

AIRO[®]



AVAILABLE IN SEVERAL VERSIONS
TWO OR FOUR CHANNELS
WASHING & DRYING OR DRYING ONLY

TREATMENT SPEED
UP TO 1000 METERS PER MINUTE

AIRO® UNIQUELY ORIGINAL

BIANCALANI AND AIRO®

In 1985 Biancalani introduced on the market the revolutionary AIRO®: an instrument that completely changed the way in which textile producers treat and finish their products, to the point that the textile industry adopted the term AIRO® to define this finishing process.

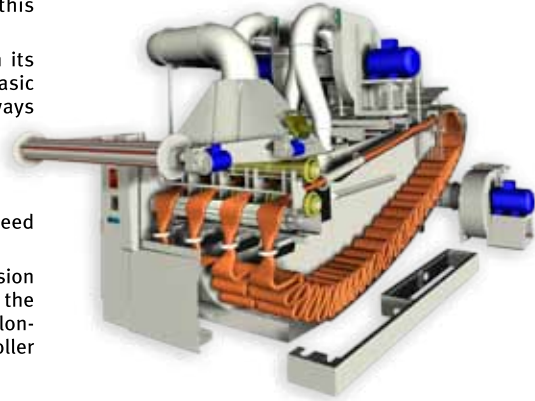
AIRO® improves the hand and look of the textile product with considerable effects on its quality, allowing an almost infinite number of finishing combinations, ranging from a basic drying and softening treatment to sophisticated wet processes with added chemicals, always within the full respect of environmental standards.

THE AIRO® PRINCIPLE

AIRO® is based on the combination of an air-only fabric transport system and the high-speed crashing of the material against a special grid.

The fabric, in rope form, is driven by an intense airflow and accelerated without any tension inside the processing tubes, then ejected against an impact grid positioned in the rear of the machine, where it discharges all the accumulated kinetic energy. After falling onto a Teflon-coated slide, the fabric flows to the front of the treatment vat, ready for being guided by a roller to the beginning of a new cycle.

AIRO® QUATTRO



AIR TRANSPORT SYSTEM

The exclusive air transport system keeps the fabric safe from any form of mechanical crease or abrasion and delivers a strong and delicate action at the same time, without any friction and with complete absence of defects also during the washing or squeezing process, as the fabric is continuously “massaged” by air inside the tubes and immediately opened at their exit. Moreover, the air enveloping the rope forces the water to deeply penetrate the fabric and saturates also the inner part of the fibers, preparing them for the strong mechanical action that will determine their optimal swelling, and largely improving the efficiency of the washing process.

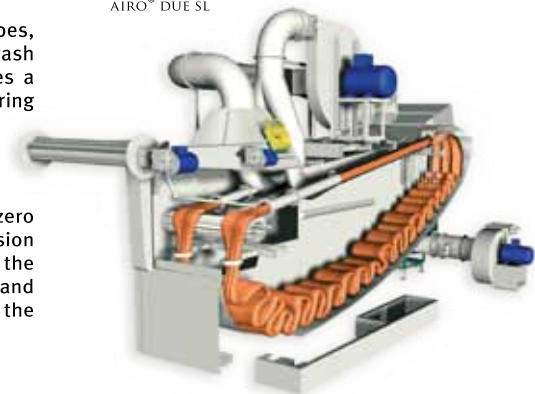
THE IMPACT GRID [1]

The fabric is completely opened by the airflow as soon as it is ejected from the tubes, preventing the formation of any kind of mark, and undergoes a strong and controlled crash against the impact grid. This contributes to release and expel the water and provides a mechanical and permanent effect of softening and natural compaction of the fibers, delivering what is universally known as AIRO® Hand.

EFFICIENT FILTERING, AUTOMATIC SELF-CLEANING [2-3]

All AIRO® versions are equipped with an efficient filtering system in order to guarantee zero level emissions and to allow for minimal maintenance times. The drying-only version (AIRO® SL) is supplied with an automatic self-cleaning disc filter with lint compactor, while the version with washing capabilities features a cyclone-based system with cascade filter and water recycling, and provides an automatic self-cleaning system that rapidly cleanses the whole interior of the machine, minimizing the need for human intervention.

