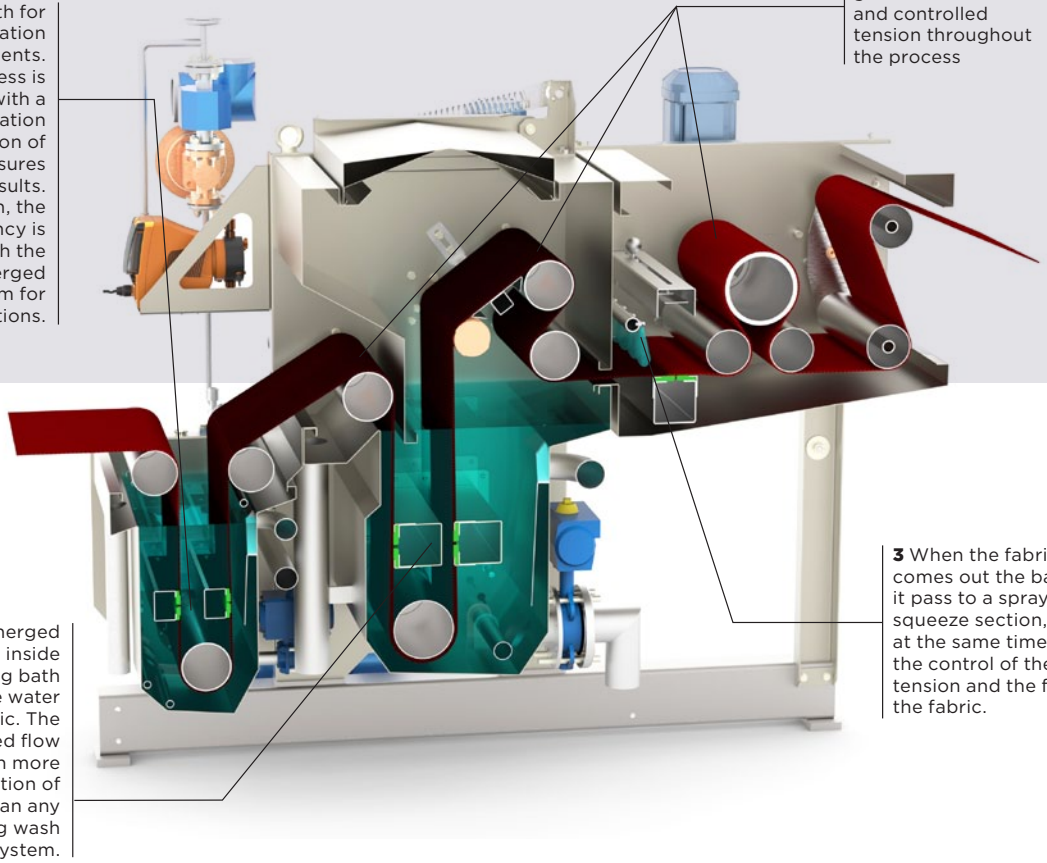
- Product feeding with dosage pump.
- Independent water feeding in each tank with inductive flowmeter.

**PROCESS AUTOMATION**

- Process control totally automated
- Programmable parameters: Water consumption. Bath concentration. Temperature. Flow recirculation level in each tank. Control of the tension. Vacuum level
- Edition of recipes

# **Optimus** Process

**1** A first bath for impregnation of detergents. The process is developed with a great recirculation and renovation of bath, which ensures excellent results. In addition, the process efficiency is increased with the special submerged suction system for impregnations.

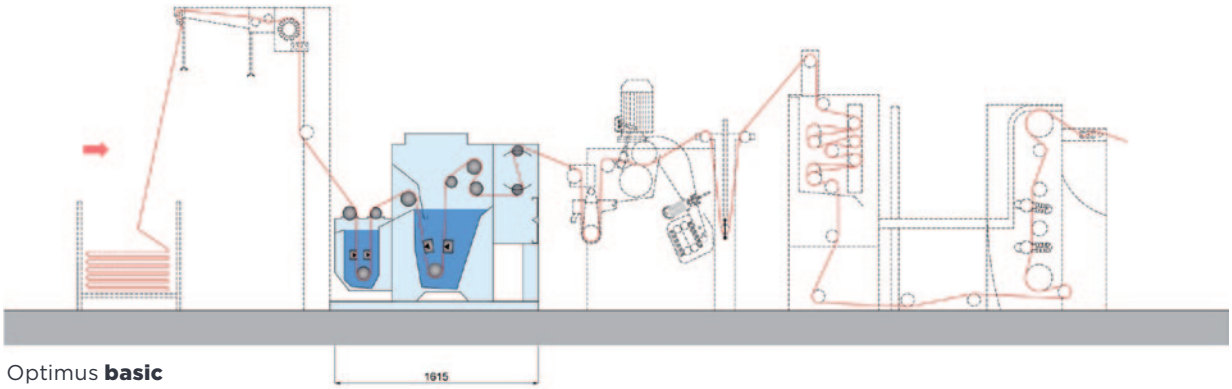


**4** The fabric is guided with minimal and controlled tension throughout the process

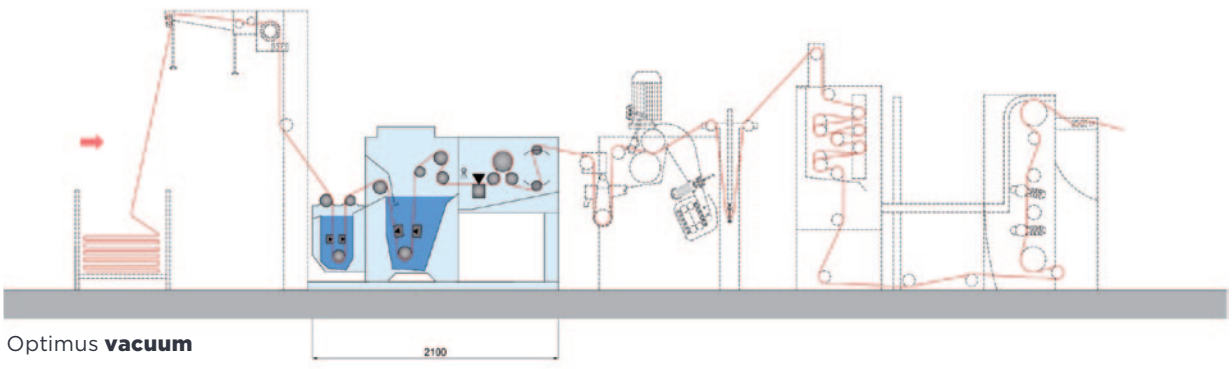
**3** When the fabric comes out the bath, it pass to a spray and squeeze section, which at the same time allows the control of the tension and the feed of the fabric.

