



CUBOTEX
DYEING MACHINES AND DRYERS





Index

2

Company Profile

Message to our customers.

4

Machine Features

Common features and options available on our dyeing machines

8

RVS

Bobbin, fiber, tops, tow, muff, dyeing systems

14

DyeFlex (Patent Pending)

A new concept of load flexibility

16

TRO

Bobbin, tops, muff, dyeing systems

18

AMRE

Hank cabinet dyeing machines

22

MBR

Spray dyeing machines for hanks

26

STV

Thermo fixing machines

28

PDM-AMRE

Pantyhose, muff dyeing machines

32

B72

Belt dryers for loose fibre and tow

36

MNC

Hank dryers with automatic squeezer

40

Sampling

Laboratory dyeing machines





Company Profile

Message to Our Customers

To design and realize top quality dyeing machines. This is our aim and the reason we work for every day.

We may succeed or not, only our customers can judge. But we always encourage all new potential customers to get in touch with users of our machines and check their opinion and feedback.

There are hundreds of companies producing dyeing machines and at first sight, all dyeing machines look the same.



We believe that details make the difference.
We believe that people make the difference.
We believe that 10 liters of volume reduction mean millions of liters saved in a machine life.
We believe that convictions like “Don’t change it, we have always done like this” is one of the biggest mistakes.

Choosing Cubotex means choosing a partner. This is how we look at our customers and this is how our customers feel.

The Beginning of a People's Story

Cubotex was born from an idea. An innovation, a new concept in pantyhose dyeing which did not exist.

The production of pantyhose changed in the whole world after the introduction of Cubotex internationally patented "TC" machine.

Water consumption reduced of nearly 50%, handling reduced of 35% and robotized handling was introduced for the first time in this field.



This innovation was the beginning of our story:

Not a company story but a people's story.

A story of hard work and honesty as the main values of the Company founders, transferred and shared with the whole Cubotex team.

A few years after company foundation, the product range was extended, and you will find here exposed a brief introduction to our products.

All machine models are engineered to reduce power and water consumption and to increase efficiency at the highest possible level.

More than 2400 Cubotex machines are today running in 45 different Countries among the 5 Continents.

We believe that only a continuous re-discussion of the existing dyeing technologies is the way to achieve utility savings and to **give the deserved respect to the world where we and our families live.**



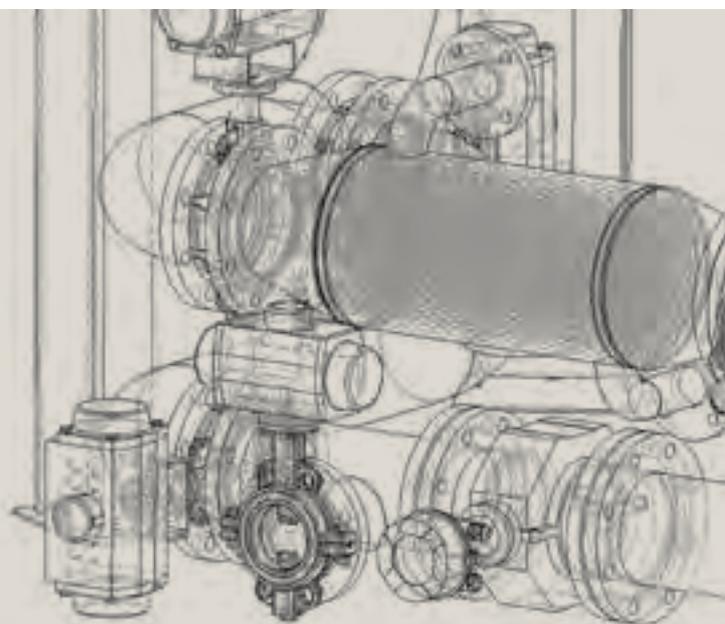
Machines Features

Common features
and options available
on our dyeing machines

After 40 years of experience in the production of different dyeing machines, we have been able to take the best features of each kind of apparatus and use/adapt the same to our entire product portfolio.

All our machines have been developed in close collaboration with our customers, among which there are some of the biggest and most relevant textile factories in the world.

Here you will find some of the common features which are present on all our dyeing machines.

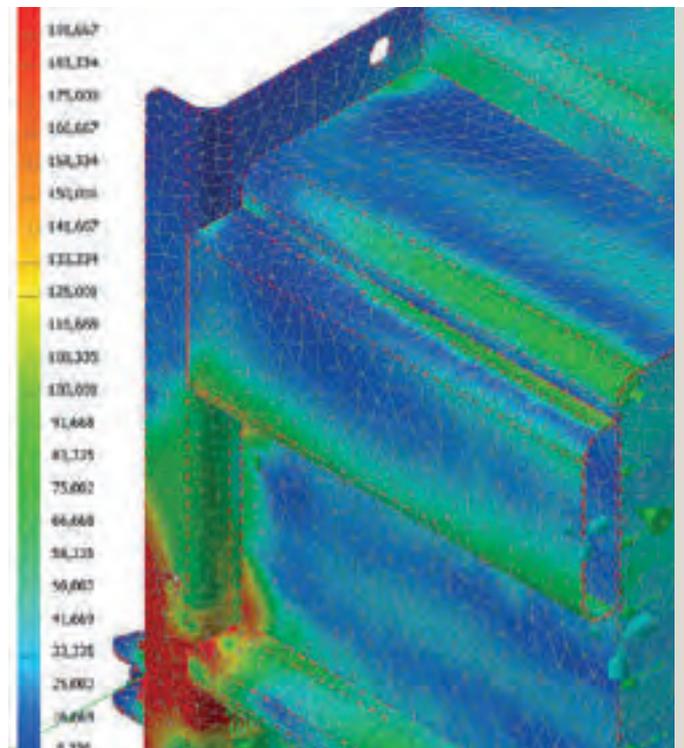
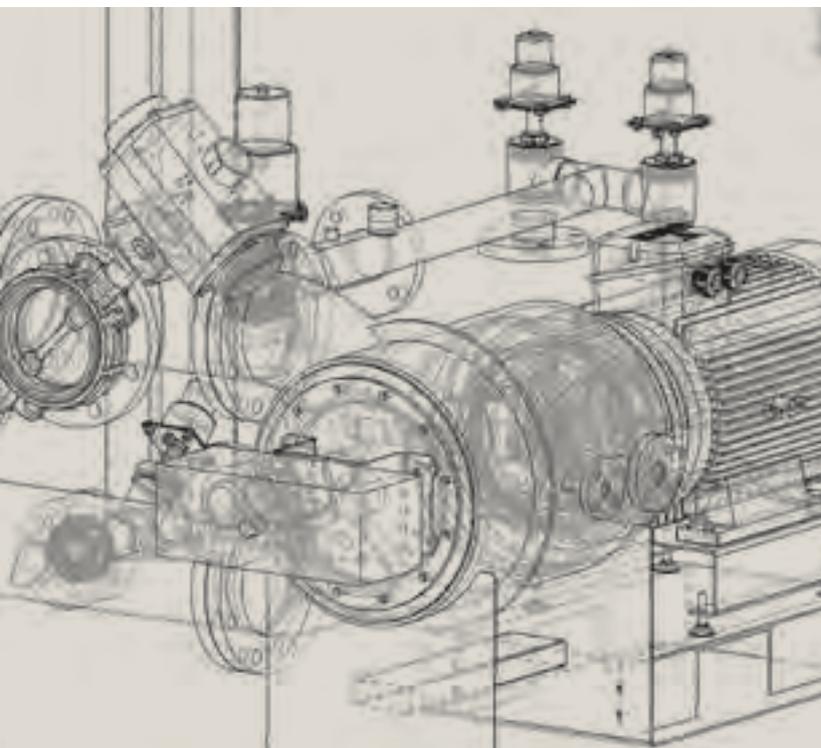


Material of construction: All our machines are manufactured in **AISI 316 stainless steel (1.4404) even for the parts not in contact with the dye-liquor.** Upon request, some parts can be realized in **duplex stainless steel, typically SAF 2205 (1.4462).**

There is no use of stainless steel 304 (1.4401) in any part of the machine except for the outer closing ring on those machines that have it.