AIRO® DUE SL



WASHING, SPECIAL TREATMENTS, ENZYMES, FIBRILLATION AND DEFIBRILLATION

Thanks to a sophisticated hydraulic system, equipped with a pump of introduction and re-circulation, with bath filtering, direct and indirect heating, chemical tank with mixer, and optional pH-meter, in combination with the air action, all types of wet treatment are performed with great results. AIRO® is the only machine able to carry out fibrillation and defibrillation of light and heavy fabrics either woven or knitted of Lyocell and Tencel in absolute absence of defects, thanks to the particular air transport system and to the design of the ejector tubes. Defibrillation is carried out perfectly due to the exclusive mechanical action of beating that guarantees the complete removal of pilling.

STEAM TREATMENTS

Multipoint steam injection ensures an intensive and uniform steaming, allowing to achieve excellent dimensional stability of woven and knitted fabric and to obtain perfect results (lamb skin) on polar fleece. A first set of nozzles injects the steam at the entrance of the treatment tubes, where it is pushed by the air to penetrate deeply through the fibers, creating an intense massaging effect. A second set of nozzles acts upon the fabric at the point where it's opened (at the exit of the tubes and right before the contact with the grid) and helps to maintain the optimal steam concentration inside the machine.



RECIPE MANAGEMENT SYSTEM AND REAL-TIME MONITORING

Every parameter in AIRO® is managed by a PLC, and controlled through a touch screen with a specifically designed user interface, simple and easy to use.

Programming the various parameters (temperature, air capacity, speed, water inlet, chemicals inlet, steam supply...) allows the users to define and store into recipes their personal standards, and ensures complete repeatability. A constant functional monitoring and an in-line help system permit the rapid identification of any area in need of intervention.

PRODUCTIVITY AND ECONOMY

Efficient management of air flows ensures a high evaporation capacity and clean operation, while the specific design of the ejectors allows to reach extremely fast treatment speeds (up to 1000 m/min) for effective grid crashing. This way the desired result can be reached in a shorter time, minimizing specific consumptions and treatment cost, and increasing the production capacity.

As an example, in a single day, one AIRO® Quattro can soften more than 15.000 meters of chenille upholstery fabric, or easily process 10 tons of polar fleece for lamb skin effect. The availability of four and two channel versions, the inverter-controlled motors, the possibility to work also with a single channel and the overall efficiency of the machine, allow AIRO® to flexibly meet the needs of each and every user, always delivering quality, in a cost-effective way.



PERFORMING EXCELLENCE

AIRO® can perform an incredible variety of treatments, ranging from processes that ennoble the textile material and increase the competitive value on the market by enhancing its intrinsic qualities, to unique and trendsetting fashion effects that – by creatively modifying the appearance and touch of the fabric – will allow designers, weavers, and finishers, to profitably explore new marketing opportunities.

MATERIALS AND FABRIC CONSTRUCTIONS

A very wide range of materials are suitable for AIRO® treatment. The flexibility of its functions allow this machine to adapt to any type of product: natural fibers (cotton, linen, ramie, jute, silk, wool, and blends), artificial fibers (viscose, cupro, polynosic, polyamide, Tencel, Lyocell, Modal), synthetic fibers (PES, nylon, acrylic, PP, PU, PVC) in all types of construction such as woven, knitted, flock and non-woven, with different application: apparel, upholstery, technical textiles, synthetic leather. No limits in weight and width. Results are obtained in complete safety and absence of defects.

CUSTOM TECHNICAL AND FASHION SOLUTIONS

The AIRO® Hand club is the technological division of Biancalani that studies – with expertise and discretion – together with the customers, the process solutions which are most suitable to each type of material and treatment requirement.

