

HI-TECH SOLUTIONS
FOR THE TEXTILE INDUSTRY



AURORA

Hank **mercerizing** machines for yarn

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Hank mercerizing machines for yarn

A simple and flexible electronic system equipped with strong and reliable mechanics to allow a fast set up of recipes, controlling all the parameters of the process in real time. It's Aurora, the best solution for all the customers who are entering into the "mercerizing world" for their first time and for skilled producers.

INTRODUCTION

The new Hanks Mercerizing Machine **Aurora** was born with the main purpose to provide an instrument able to obtain a high quality mercerized yarn for the market of valuable cotton yarn.

All tests effected on the different kind of yarns have shown that to obtain a good mercerized yarn it is not sufficient to know the "right" recipe but it is most important to keep under control all the process parameters and especially to guarantee the repeatability between a cycle and the next one.

This is the real point of strength of Aurora, this machine has been designed with an essential electronic system to permit the setting out of work cycles (recipes) in a flexible and fast way **controlling in real time** all the process parameters. It is equipped with simple but strong mechanics able to carry the heavy tensioner stress (up to 70 Tons) and the heavy pressing stress (up to 25 kg/cm) of the hanks under process.

Design

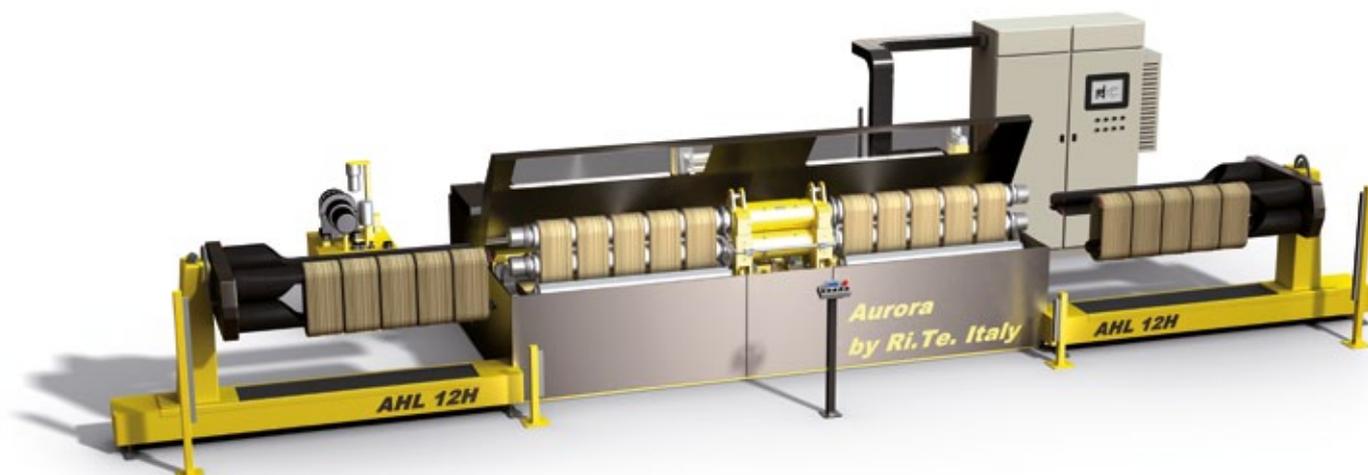
Aurora is the only one among the others equipped with hank holder rolls fixed to the extremities that uses a centralized device for draught at direct intervention (patented) that allows us to pass both the solution with more electronic synchronized axes (not much reliable) than more complex one with cams (with cycles not much flexible).

Aurora is the suitable machine for all the customers that are approaching the "mercerizing world" for the first time. Thanks to the basic recipes memorized on PLC it is possible to work the complete range of counts according to the technological cycles already fixed by manufacturer. For skilled customers Aurora is able to personalize and develop with the maximum flexibility (according to the functionality limits of the machine) all the mercerizing phases in order to meet customer requirements.

The Aurora hank mercerizing machine is divided into two parts which operate symmetrically, in each side there are two rolls where the hanks are loaded (by **AHL 12H - Automatic Hank Loading System**). The operator loads manually the hanks to be processed on to the blades of the loader (AHL 12H), which moves on the rolls and rotates the blades to deposit the hanks on the rolls. After that, the machine is ready for the real process.

The rolls are lowered and fitted on to four hooks, **a single cylinder** controlled by an oil pump moves the four hooks to stretch the hanks inside the tanks (full of a solution of caustic soda with a concentration of 30 Baumè at 20 °C of temperature) where the mercerization treatment takes place.





During this phase (about 300 sec), where the hanks are housed in the tank with a succession of traction and relaxation movements for a maximum traction power of 70 tons, the rolls continue to rotate in one direction and then in the opposite one. Two additional rolls are squeezing the hanks during the entire process, with a **max pressure 25 kg/cm** (to be set electronically for each cycle).

The mercerizing phase is followed by a washing phase, in three steps: the water in the first two steps has a temperature of 80 °C and on the third at room temperature (around 20 °C).

As before the process, the rolls move up from the hooks and now the hanks are ready to be unloaded by the automatic hank loading system or by the manual one.

HANK AUTOMATIC LOADING SYSTEM RITE MODEL AHL 12H

AHL 12H is an Hanks Automatic Loading System for loading/unloading of the hanks and it is put out to the service of Mercerizing machine Aurora.

AHL 12H works in synchronized way with the Mercerizing machine according to a working process optimized in order to complete the loading / unloading operation of the hanks in only 30 seconds.