**2** Two submerged suction tubes inside the washing bath force the water through the fabric. The high-powered flow ensures a much more efficient extraction of contaminants than any other existing wash system.

## Example of Optimus installations




Optimus **basic**




Optimus **vacuum**

# Bleaching

**Bespoke installations with high efficiency for the pre-treatment and bleaching**

**TVE-ESCALE has developed an advanced technology for preparation and bleaching processing, adapting its extensive knowledge in vacuum and submerged suction technology.**

By combining TVE-ESCALE washing units, COMBI® steamer and VAC-BOOSTER® impregnation unit, TVE-ESCALE has achieved the best results in this process, uniform impregnation, maximum flexibility as well as water savings and energy consumption reduction.

TVE-ESCALE offers the market complete lines for:

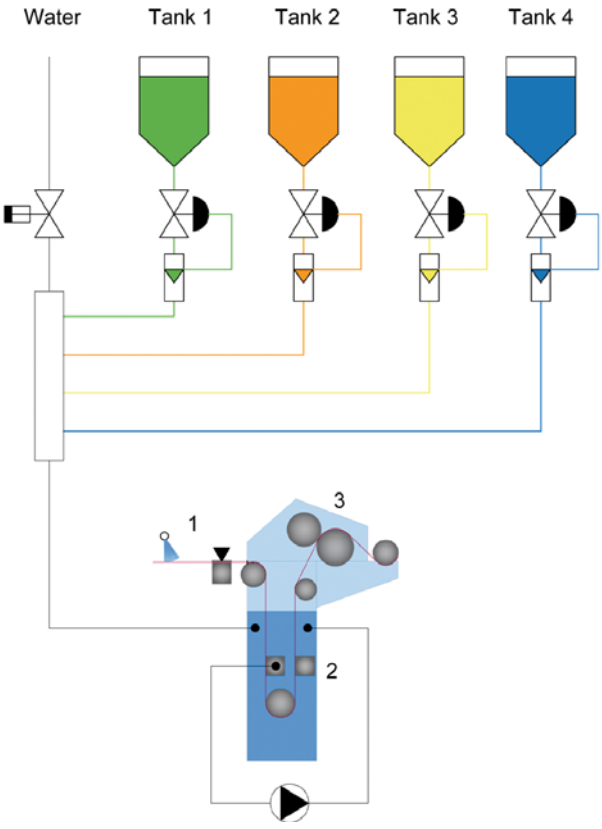
- **Continuous desizing, scouring and bleaching range**
- **Continuous washing and bleaching range (after a pad-batch desizing process)**

Thanks to the flexibility and the company's technical ability, TVE-ESCALE is able to adapt all its lines for denim to meet the needs and specifications of its clients, providing complete bespoke lines.

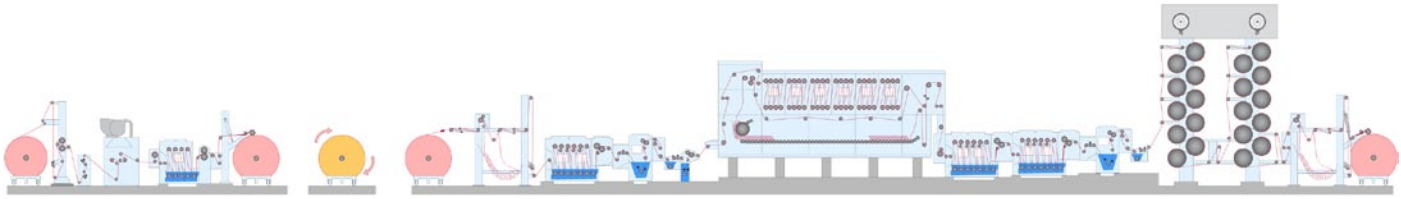
## Vac-Boster

PATENTED

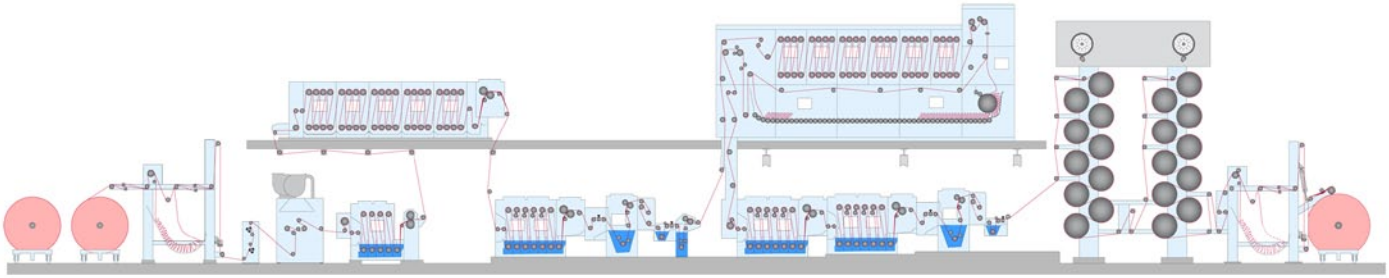
Impregnation unit which uses vacuum and submerged suction technology for better penetration of the bath through the fabric fibers.



## Example of Bleaching Installations



**Semicontinuous line, with one bleaching stage**



**Continuous line of desizing and bleaching**

# Dyeing

## Bespoke lines with excellent reproducibility results

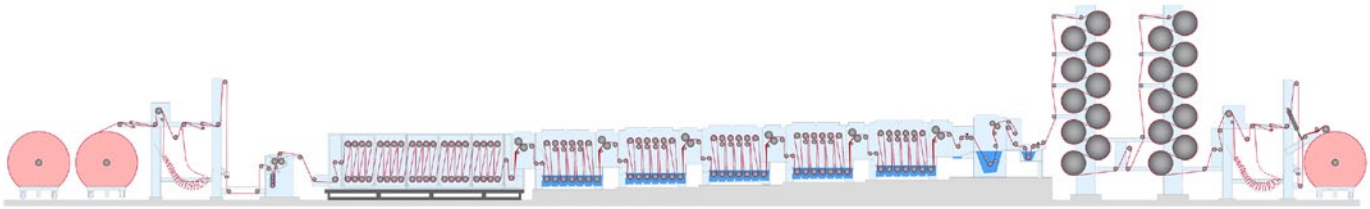
TVE-ESCALE understands continuous dyeing processes as one of the most risky processes. For this reason TVE-ESCALE joins its technology with the best specialists to get the best lines.