Air pad technology: Variable filling level by means of high precision analogic sensor with automatic selection of the desired level setting.

Bath recycling: Every machine is equipped with dye liquor recirculation from machine to addition tank, useful for shade corrections.



TRO

Preparation tank: Where required, realized with same volume of the machine, complete with indirect heating coil, temperature control and analogical level control system.

Process control valves: The use of valves with **high Kv value**, permits to optimize piping and allows **lower pressure drops**, especially useful on the heating/cooling circuit.

Programmer and PLC: Any major brand can be used to control the machine and perform all functions in automatic mode. Control panel is realized in stainless steel as standard feature.

Addition tanks: From one to six tanks, with suitable capacity and complete with indirect heating coil and mixing system.

Robotized handling: All machines can be equipped with full automatic lid/door closing and opening system to be perfectly integrated in robotized installations.

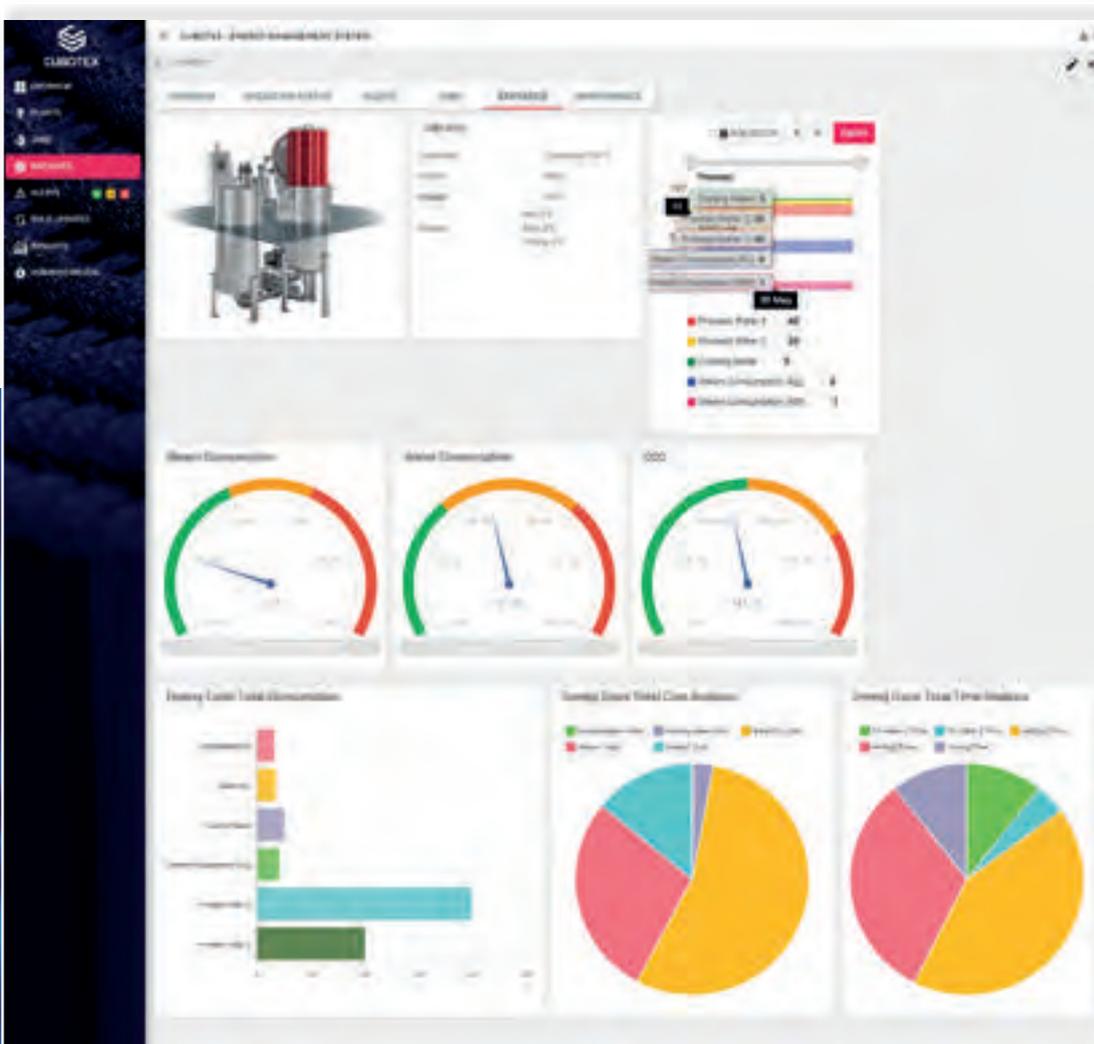
CALZEDONIA



HT drain function: Drain at 140°C – 3,5 bar can be realized into an atmospheric open drain channel thanks to a special cooling device. The water used for cooling purpose is recovered from machine cold drains to avoid consumption of clean water.

Coupling function: Realized with total dye liquor exchange between different machines of same capacity.

QDR function: Suitable to reduce drain time, in combination with compressed air and main circulation pump.



Values are figurative only, do not correspond to a real cycle.

EMS: Energy management system- A complete utilities report which can be displayed in the machine programmer and/or can be stored into an independent system with programmer and PLC installed separately from machine controller.

It allows to have a complete record of direct utilities costs of each dyeing cycle and in combination with our Cubotex Energy Management System information can be stored, recorded and analyzed with statistics and graphs.

DBA system: Instrument to control liquor turbidity, to optimize washing phases and see on the controller screen a curve of the instrument reading.

Process control instruments: On all machines can be installed **pH measurement** with automatic dosing of alkali and acid by means of 2 independent dosing pumps. Conductivity measuring device is also available.

Washing functions: According to machine model, different washing functions are available to reduce water consumption.



RVS

Bobbin, fiber,
tops, tow,
muff, tapes
dyeing systems

Main Features

RVS machines represent the result of 40 years of research and development focused on the reduction of power and water consumption.

For general information on RVS machines and options available, you can refer to **pages from 4 to 7** of the present catalogue.



In addition to the above, here below some information related to this product line:

Variable liquor ratio: Average 1:6 with material fully covered. Up to 1:3,5 with partially covered material.

Reversing device: All machines are equipped with system to reverse circulation, even on fiber dyeing machines.