Through AHL 12H the production of the Mercerizing machine can reach up to 130 kg/h that is equal to 35 - 40% more than during the manual phase of loading / unloading of the hanks.

The main feature of AHL 12H is the carefulness through that the hanks are moving during the operation of loading / unloading. AHL 12H means best quality of the hanks therefore less breakages risks during winding process so to determine the best final quality product.

Why does AHL 12H give hanks best quality? Because it is equipped with power loader for loading/unloading with special geometry with anti-adherent treatment that promotes the sliding of soaked hanks and a DMA (patented) system that during the loader rotation does not allow hanks to tangle.

ASP BOX: THE CAUSTIC SODA LYE PREPARATION AND RECYCLING FOR AURORA MERCERIZING MACHINE

The **Asp Box** is a device studied for the preparation and recycling of the caustic soda for mercerizing machine Aurora by RITE.

One Asp Box is able to supply two mercerizing machines Aurora. With Asp Box the preparation of the caustic soda for the mercerizing process is fully automatic, where the supply will be the standard caustic soda with a concentration of 48°-50° Boumè.

The customer has only to take care of :

- Suppling "sweet-water" to reduce the concentration of caustic soda from 48°-50° Boumè (from the market) till the required.
- Suppling "standard water " to the heater exchanger to cool the caustic soda. If the water has more than 15°C , it will be necessary to use an additional cooling device , provided by the customer.
- Preparing a site for the Asp Box 1.200 mm below the machine's level, to have the guarantee that the caustic soda moves from the machine to the Asp Box by natural fall.

The caustic soda preparation unit Asp Box by Rite has basically 5+1 functions :

- Circulation
- Cooling
- Filtration
- Dosing
- Concentration regulation
- DRS (exclusive of RITE)

DRS : DEVICE RECOVERING SODA

Only with our Asp Box and Aurora together, we have a full automatic procedure able to save around 15% of the caustic soda compare to the normal consumption.

It works thanks a sequence of operations adjustable by the operator in the main panel of Aurora. The washing cycle starts with hot water (80°C) and normally this water goes to the depuration facilities along with all the other waters. In our system, with the purpose to save soda, for the first 5-8 seconds, this water, where there is a high concentration of soda (around 8° Boumè), goes directly to the Asp Box. After this time, the remaining one, goes to the depuration facilities.



TECHNICAL DATA: AURORA

ELECTRICAL INSTALLED POWER	12 Kw 400 Vac	AVERAGE TIME OF THE CYCLE	330 sec (with automatic hank loading system AHL 12H)
ROTATION SPEED PF THE HANKS	20 mt/min (to be set electronically)	STRETCHING FORCE UP TO	70 tons
WATER CONSUMPTION	300 lt/cycle 1/3 room temperature 2/3 hot 80 °C	SQUEEZING PRESSURE UP TO	25 Kg/cm (to be set electronically for each cycle)
CAUSTIC SODA CONSUMPTION	380-400 grams per kg of yarn of NaOH at 100% at 30 Baumè 20 °C	MASS	11.000 Kg
NOMINAL FEELING SIZE	1.370 mm (54")	WORKING PARAMETERS CONTROL	By Monitor 15 inches with touch-screen and by Driven device with electronic view screen. Electronic air-condition cabinet
WORKABLE COUNTS	Up to Ne 220/2	ECF	Electronic control of the feeling with a positioning precision of +/- 0,2 mm
HANKS WEIGHT	0,250 - 1,2 Kg	ECS	Electronic control of loading unbalancing (patented)
MAXIMUM FEELING SIZE	1.500 mm	IDR	Hydraulic regenerative device for the reduction of electronic consumptions
STRETCHING ROLLERS DIAMETER	210 mm		
USEFUL STRETCHING ROLLER WIDTH	1.580 mm		
MAXIMUM LOADING CAPACITY/ CYCLE	12 Kg (12 hanks of 1 Kg)		
MAXIMUM PRODUCTION / HOUR	130 Kg/h (with automatic hank loading system AHL 12H)		

TECHNICAL DATA: AHL 12H

ELECTRICAL INSTALLED POWER	2 kw 400 Vac (per couple of hanks loading system)
NOMINAL REELING SIZE	1.370 mm (54")
WORKABLE COUNTS	Up to Ne 220/2
HANKS WEIGHT	0,250 - 1,2 Kg
MAXIMUM LOADING CAPACITY/ CYCLE	12 Kg (12 hanks of 1 Kg)
AVERAGE LOADING/UNLOADING PROCESS	30 sec
MASS	800 Kg (per single hanks loading system)
DMA	No - tangles (patented) system by shovel-arm rotation

TECHNICAL DATA: ASP BOX

ELECTRICAL INSTALLED POWER	3 kw 400 Vac 60-60 Hz
LYE PREPARATION CAPACITY	300 Lt/h (for two machines Aurora)
TANK CAPACITY	2.000 Lt
CONCENTRATION RANGE	26° - 34° Bè
TOLERANCE	+/- 0,5 Bè
WETTING AGENT TANK CAPACITY	80 Lt
WETTING DOSING RANGE	60 - 140 Ml/cycle
CAUSTIC SODA PUMP CAPACITY	150 Lt/min with pressure 2 bar
HEAT EXCHANGER CAPACITY	50.000 Kcal/h
SELF-CLEANING FILTER	0,3 mm
MASS	1.100 Kg
WORKING PARAMETERS CONTROL	By monitor 5,7 inches with touch-screen
DRS	Device Recovering Soda

LAYOUT