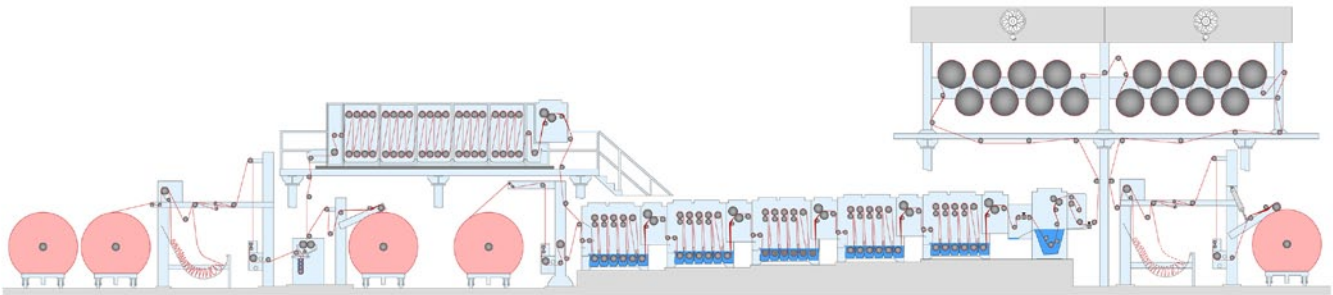
Thanks to the great flexibility and enormous capacity of the company, TVE-ESCALE is able to adapt all its lines to the needs and specifications of its clients, making complete custom lines.

TVE-ESCALE offers the market lines of:

- **CPB with continuous washing**
- **Pad-Steam**
- **Pad-Dry**
- **Pad-Dry and Pad-Steam in continuous**

## Example of Dyeing Installations





# Causticizing

## Bespoke installations with great finishing qualities

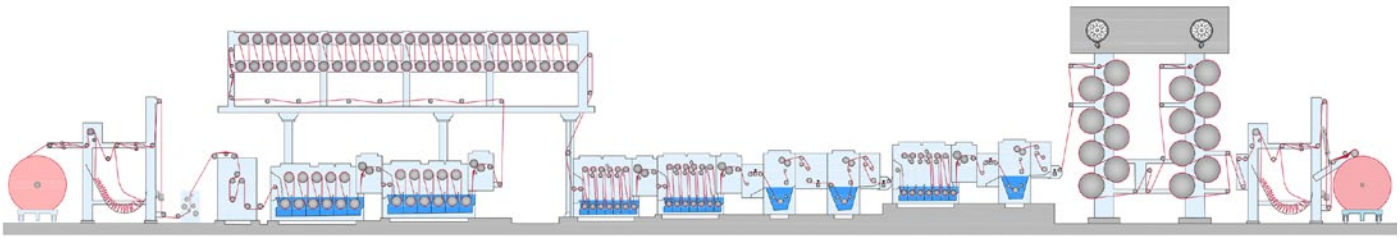
As a result of the close collaborations with customers of the denim sector, TVE-ESCALE has launched new caustic lines with excellent quality results.

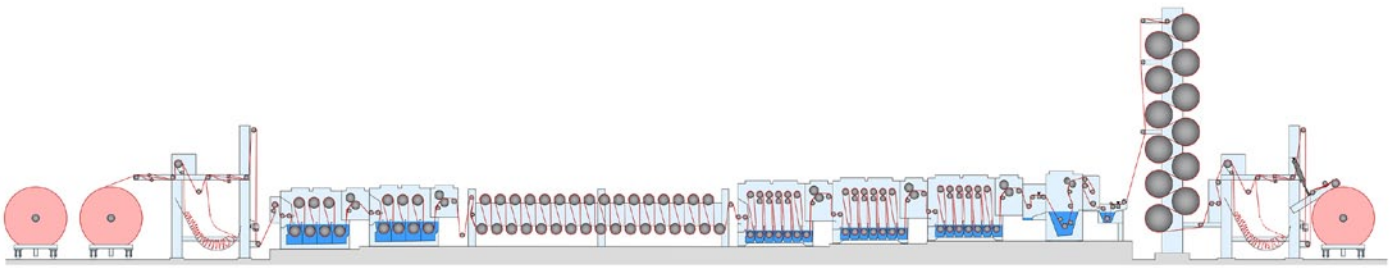
Thanks to the great flexibility and enormous capacity of the company, TVE-ESCALE is able to adapt all its lines to the needs and specifications of its clients, making complete custom lines.

All TVE-ESCALE causticizing lines guarantee:

- **High performance**
- **Great finishing quality**
- **High washing effect**
- **Minimum water consumption**
- **Maximum energy efficiency**
- **Robustness and easy maintenance**
- **Total automation**

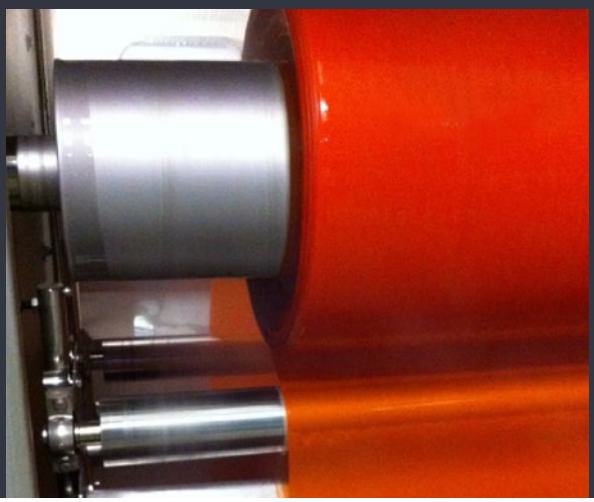
## Example of Causticizing Installations





# Jiggers

## World leaders in Jigger technology



As early as 1991, TVE-ESCALE had the vision of leading the technological development of the sector launching the first Jigger with electronic control. In addition to winning numerous technological awards, TVE-ESCALE became a pioneer and a benchmark in the sector.

Since then, TVE-ESCALE has not stopped evolving its Jigger models until it reaches the new ECOMATIC generation, which stand out for:

- **High performing and efficient**
- **Minimum and controlled tension**
- **Robustness and easy maintenance**
- **Fully automatable**

# **Ecomatic** Jigger

## Ideal for dyeing sensitive fabrics with mínimum tension

**Ecomatic Technology**
TVE-ESCALE controls the tension in real time thanks to the management of the motor torque. This excellent management of engine torque is the result of the experience being pioneers in this field. This allows the Ecomatic jiggers to work with the minimum tension.