Pump flow regulation: By means of inverter and process parameters, permits to reduce at the minimum the power consumption of the main pump.

Shell and tube heat exchanger: A more expensive but more refined solution with an average 2,5 times higher efficiency compared to internal coil.

Carriers: The same machine can be equipped with different carriers optimized for dyeing any size of bobbin and different textile products like loose fiber, tow, tops and muff.

Capacities: Machines are realized in any different capacity, combining different diameters and heights of the vessels from 200 to 2200 mm, we can cover any size from 1 to 1500 kg.



Options:

Automatic rapid lid locking system, especially useful for fully automatic loading/downloading system.

Flow meter: Placed on the main circuit of circulation, allows, along with differential pressure regulation (standard supply), to control and adjust the pump flow according to material characteristics.

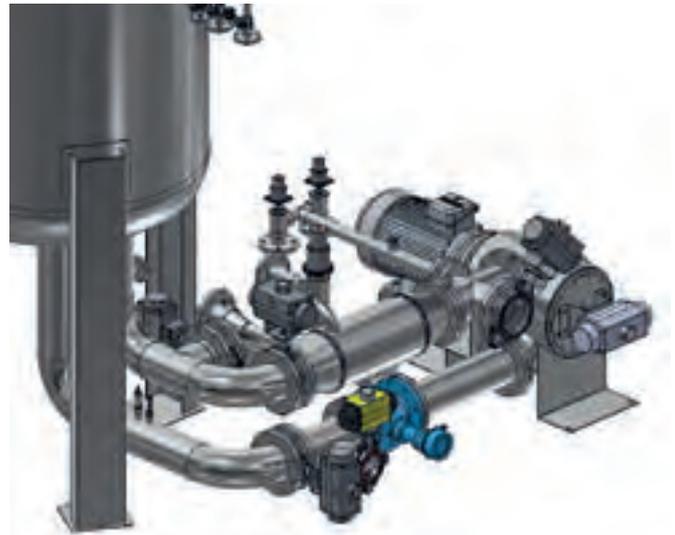
Washing functions: There are 4 different washing functions available which can be performed according to the dyestuff and fibers to optimize consumptions. If the machine is equipped with stock tank, a fifth washing option is available.



Squeezing function: By means of compressed air, to extract water from packages.

Heat Exchanger Models

The use of an external heat exchanger, permits to further reduce the machine liquor ratio since the lower part of the kier is not occupied by the coil creating additional water volume. As a matter of fact, and evident in basic thermo dynamics, the thermal exchange coefficient of a tube/shell type heat exchanger is higher (double and even more) compared to an internal coil. Thermal exchange is direct function of the flow speed and turbulence between the heating medium and the liquor to be heated/cooled. It is easy to understand that the speed of flow inside the small pipes of an external heat exchanger is much higher compared to the liquor movement around the coil inside the dyeing kier.



The image on the right shows two machines model RVS 1000 each one loaded with 1200 kg of cotton yarn.

The running consumption during the entire cycle varies between 40 and 45 kWh thanks to the high efficiency circulation system.

All our machines are supplied with reversible circulation although it is possible to perform cycles with IN-OUT circulation only, without covering the bobbins.





Circulation Pump

All circulation pumps on Cubotex machines are designed and built in our factory. The impeller design has been developed to ensure the most flexible combinations of flow and pressure at different motor speeds. All pumps are equipped with reversing device which is in-built inside the pump body. It is an almost maintenance free system consisting of a rotating curve which is connected to impeller suction and switches between the two sides of pump connection to machine. Pumps have a stainless steel free standing basement and do not require any foundation.



Material Holders Configuration

The same machine can be equipped with different types of carriers according to the material to be dyed. Here below some examples.

Tops dyeing: Machines available from 1 to 14 extractable columns (tops dia 400 mm), with different column height at customers' preference. In tops dyeing it is very important to grant a delicate circulation to preserve the fiber quality and mechanical properties. The machines dedicated for this purpose are especially engineered keeping this aspect as a priority. The material holder can be equipped with or without external removable perforated shell.



Moreover, with the use of special dummies in combination with air pad technology, it is possible to realize partial loading on the columns to increase machines flexibility. Even for tops dyeing machines, we have realized robotized installations with special covers suitable to be removed by automatic handling systems.



Muff dyeing: Typically used for filament yarns, this material configuration allows to obtain a higher yarn elasticity after dyeing and permits to process high-shrinkage articles. Muff configuration may vary from a smaller diameter of 200 mm (in such case can be dyed on spindles like bobbins) up to higher diameters with 800+ grams weight which are normally dyed in loose form inside baskets.



There are two different options for dyeing loose fibre and tow: Dye-cakes can be formed on base plates or inside baskets with individual covers. In the first case, handling is made by means of chains and two or more cakes are connected together for faster loading/downloading of the machine. In this case, a fibre carrier is fixed inside the machine with an inner and outer perforated shell. In second case, each cake is formed into its own basket and the material can reach a higher density since each basket has a cover which is positioned under the press and locked into the basket after the pressing operation avoiding material resilience.



DyeFlex

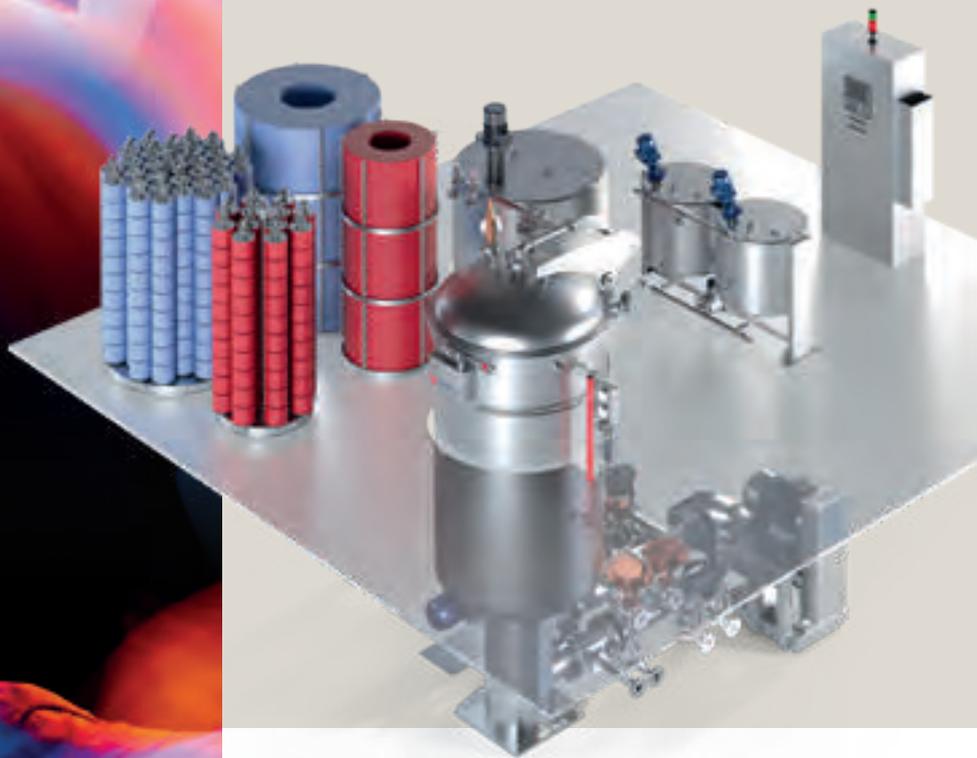
A new concept
of load flexibility

PATENT PENDING

Main Features

DyeFlex machines represent the latest development on our RVS machines and reflect our customers demands of higher load flexibility in yarn and fibre dyeing machines.