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SOME TREATMENT SAMPLES

On all versions:

- MECHANICAL, CHEMICAL-FREE, SOFTENING OF DRY FABRIC, WITH OR WITHOUT STEAM APPLICATION
- AIRO® DRYING AND MECHANICAL SOFTENING OF WET FABRIC
- INTENSIVE STEAMING TREATMENTS
- POLYMERIZATION OF RESIN-TREATED FABRIC
- COMPACTION AND RELAX

Additionally, on AIRO® versions with washing capabilities:

- APPLICATION OF CHEMICALS (I.E. SOFTENER) BY EXHAUSTION
- WASHING
- ENZYME TREATMENTS
- FIBRILLATION AND DEFIBRILLATION
- BIO-POLISHING
- DESIZING
- BLEACHING
- MILLING
- RAPID SCOURING

THE RESULTS

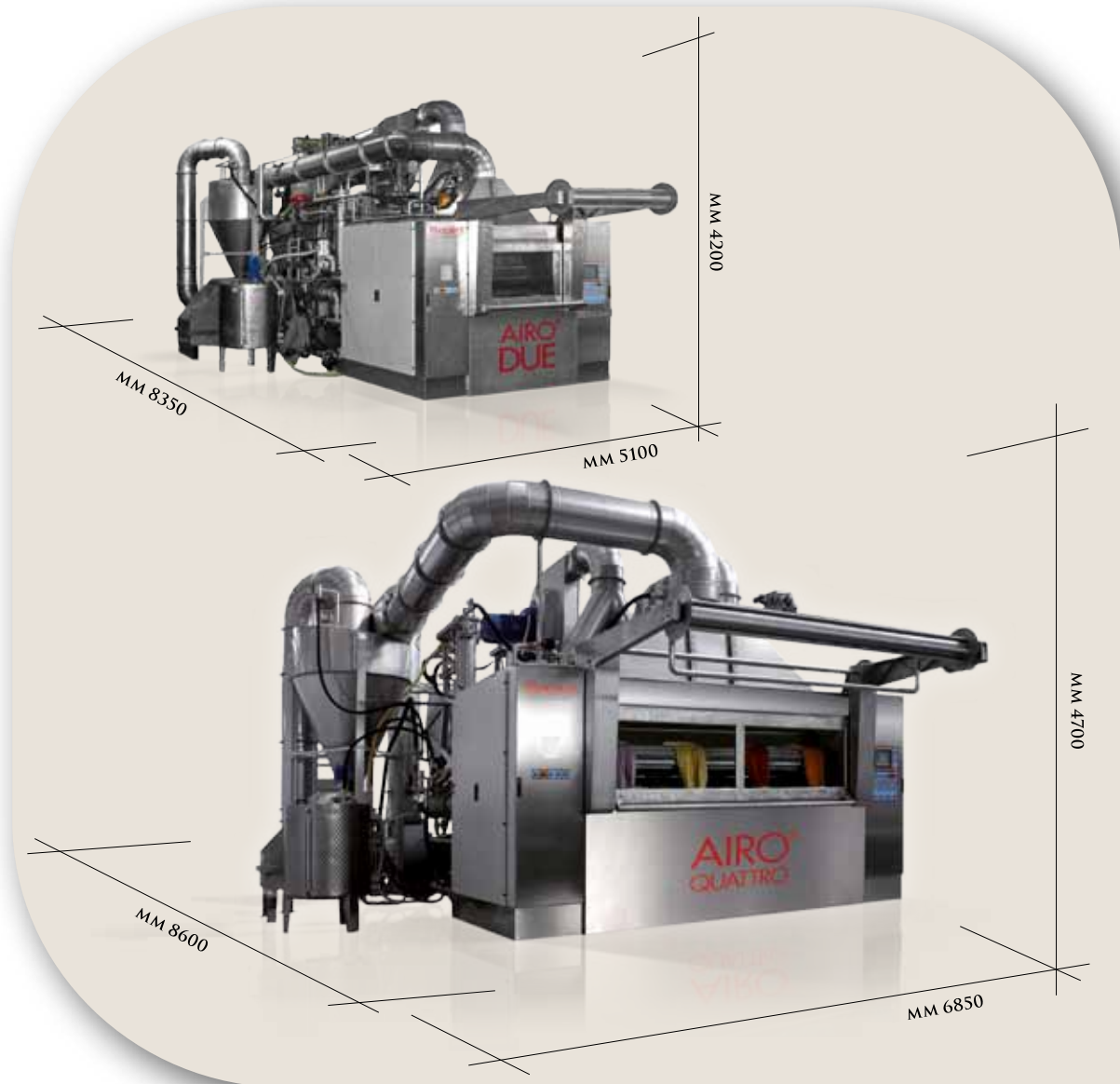
- SOFTNESS, VOLUME, DRAPE (AIRO® HAND)
- LAMB SKIN ON POLAR FLEECE
- INHIBITION OF PILLING FORMATION*
- OPENING OF THE CHENILLE; THREE-DIMENSIONALITY ON JACQUARDS
- SWELLING AND VOLUME ON VELVET, CORDUROY, AND PILE FABRIC IN GENERAL
- COMPACTION AND DIMENSIONAL STABILITY ON KNITTED AND STRETCH FABRICS
- DELAVÉ AND COLOR REDUCTION*
- TENCEL AND LYOCELL FIBRILLATION AND DEFIBRILLATION*
- RESILIENCE, CREASE-RESISTANCE (EASY CARE, NO-IRON)
- ENZYME WASHING OF SILK FABRIC*
- SENSE EFFECT ON CUPRO AND BLENDS*
- AIRO® HAND ON PARTICULARLY RIGID FABRIC OR COUPLED/LAMINATED MATERIALS
- WRINKLED EFFECT AND CASUAL LOOK
- ELASTICITY AND SEWABILITY
- SOFTNESS AND UNIFORMITY OF THE SURFACE ON PRINTED CLOTHS
- PEACHY HAND ON EMERIZED AND BRUSHED SURFACES
- GRAIN-ENHANCEMENT AND NATURAL/AGED LOOK ON SYNTHETIC LEATHER
- OPALESCENCE*
- PAPER HAND
- GUMMY HAND
- FROSTING EFFECT* ...and many others!