To get to work with the minimum tension throughout the cycle, the Ecomatic jiggers have installed a balanced pendulum controlled by pneumatic cylinder and encoder. This unique technology developed by TVE-ESCALE makes the pendulum constantly move at the precise distance between the roll of fabric and the previous cylinder

## Features

- Servomotors which allow total control over speed, torque and position.
- Monoblock construction totally in AISI-316 stainless steel.
- Large doors automatically actuated
- Direct and indirect steam in the bath
- Indirect steam at the ceiling
- Bath recirculation pump
- Automatic centring equipment
- Automatic bath level
- Manual filter (optional)
- Motorized unloading arm (optional)

# **Turbo-Jigg** Jigger

## Maximum efficiency for Jigger processes

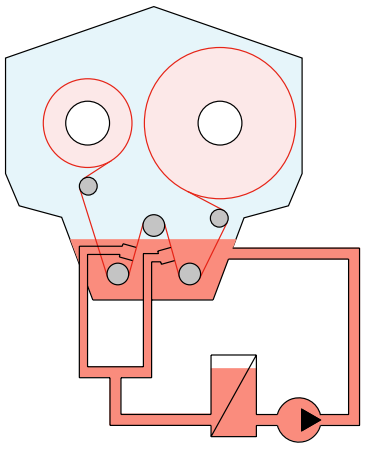
**Tecnología Turbo-Jigg**
TVE-ESCALE has incorporated submerged suction technology in their Jiggers to increase equipment performance.

Thanks to the tension control system technology and coupled with the many years of knowledge on submerged suction technologies TVE-ESCALE has been able to create this new range of Jiggers which are both innovative and totally revolutionary.

With ECOMATIC, TVE-ESCALE completely changes the concept of Jiggers, from traditional model of “passing the fabric through a chemical bath” to “passing the bath through the fabric”.

### Advantages

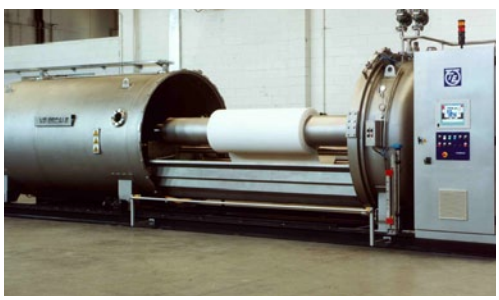
- Reduction in production processes
- Improved washing and dyeing effect
- Higher quality of the treated fabrics
- Water and energy savings
- Chemical products savings



Submerged suction recirculated bath

# **Ecomatic HT** Jigger

## ECOMATIC technology for high temperature processes

## Features

- Servomotors which allow total control over speed, torque and position.
- Balanced pendulum controlled by pneumatic cylinder and encoder.
- Indirect steam through an external heat exchanger
- High performance recirculation pump
- Uniform dosage of the product throughout the cycle
- Automatic closing system of the autoclave
- Manual filter
- Automatic bath level
- Automatic centring equipment(optional)
- Motorized unloading arm (optional)

# Hydra

## High-performance semi-continuous process for the preparation and washing of open-width fabrics

TVE-ESCALE has created a new semi-continuous line for the wet treatment of open-width fabrics totally innovative.
All the technology developed over the more than 30 years of the firm has been put at the service of this latest invention.

### A NEW PROCESS FOR A NEW ERA

HYDRA opens a new range of possibilities in the treatment of open-width fabrics.

This new innovative concept brings great versatility to companies with small and medium-sized production.

With HYDRA you can carry out the vast majority of wet processes with excellent performance.

### RELIABLE INNOVATION

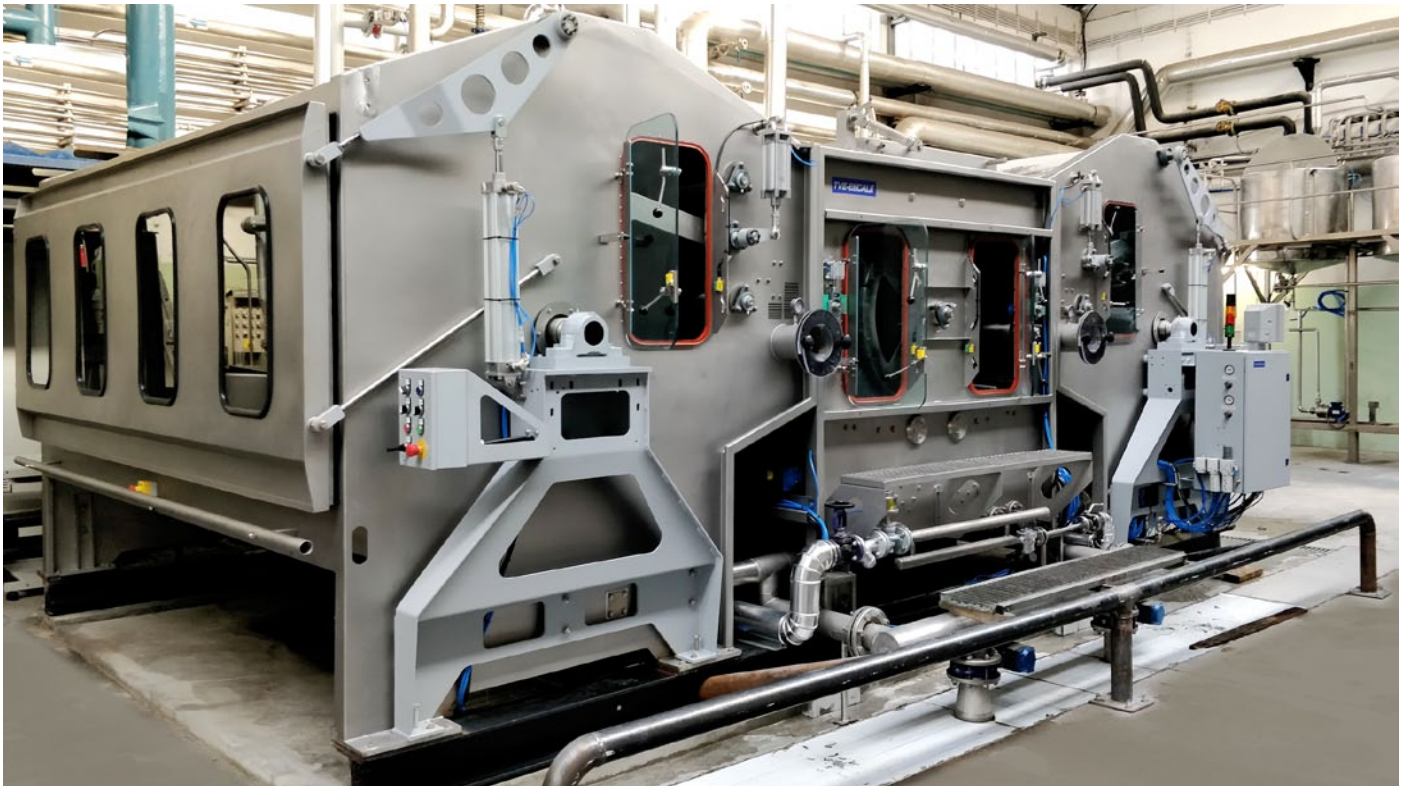
Since its birth TVE ESCALE has based its growth on innovation. Multiple inventions, which have served as a reference for its competitors, endorse it.