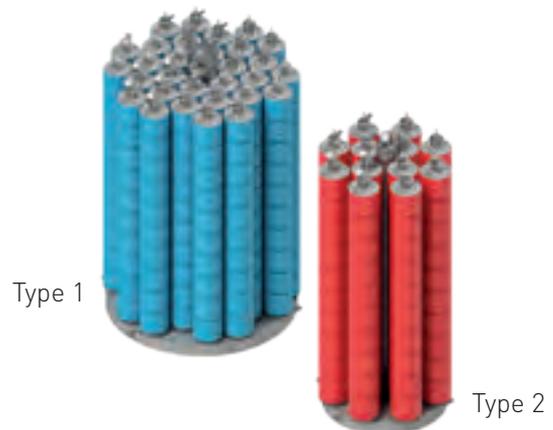
It frequently happens in dyehouses that the biggest machines have no orders and the smaller machines are overbooked. Dyeflex series is the solution which allows a tremendous load flexibility within the same machine, exactly like having two machines in one.



Dyeflex machines are designed according to customer flexibility requirements and the same machine can cover from 15% to 100% of the nominal load capacity with 12 different loading configurations with almost constant liquor ratio and material fully covered.

Each machine is equipped with two circulation pumps and can receive two material holders with different diameters: According to the load configuration set in the dye program, the machine will automatically select the suitable pump for the process.

Here below an example of load flexibility on two DyeFlex machines based on bobbins with 180 mm diameter and height of 170 mm:



| D-flex 1000-150 | Number of bobbins | | | | | | Average LR* |
|--------------------------|-------------------|-----|-----|-----|-----|-----|-------------|
| | 720 | 648 | 576 | 504 | 432 | 360 | |
| Load with carrier type 1 | 720 | 648 | 576 | 504 | 432 | 360 | 6 |
| Load with carrier type 2 | 320 | 288 | 256 | 224 | 192 | 160 | 6 |

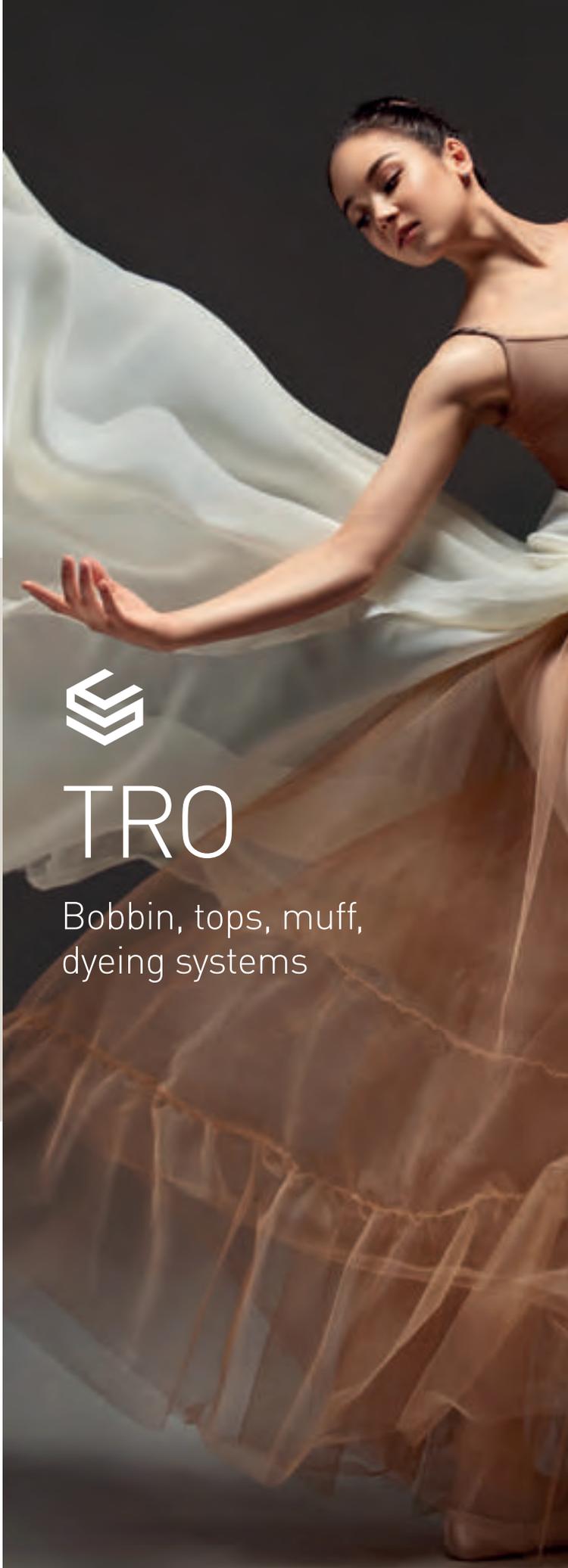
| D-flex 150-50 | Number of bobbins | | | | | | Average LR* |
|--------------------------|-------------------|-----|-----|-----|-----|-----|-------------|
| | 320 | 288 | 256 | 224 | 192 | 160 | |
| Load with carrier type 1 | 320 | 288 | 256 | 224 | 192 | 160 | 6 |
| Load with carrier type 2 | 120 | 108 | 96 | 84 | 72 | 60 | 6 |

* **Liquor Ratio** value refers to material fully covered and processed with I-O / O-I circulation

The combination of carriers can be decided by the customer choosing from any dimension of our standard carriers of RVS machines: with one single machine in the dyehouse will be exactly like adding two machines. **DyeFlex machines can also be used for fibre dyeing receiving cakes with different diameters.**

For example our model DyeFlex 250-100 will be suitable to receive 3 standard dye-cakes of RVS 250 machines and also 3 cakes suitable for the RVS 100: Load capacity will be 750 kg in one configuration and 300 kg with the other. As per yarn dyeing, even for fibre dyeing liquor ratio in reduced load configuration will be almost the same as it is for full load.

DyeFlex represents today the most flexible dyeing machine on the market and allows our customers to have two machines in one with a much lower capital investment compared to the purchase of two independent machines.



TRO

Bobbin, tops, muff,
dyeing systems

Main Features

TRO machines are the suitable solution for customers who prefer to avoid the installation of a crane or in case of limited building height. Horizontal machines have all the characteristics previously mentioned for RVS machines.

Please refer to previous pages for general features and options (from page 8 to 13).

In terms of capacity, the range varies from 30 kg to 1500 kg, combining different vessel diameters and lengths.