(*) only on AIRO® machines with washing capabilities.

AIRO® HAND LABEL CERTIFIES
THE ORIGINAL AIRO® EFFECT
OF THE FABRIC FINISHED
IN A BIANCALANI MACHINE.



AIRO® IN ALL DETAILS



TECHNICAL SPECIFICATIONS	AIRO DUE	AIRO DUE SL	AIRO QUATTRO	AIRO QUATTRO SL
NUMBER OF CHANNELS	2	2	4	4
DRYING & SOFTENING TREATMENTS	●	●	●	●
STEAM TREATMENTS (I.E. POLAR FLEECE)	●	●	●	●
WET TREATMENTS (I.E. ENZYME WASHING)	●	-	●	-
LOADING CAPACITY (ACCORDING TO TYPE OF FABRIC)	1.200 M	1.200 M	2.400 M	2.400 M
TREATMENT SPEED	30-1.000 M/MIN	30-1.000 M/MIN	30-1.000 M/MIN	30-1.000 M/MIN
MAXIMUM TREATMENT TEMPERATURE	150°C	150°C	150°C	150°C
- AIR HEATING WITH STEAM	170°C	170°C	170°C	170°C
- AIR HEATING WITH GAS OR DIATHERMIC OIL				
AVERAGE EVAPORATION CAPACITY	175 KG/H	175 KG/H	350 KG/H	350 KG/H
MAXIMUM WATER TEMPERATURE	70°C	-	70°C	-
MAXIMUM FILLING OF WATER IN THE VAT	2.500 L	-	5.000 L	-
TANK CAPACITY FOR CHEMICAL PRODUCTS	600 L	-	600 L	-
INSTALLED ELECTRICAL POWER	92 KW	72 KW	169 KW	141 KW
AVERAGE ELECTRICAL POWER ABSORPTION	40 KW	40 KW	75 KW	70 KW
INSTALLED THERMAL POWER FOR AIR HEATING	350.000 KCAL/H	350.000 KCAL/H	700.000 KCAL/H	700.000 KCAL/H
INSTALLED THERMAL POWER FOR WATER HEATING				
- INDIRECT	400.000 KCAL/H	-	650.000 KCAL/H	-
- DIRECT	50.000 KCAL/H	-	50.000 KCAL/H	-
MAXIMUM WIDTH	5.100 MM	3.950 MM	6.850 MM	5.500 MM
MAXIMUM LENGTH	8.350 MM	8.600 MM	8.600 MM	9.150 MM
MAXIMUM HEIGHT	4.200 MM	4.200 MM	4.700 MM	4.200 MM
WEIGHT	9.500 KG	7.500 KG	14.500 KG	12.500 KG

TECHNICAL DATA CAN BE CHANGED AT ANY TIME WITHOUT PRIOR NOTICE DUE TO PRODUCT MODIFICATION AND IMPROVEMENT.