After a period of maturity TVE ESCALE has managed to concentrate all its knowledge on one machine.

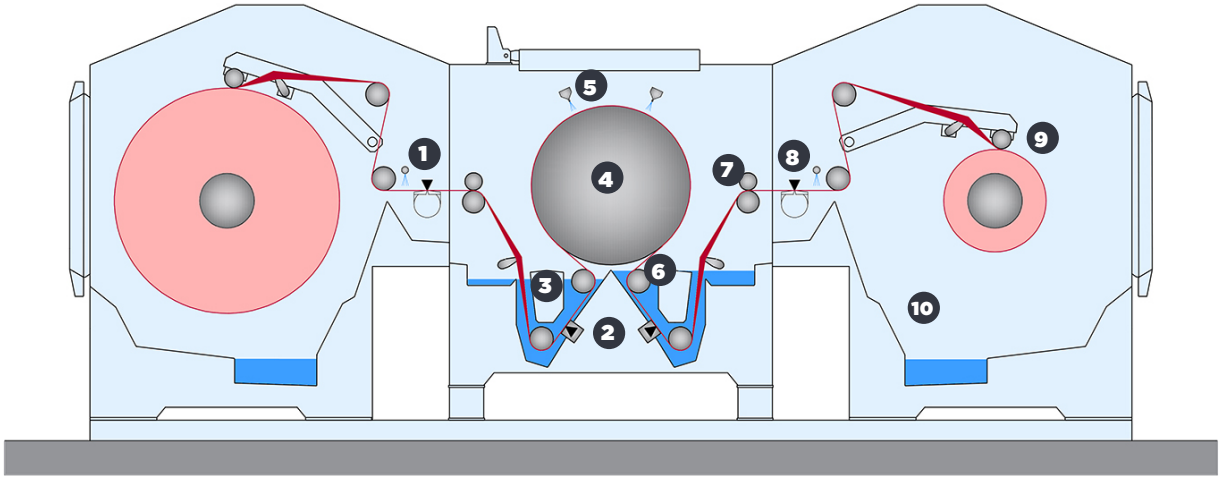
### COMMITTED TO THE ENVIRONMENT

Since its creation, TVE ESCALE has been committed to saving water, energy and chemical products. Their knowledge and close collaboration with universities and companies in the chemical sector contribute to the environmental impact.

HYDRA, for its innovation in the process and its enormous mechanical and electrical performance, achieves these savings.



# **Hydra** Process




**The first of HYDRA is the use of a wash box in both directions. This box is high performance for all the technology that TVE ESCALE has managed to incorporate into it.**

1. Spray Vacuum Washer at the entrance that eliminates the vast majority of contaminants from the previous wash cycle, reducing the level of contaminants that enter the next bath. In addition the fabric is left with a very low residual humidity that allows a greater exchange of bath.
2. Submerged suction tubes inside the bath that force the pass of water through the fabric. The power of this flow ensures a very efficient level of contaminant extraction.
3. Bath reducers that allow the machine to work with the minimum possible bath.
4. Large diameter perforated drum that ensures good guidance and careful advancement of the fabric.
5. Spray bars located around the perforated drum that guarantee a greater washing effect thanks to the water film that forms around the fabric in its advance.
6. Counterflow principle. (Illustration 1.)
7. Pre-squeezed with a small squeezer.
8. Vacuum equipment that is responsible for making a final rinse and reduce the residual moisture of the fabric to the level that interests us.
9. Final winding without wrinkles and controlling the tension during all time.
10. Reaction chamber with saturated steam and adjustable room temperature.

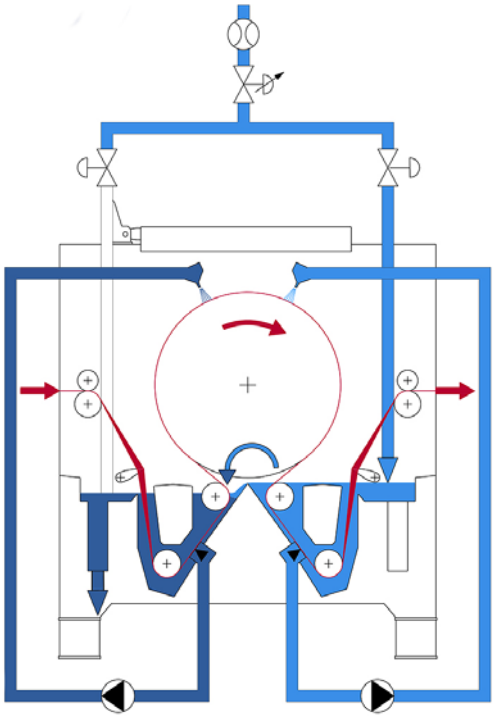
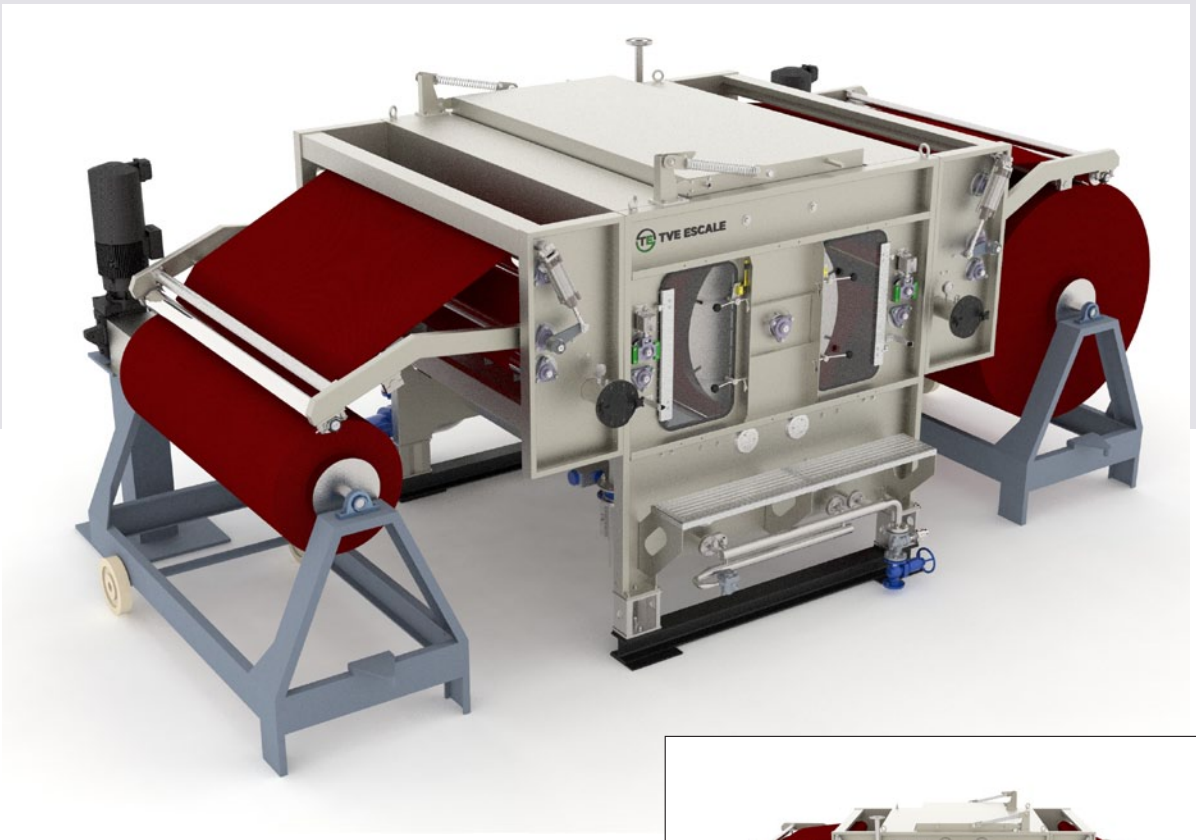