The air pad system works with the same principle applied for the vertical machines, but the space for liquor thermal expansion is placed on both sides of the kier and in the rear portion. Variable filling level is also a standard feature for reduced loads. TRO machines are mainly used to dye yarn, tops and muffs. Even if it would be possible, these machines are not suggested to dye loose fiber and tow because of material holder configuration. The introduction/extraction of carriers is realized by means of stainless steel trolleys which can be locked in front of the machine and have suitable guide-rails where material holders slides.



TRO machines do not need any foundation and all utilities connections can be placed on the top of the machine for an easier and faster installation and maintenance. Heat exchanger is outside the machine, tube/shell type and positioned on the main circulation circuit.



In a typical installation of TRO machines, most of them have the same diameter and use inter-changeable material holders. In this way, once selected the most suitable capacities for the customer, machines will be modular. For example, it is common to have installation with machines of 250-500-750 kg, respectively loading one, two or three carriers, all interchangeable between different machines.



All TRO machines are available with fully automatic lid opening/closing for integration in plants with robotized loading/downloading of the carriers. Carriers handling is normally performed with fixed rails positioned on the machines front line where all carriers can slide from a common parking position.



AMRE

Hank cabinet
dyeing machines

Main Features

Our cabinet dyeing machines are entirely realized in AISI 316 stainless steel, including the outer reinforcements and are suitable to dye yarn in hank form up to a temperature of 110°C. The high-thickness realization, along with continuous welding on reinforcements, ensures the longest life without leakages or structural problems which are typical on other cabinet machines on the market.



For general information on AMRE machines and options available, please refer to the pages from 4 to 7 of the present catalogue. In addition to the above, here below some information related to this product line:

Short liquor ratio: The geometry of the machine is engineered to reduce liquor ratio at the minimum. Air pad technology, compared to fully flooded one, also contributes in important water savings.

Circulation pump: Thanks to a bigger impeller diameter, it is possible to achieve the optimal flow keeping a low rotation speed with consequent less turbulence. In hank dyeing, the most common cause of problems is turbulence in circulation.



Cubotex has been among the first companies in the world to start manufacturing high-thickness cabinet machines. From the late 80s, structure of machines has been studied and re-engineered with 2 main purposes: **increase its strength and durability and grant the most delicate treatment for the yarns.** To preserve the crossing angle of the hanks means to increase **efficiency and productivity in hank-to-cone** department and this is a very important aspect for our customers.



Upper and lower grids with special perforations:

Hanks are positioned between two perforated grids that further reduce turbulence and uniformise the flow in the entire dyeing compartment.

Flow conveyors:

The pump housing and the machine dyeing chamber are equipped with flow conveyors to reduce turbulence and keep liquor flow parallel with the yarn.

Carriers and door configuration:

The construction shape of carriers allows to preserve the hanks loaded on the sides of the sticks, which is the most critical position for the possibility of entanglement.



Air pad: Cabinet machines working with 2 layers of hanks, can work with variable filling level. Simply using a standard carrier with a single layer, it is possible to perform half load in the machine **without the use of any dummy**. The filling level will be automatically adjusted at 10-15 cm above hanks. The air pad technology also allows to use the **same machine with different types of hanks having different circumference**.

According to hank reeling, material holder height will change and filling level will change accordingly.

Double compartment machines: To perform bigger lots, cabinet machines are realized with double compartment (two loading doors). In such machines, for further liquor ratio reduction, the rear circulation chamber has been removed with important volume saving compared to other products on the market.



Partial loading: In combination with air pad, it is also possible to partialize more the load capacity of any cabinet machine with customized dummy loaders.

A duly strengthened stainless steel box is welded in the rear portion of the carrier so that it is possible to load the required number of sticks without effecting the liquor ratio.

Heat exchanger: Realized with annealed tubes, it is placed inside the machine in the lower portion of the dyeing compartment. This is a technical solution which on the geometry of cabinet machines, helps to decrease the liquor ratio. Upon request, heat exchanger can be realized in **duplex stainless steel type SAF 2205 (1.4462)**.



Coupling option: All cabinet machines with same capacity can be coupled to achieve higher lot dimensions. It is possible to connect up to four machines and include additional mixing pumps for perfect uniformity.



Section of cabinet machine with rear circulation circuit. All machines with two hank layers work with variable filling level for half load.

Standard dye poles lengths:
 200-300-500-600-1000 mm.

If required, different dimensions can be supplied especially for small capacity machines or for integration in existing plants.

The dye poles head is closed on 4 sides to avoid possibility of yarn entanglement and the pitch between the poles can be realized with any dimension upon customer request.

Easy installation: Machines are engineered to be **installed at floor level**, without any requirement of foundation.

Machines capacity: The range of capacities varies from 2 to 420 kg. The load of a cabinet machine, may vary significantly depending upon the type of yarn and the hank configuration. The dimension of stick head (pitch among the sticks) can be realized with any different size and in case of bulky material, it is possible to load up to 8 kg per each stick.



Sampling device: Our hank dyeing machines are equipped with internal sampling device which allows the positioning of the sample directly inside the dyeing compartment. With machine in running condition, the sample can be extracted in total safety and it will perfectly reflect the shade of all the rest of the material.





MBR

Spray dyeing
machines
for hanks

Main Features

The main purpose of treating yarns in spray dyeing machines is to apply the lowest possible stress on the material, with the most delicate treatment. This is the main focus of all our MBR machines, produced in atmospheric and pressure version (110°C) .

For general information on MBR machines and options available, please **refer to the pages form 4 to 7 of the present catalogue.**



Some additional features of the MBR machines are hereunder exposed:

Circulation pump: The pump is widely over dimensioned to allow a reduction of the rotation speed of the impeller and consequently less turbulence in the circulation.

The characteristic curve of the pump of each different machine, combines the required **flow with the lowest possible pressure.**

The positioning of the pump and the wide suction connection duct, allows a very low bath speed and permits to work with the lower possible volume of liquor avoiding pump cavitation.

Circulation circuit: The piping configuration between pump and arms, is realized to reduce at the minimum the speed of water which again reduces turbulence prior to the liquor distribution among the arms.

Pump flow regulation: The machine can be equipped with flow meter placed on the main circulation circuit. In this way it will be possible to set the desired pump flow according to the yarn and loading conditions of the machine (reduced loads are possible on all MBR machines).

Variable filling level: Filling level is controlled by liter counter and consequently it is possible to set any desired liquor ratio in different loading conditions.



Rotating arms: Realized in triangular shape, to permit hank rotation without an eccentric rotating part which might create additional friction on the yarn. Perfect mechanical polishing on the entire surface + final electro polishing.

The combination of these treatments allows a final superior grade of finishing for a further reduction of friction.

Rotation system: Each arm is equipped with individual self-breaking motor. This feature is very important since in case of motor failure, only one arm will stop and the rest of the arms will continue to work properly without necessity to stop the entire machine.

Heat exchanger: The machine can be supplied with internal coil or external shell and tube heat exchanger. Both versions are available.

Preparation tank: The preparation tank is placed on the top of the machine to shorten cycle time using pre-heated water. There is no additional space requirement for the tank since it can fit entirely in the upper part of the machine keeping the same footprint.

Liquor ratio: The machine body and pump have been engineered to minimize NPSH value. In this way, the pump can run without cavitation with the minimum possible level of water.



Machine opening: It has been given particular attention to the machine opening door which has to allow a comfortable loading/downloading of the material.

Loading/downloading: The machines can be equipped with **extractable sliding arms**, so that the material handling can be comfortable and easy once the arms are extracted on their supports. If required, it is available the option to load/download the arms **with the use of trolleys** keeping a double set or arms per each machine.

Coupling connection: Two or more MBR machines can be connected to increase load flexibility and realize bigger dyelots.



Arms sealing system: The use of extractable arms requires to have a practical and long lasting sealing system on the arm seat. Leakage in this position will create abrasion on the yarn due to excess of water and unproper circulation throughout the arm itself. Our MBR machines are equipped with a special double set of rotating auto lubricating seals which allow long lasting performance and easy maintenance.



All MBR machines can work with partial loading by means of arms without holes to be positioned where material is not loaded. Special harms with half perforation can also be provided for further load partialization.

The positioning of these arms takes is very simple and requires a couple of minutes.



STV

Thermo fixing
machines

Main Features

STV machines can be used for the treatment of any kind of textile product. The material holders can be supplied in any different configuration according to the articles to be processed.

Models available in atmospheric and HT version up to a temperature of 140°C. If required, **pressure vessel for higher temperatures can be supplied upon request.**



Machine opening: Semi-automatic or fully automatic. Machines can be supplied with one front door or with front + rear lid in case of automatic loading/downloading.

Vacuum pump: High efficiency to reach the highest level of vacuum in the shortest possible time. Upon request, supplied with stainless steel rotor to avoid damages coming from eventual cavitation. If required, can be supplied with acoustic **insulation system** to reduce the level of noise.

With a wide combination of diameters and lengths, almost every capacity is covered, from laboratory to production: From a **minimum diameter of 400 mm up to a maximum of 2200 mm**.

Machine construction: Completely realized in AISI 304 stainless steel including the external thermal insulation covering. Upon request, the machines can be supplied in SAF 2205 (1.4462) or in AISI 316/316L (1.4404).



Steam distribution: The uniformity of treatment inside the vessel is granted by a special distribution system of the steam combined with the installation of a ventilation unit in the rear portion of the machine.

Steam injection: Can be direct steam injection from factory line and/or by means of internal coil for saturated steam generation in vacuum conditions. The internal coil is placed between the sliding guides of the material holders and completely covered with a perforated grid.



Material holders: Different types of material holders are available according to the different articles to be treated. Here below some examples.





PDM AMRE

Pantyhose,
muff dyeing
machines

Main Features

PDM machines, along with AMRE machines equipped with drawers and shelves, are nowadays installed in the biggest pantyhose factories worldwide.

For general information on our pantyhose dyeing machines and options available, please **refer to the pages from 4 to 7 of the present catalogue**. Some additional specific features are hereunder exposed.

Static dyeing machines in pantyhose dyeing, ensure a higher quality compared to drum dyeing due to the simple fact that material is not moving inside the machine (or is moving within a very small space).

Static dyeing is the most common technology for pantyhose dyeing in Italy and has completely replaced the old drum dyeing technology (which can be applied -with some limitations) only on heave denier material. Among italian companies where static pantyhose dyeing is performed, Cubotex has nearly 90% of market share with the 2 models here after exposed.

PDM Main Features

Machine purpose: PDM machines are the most efficient system for dyeing light pantyhose (average up to 40 denier).

Moreover, in case of **muff dyeing** (any count), when particularly high parameters of elasticity and mechanical characteristics are required, generally speaking the treatment in PDM machines has shown better results compared to the same material processed in a bobbin dyeing machine.



Circulation: PDM machines are equipped with axial pump, the same used on cabinet machines and the circulation of the liquor is the same. The flow is crossing the material **from top to bottom and vice-versa** and not from inside to outside.

In addition to that, the flow is definitely higher compared to a centrifugal pump of the same size but the pressure head is much lower and permits a very delicate treatment on the articles.

Liquor ratio: in light denier pantyhose, the liquor ratio on PDM machines compared to cabinet machines is approximately 30 to 45% less (depending on machine size). In comparison with drum machines, water saving may also reach 50% since the material loading density in a drum machine with rotating basket has to be definitely lower compared to PDM system.

Material holder: All the baskets of PDM machines are suitable to be **directly introduced inside a hydro extractor** with important labor saving.

Installation: All PDM machines are suitable for floor installation, there is no requirement of any foundation work.

Machines capacity: All machines can be equipped with special baskets for load reduction up to 50% and adjustable filling level. Standard capacities of 25-50-100-200 kg are available.

AMRE Main Features Pantyhose Dyeing

Machine purpose: AMRE machines can be used to dye any kind of pantyhose, from very light material till medical stockings.

Material holders: Every material holder can be equipped with drawers and shelves, according to the type of pantyhose to be dyed. Shelves are used for the light material loaded in bigger bags, drawers are used for the heavy material generally packed in smaller bags.



Material preparation: Microfiber heavy articles are loaded into drawers after a pre-boarding operation. Light denier pantyhose are loaded in shelves (or drawers) without any pre-boarding. Machines are all equipped with double set of drawers and carriers + double set of trolleys for material holders transportation.



Drawers configuration: According to the articles to be dyed, machines can be equipped with drawers of different height according to customer preference.

Machines capacity: AMRE machines are available from laboratory capacity (2-3 kg) till big production capacity (max. 220 kg). There are 5 different drawer dimensions and each dimension can be combined with 3 different machines heights: In such way, it is possible to cover ANY capacity requirement with a range of machines which includes **15 different models**.



Focus on Medical Stockings:

For the producers of medical stockings, some articles can only be dyed in static machines to reach the highest quality results. For some of these articles, it is indispensable to avoid folding the material inside the drawer.

For this specific purpose, we offer a special line of machines with extra-long drawers that permit to load even the bigger size stocking without any folding.

Medical stockings small production lots: In this field it is very common to receive small orders from 5 to 25-30 kg for which a standard cabinet machine would not be suitable because of the small dimension of the drawers (typically 500x500 mm on these sizes).

For this purpose, we have a dedicated line of machines which can be realized upon request with **any number and size of drawers**. Here above an example of machine with a single drawer with suitable dimension for loading medical stockings without the articles folding (capacity 7-10 kg).





B72

Belt dryers
for loose fibre
and tow

ALEA

BY CUBOTEX | TEXTILE DRYERS

Since 2020 Cubotex has acquired “Alea” brand and know-how for the production of hank dryers with automatic squeezer and belt dryers under the brand of “Alea by Cubotex”.

The company Alea, founded in 1881, has transferred to Cubotex 145 years of know-how in textile dryers design and production having thousands of machines installed worldwide developed along with customers throughout the years.

Cubotex has partially acquired the product portfolio of Alea for those machines related to yarn, fibre and tow dyeing.

Main Features

The belt dryer model B72 is produced in more **than 40 different versions** combining machine belt width and number of drying bays. The machine is modular and drying chambers can be easily added in case of higher production requirements.

Machine purpose: The B72 dryer was originally designed to replace the traditional drum dryers for loose fiber due to very high power consumption. After a few years, with some modification, the machine has been successfully designed for processing tow, nonwovens, and wool carbonizing.