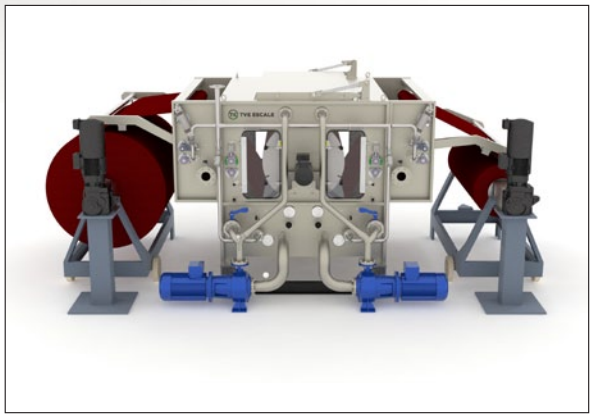
**Illustration 1** Counterflow principle

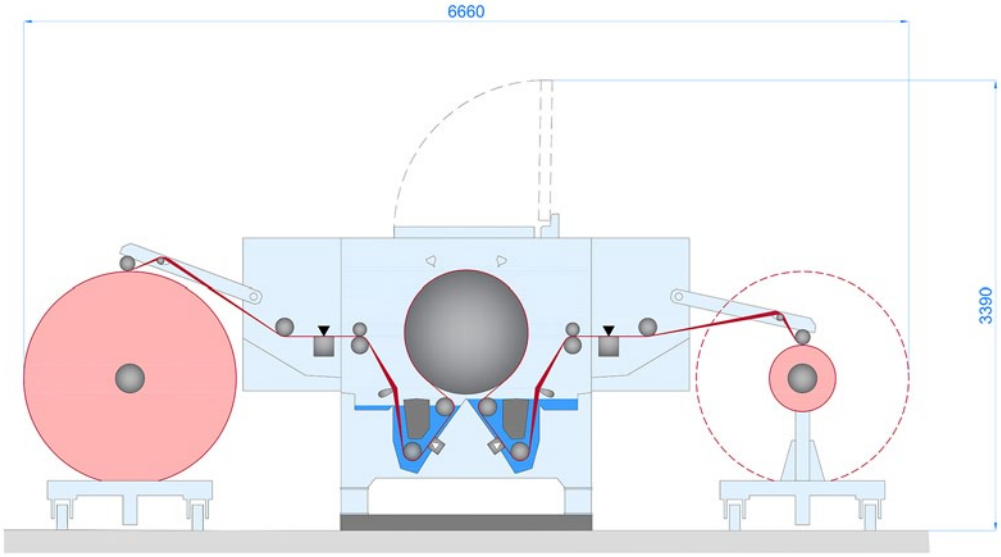
# Hydra S



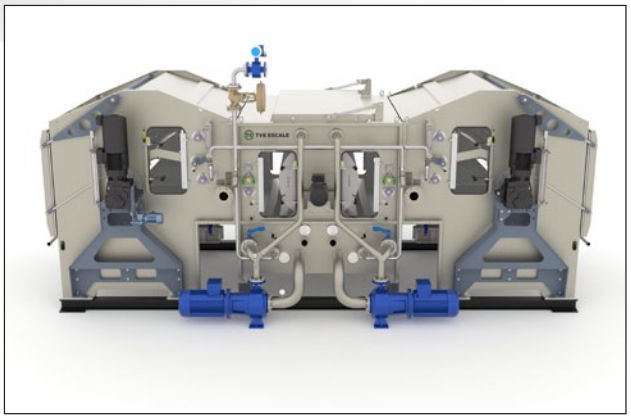

Ideal for processes as

**Desizing**
**Enzymatic washing**
**Small washes**
**Impregnations**



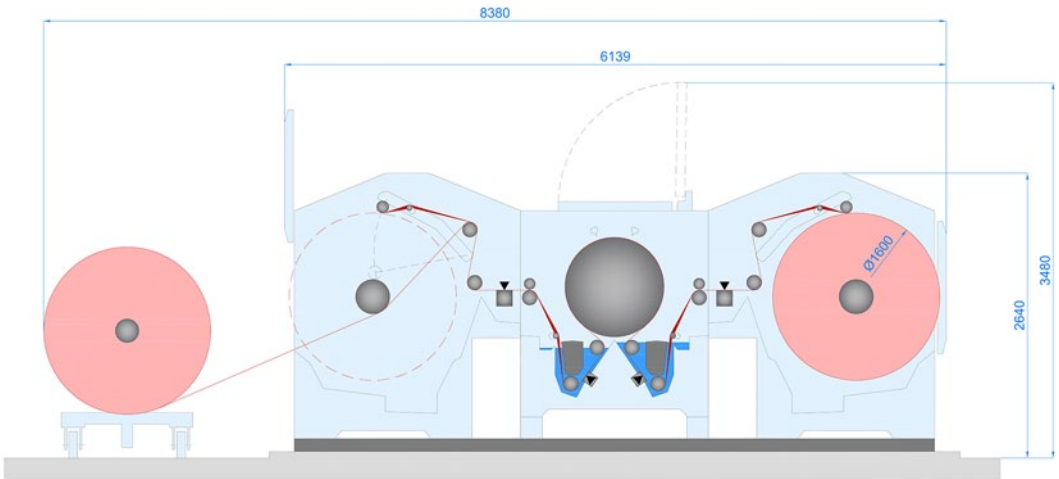


# Hydra

Ideal for processes as

**Desizing**
**Bleaching**
**Preparation of digital printing**
**Digital printing washing-off**
**Dyeing washing**
**Print washing**
**Pad-roll**



# Vacuum equipment

## World leaders in vacuum technology

**As world leaders and experts in vacuum technology, TVE-ESCALE develops their own equipment and technology.**

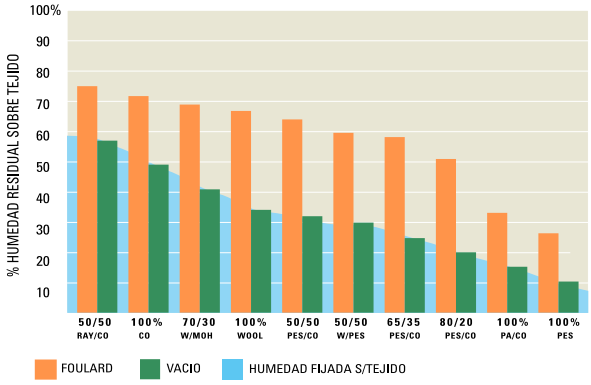
**The factors which distinguish vacuum equipment by TVE-ESCALE from other systems are:**

- The type of vacuum slot; TVE-ESCALE has a large variety of models which allow us to meet the specific needs of each customer. (see illustration 2)

- The profile of the vacuum slot; our systems are designed to obtain a correct Venturi effect in order to extract the maximum level of humidity from the fabric. (see illustration 3)

- The vacuum slot composition; the vacuum slot is made with a unique high density polymer and is self-lubricated to ensure maximum humidity extraction without causing damage to the fabric structure.
- The Air/liquid separator; our air/liquid separator is specially designed to provide a maximum efficiency of 99%.

- The noise level of the equipment: It runs at less than 80 dB, so it is not required to be isolated in a soundproof area.
- The automatic seal of the slot in areas where the fabric doesn't pass.



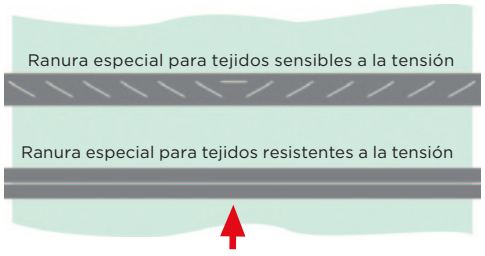




Illustration 2

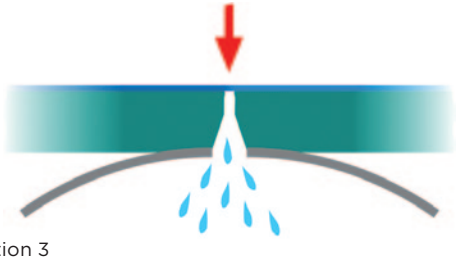
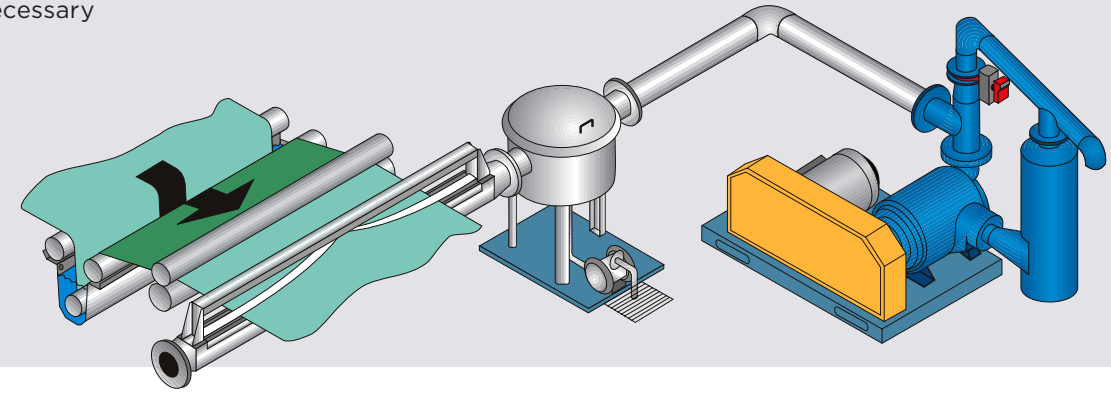


Illustration 3

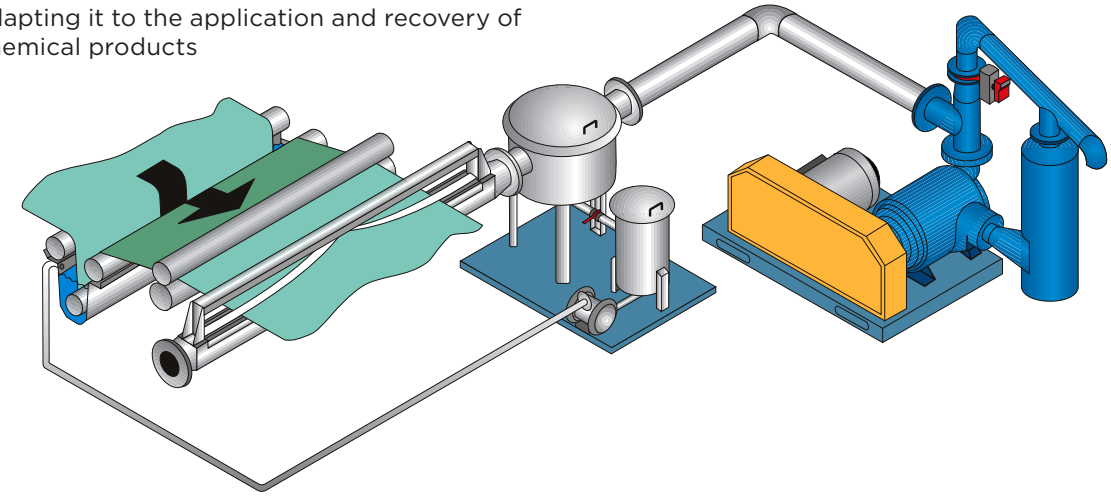
## **Modelo MRS** Moisture Removal System