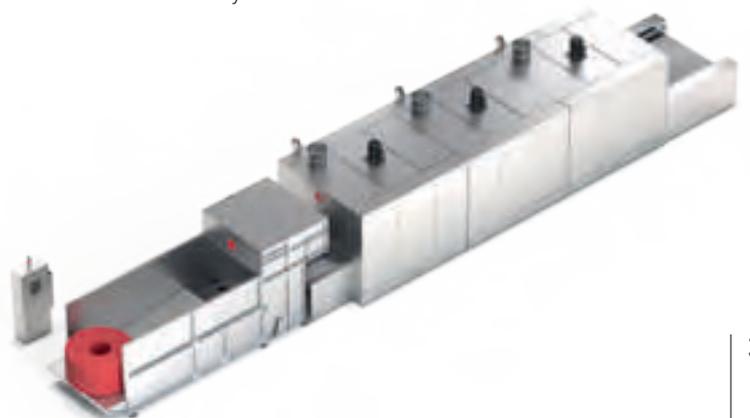
Conveyor belt: Varies from 1200 mm up to 3000 and upon request any different dimension is available. Belt width varies can be realized in different materials, from perforated stainless steel to kevlar or any other technical textile material with customized mesh.

Heating system: Radiators can be realized in different materials and the heating medium can be steam, thermal oil or superheated water. The machine can also be equipped with gas burners with any specific certification. Radiators are protected by high surface filters with stainless steel mesh easily accessible for cleaning purpose.



Air circulation: By means of Alea design centrifugal fans. The air distribution is perfectly uniform on the entire width of the conveyor thanks to an upper perforated grid and to the circulation circuit. The air, after crossing the fibre, is symmetrically recirculated in the machine through two side channels and partially discharged along with moisture. Due to this recirculation, there is a slight depression on the conveyor belt surface which ensures fibre stability on the belt in spite of high ventilation. All motors are inverter controlled to optimize machine consumption and adjust the ventilation according to the material in process and material thickness on the belt. The perfect air distribution and fine regulation allows to have uniform drying up to any required residual moisture rate.

Machine feeding systems: The uniform distribution of the material in process on the belt is one of the most important aspects to obtain a uniform drying. In view of the above, according to the material to be processed, the machine can be equipped with different systems.



Fibre drying: The cake opener can be adapted to any different belt width. It can be manufactured with all the parts in contact with the fibre in stainless steel and can be equipped with an automatic tilting platform for positioning the cake on the machine inlet. In case of high productions, before the spiked belt at the inlet, the opener is equipped with cake pre-braking system and/or with intermediate fibre openers positioned among the drying bays.

Humidity control: Fibre drying machines can be equipped with humidity sensors at the exit of the last drying bay. According to customer requirement, machine parameters will be automatically adjusted to achieve and maintain the humidity set point.



Tow drying: In case of tow drying, the machine is equipped with tow the following equipments:

Detwisting platform: It allows a perfect tow feeding to the machine with the proper tension and opening. With our system, the cake can be positioned on the platform by means of forklift or transpallet, it is not required to use and keep the crane busy for cake handling.

| Machine model | Machine length (mm) | Machine length with fibre opener (mm) |
|---------------|---------------------|---------------------------------------|
| B72-1 | 5800 | 10300 |
| B72-2 | 9050 | 13550 |
| B72-3 | 12300 | 16800 |
| B72-4 | 15550 | 20050 |
| B72-5 | 18800 | 23300 |
| B72-6 | 22050 | 26550 |

Tow finishing application: This is one of the most important phases in tow production because the tow to tops efficiency mainly depends on this production phase. We have developed along with one of our customers a special system with rollers that allows the highest efficiency in tow to tops operations.

Tow plaiter: After finishing application, machine inlet is equipped with a system for the perfect tow distribution on the conveyor dryer belt.

Leviathan washed wool: The dryer B72 has been installed in many wool washing and combing factories worldwide. In some installations, the machine configuration has been made with intermediate fibre openers-feeders so that this process is made on partially dried wool avoiding any damage to the fibre.



Machine exit: The tow dryer is completed with a cooling system after the last drying bay and with another tow plaiter system for the distribution of tow into the trolleys or into the pressing box.

Nonwovens processing: In case of nonwovens drying, the machine inlet can be equipped with different customized systems according to the process line where the machine needs to be integrated.

Machine controller: The new generation of dryers has been completed with a new automation system where the machine consumption data can be stored and transferred to any other software via OPCUA protocol or MQTT for cloud-based applications. In combination with our **Cubotex Energy Management System**, it is possible to analyze the steam and electricity consumption of the machine in real time and analyze all data per each production lot, customer, period of time etc.



MNC

Hank dryers
with automatic
squeezer

Main features

The hank dryer with automatic squeezer model MNC is suitable to process any type of yarn in hank form with great labor saving and quality improvement thanks to the water extractoin without centrifugation of the hanks.



The machine is modular and produced in two different lengths of drying bays, 3250 or 6500 mm. The number and length of bays can be combined at customers' preference to achieve the daily production requirement.

The installation of additional drying bays can easily be performed in different steps moving forward the exit section of the machine and adding the required bays.

All the covering panels of the drying chambers are realized with high thickness insulation to minimize thermal energy loss.

Automatic squeezer: The first automatic squeezer was produced by Alea in 1981. Nowadays, after 45 years of experience and feedback from Alea customers worldwide, the new generation of squeezers represents a high competitive solution in terms of cost-benefits of the machine. The squeezer is made to receive the hanks directly on dye poles of the cabinet dyeing machines and permits great labor-saving avoiding centrifugation of the hanks.



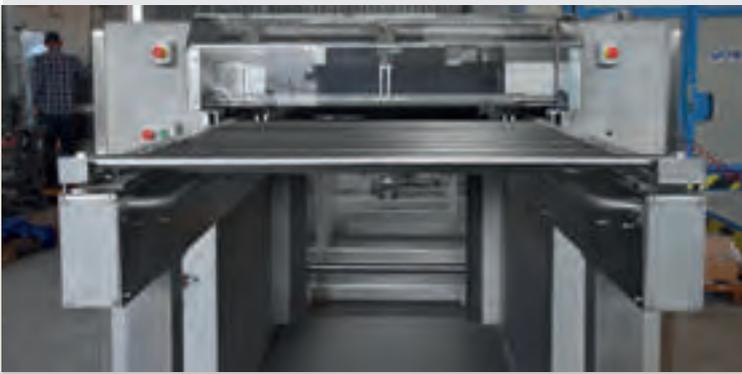
This advantage is indispensable not only for reduction of processing cost but also for hanks and yarns where centrifugation creates problems at the crossing angle of the hanks with consequent lower efficiency in hank to cone operations. The use of an automatic squeezer permits a much better preservation of the hank and an improved quality reducing the yarn breakings in hank to cone operations.

The squeezing pressure is adjustable so that even coarser counts can be processed preserving the roundness of the yarn. Here below the picture of one of the latest machines delivered where we have realized the first and only hank squeezer in the world completely realized in stainless steel.

Pre-drying section: After squeezing operation, hanks on dye poles automatically move to the first pre-drying section where air temperature can be adjusted on the higher side since the humidity content of the yarn is still high and there is no risk to damage the material.

Revolving device: At the exit of the pre-drying section, the machine is equipped with an automatic revolving device where the dye poles are used to rotate the hanks positioning the small non-squeezed portion of the hank on the upper side.

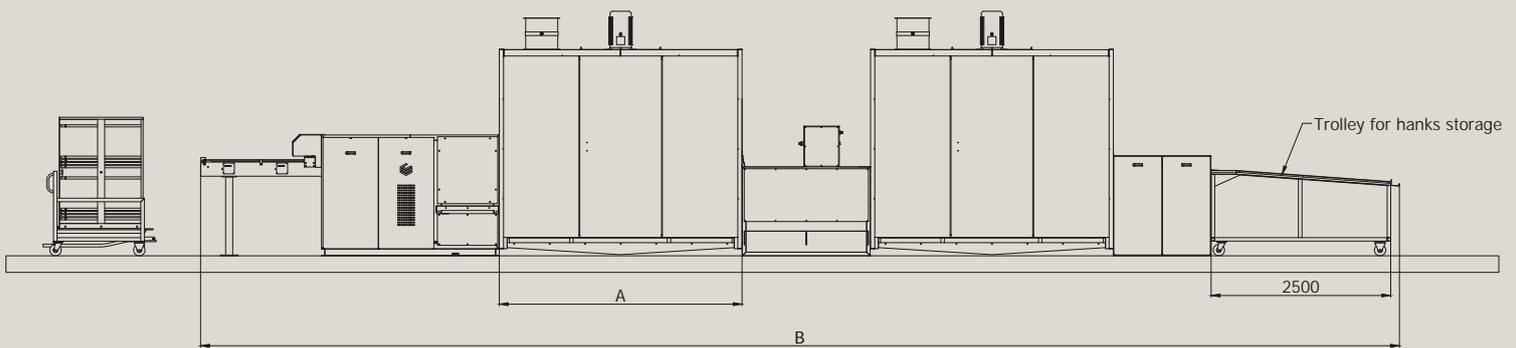
Machine exit: The machine exit is equipped with a removable trolley (dimensions and capacity at customers' preference) where the hanks are automatically delivered and stored. When the trolley is full, can easily be replaced with another trolley without stopping the dryer.



Final drying section: After the revolving device, the hanks enter into the final drying section where the temperature is generally lower and there is a perfect uniformization of humidity on the hank including the non-squeezed portion which is now directly exposed to ventilation.

Air circulation and heating system: The air circulation and heating systems are the same applied (of course sized accordingly) on the B72 dryer. For reference, please see paragraph on page 33.

| Machine model | A (mm) chamber lenght | B (mm) Machine lenght |
|---------------|--------------------------|--------------------------|
| MNC 20RR | 3250 | 16800 |
| MNC 20 R | 6500 | 20050 |
| MNC 20 | 3250-6500 | 23300 |
| MNC 30 | 6500 | 26550 |
| MNC 40 | 6500 | 33050 |



Machine controller: Automation system and data storage for MNC dryer is the same platform used for B72. For reference, please see paragraph on page 35.





Sampling

Laboratory
dyeing machines



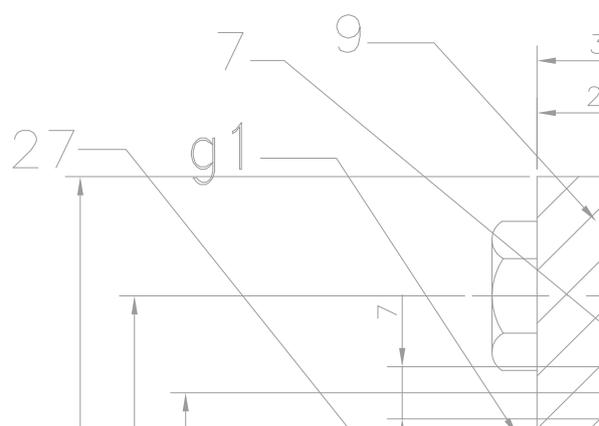
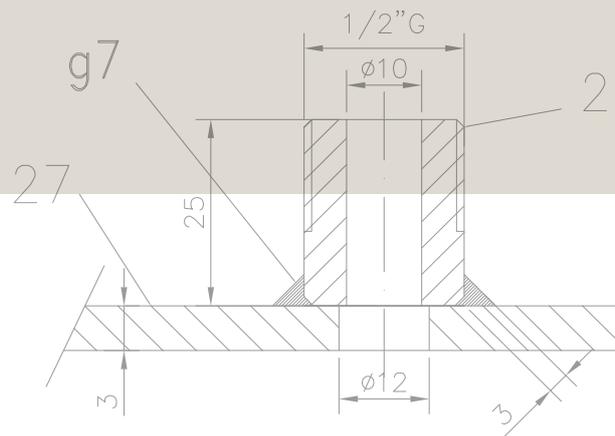
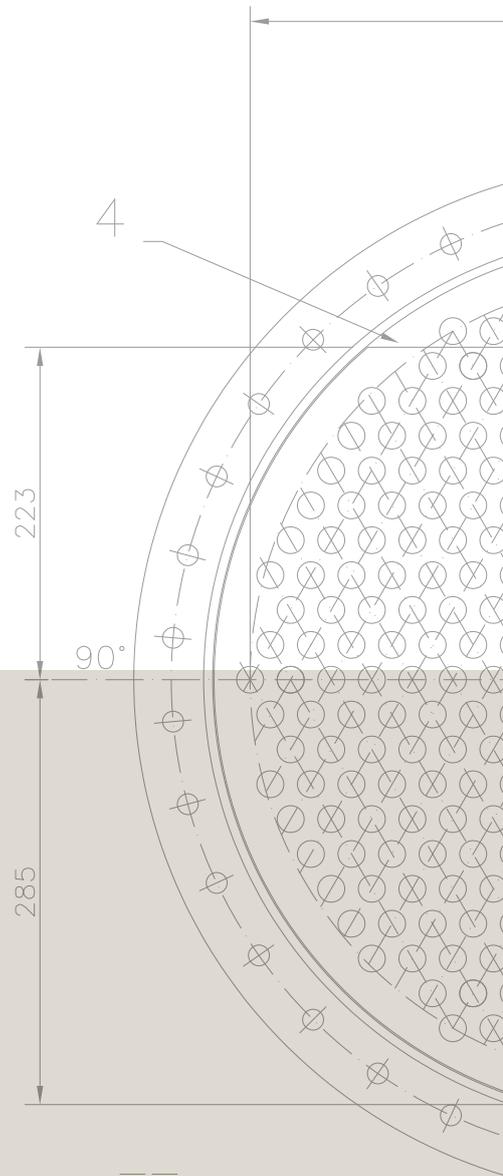
The entire product line showed on this catalogue, includes, for all models, the production of sampling and laboratory size machines. Although we have a standard production range of laboratory machines, we offer a complete machines customization service in terms of capacities and space requirement.



From bobbin dyeing to hank dyeing, from tops dyeing to steamers, all machines are realized in sampling version keeping in mind the **highest reproducibility from lab to bulk.**



Laboratory machines are always equipped with same control systems and programmers of production machines to allow an easier use by the operators and the possibility to copy and paste programs without modifications.





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