This is the most popular model and can be used in all processes where the elimination of water is necessary



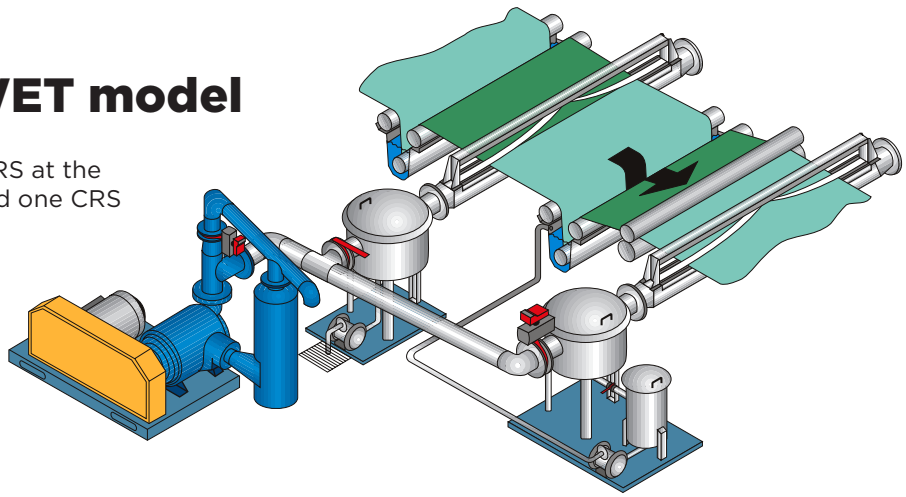
## **Modelo CRS** Chemical Recovery System

The CRS is an evolution of the MRS model, adapting it to the application and recovery of chemical products



## **WET-ON-WET model**

Combination of one MRS at the entry of the foulard and one CRS at the exit



# **Engineering** Solutions

## Giving solutions

**TVE ESCALE Engineering, subsidiary of TVE ESCALE, has been created to respond and offer all kinds of solutions to the problems of its customers.**

The solutions offered are as much for problems that may appear in the productive processes of their clients, as opportunities for improvement. All this thanks to its professionalism and the experience acquired over more than 30 years giving solutions in this field.

- Upgrades of continuous lines
- Expansion of existing lines
- Modification and adaptations of existing lines
- Transformation of hydraulic jiggers to electric
- Solutions to specific problems

**EXAMPLE 1:**

**MODIFICATION OF AN EXISTING CONTINUOUS RANGE FROM PRE-TREATMENT LINE TO PAD-STEAM**

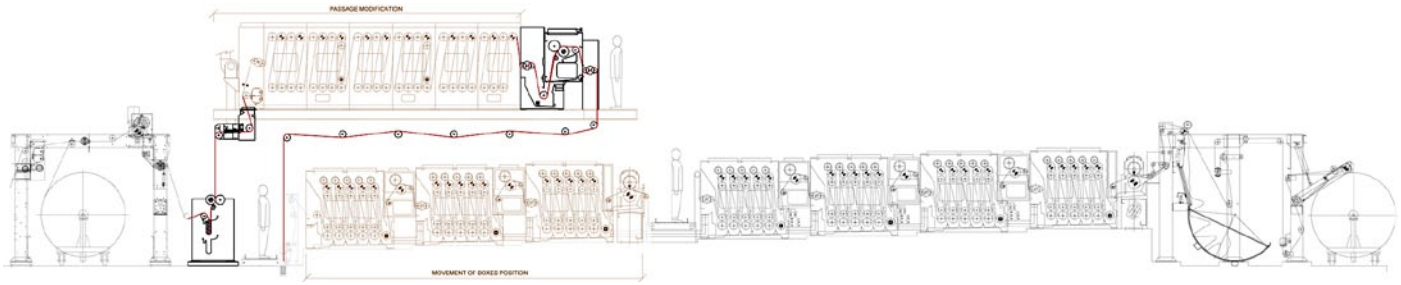
**Background:** The customer needs a new over-dyeing continuous line because of his current production.

**TVE ESCALE Proposal:** Transform an existing pre-treatment line from another firm to pad-steam.

**TVE ESCALE Project:**

1. Installation of a dye pad.
2. Incorporation of an entry unit and an exit unit with mechanical seal to the existing steamer.
3. Modification of the existing steamer passage.
4. Installation of a new squeezer pad at the exit of the modified steamer.
5. Movement of the washing boxes from front to after steamer.

**Result: The customer achieves a reliable and robust pad-steam with the minimum investment**



## EXAMPLE 2:

### MODIFICATION OF AN EXISTING CONTINUOUS RANGE FROM PRE-TREATMENT LINE TO WASHING

**Background:** The customer has an inoperative preparation facility for several reasons.

**TVE ESCALE proposal:** Transform the existing line of another firm to an operational washing line.

**TVE ESCALE Project:**

1. Removal of the existing inoperative steamer.
2. Installation of a "ROTOPRESS" washing unit at the entry.
3. Motorization of the rollers from the existing washing boxes.
4. Installation of load cells.
5. Modification of the existing foulards installing scroll rolls and bowed expanding rollers.
6. Substitution of the compensator control systems.
7. Substitution of all the motors.
8. New system of PH regulation with a new automatic acid dosage.
9. Upgrade of the electric installation.
10. New electrical cabinet, new pneumatic cabinet and new control panel boards.



**Result: The client manages to have a new and reliable washing range adapted to his needs.**

## EXAMPLE 3:

### TRANSFORMATION OF AN HYDRAULIC HT JIGGER TO ELECTRIC

**Background:** The customer does not get the necessary quality for the dyeing of delicate fabrics very sensitive to stress.

**TVE ESCALE Proposal:** Transform the existing hydraulic HT Jigger to electric with ECOMATIC technology.

**TVE ESCALE Project:**

1. Installation of electric servomotors with last generation drives.
2. Installation of a compensated pendulum regulated by pneumatic cylinder and encoder.
3. Implementation of ECOMATIC control technology.
4. Installation of a new colour touch screen.


**Result: The customer get an HT Jigger with the latest control technology for the dyeing of very sensitive fabrics.**

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