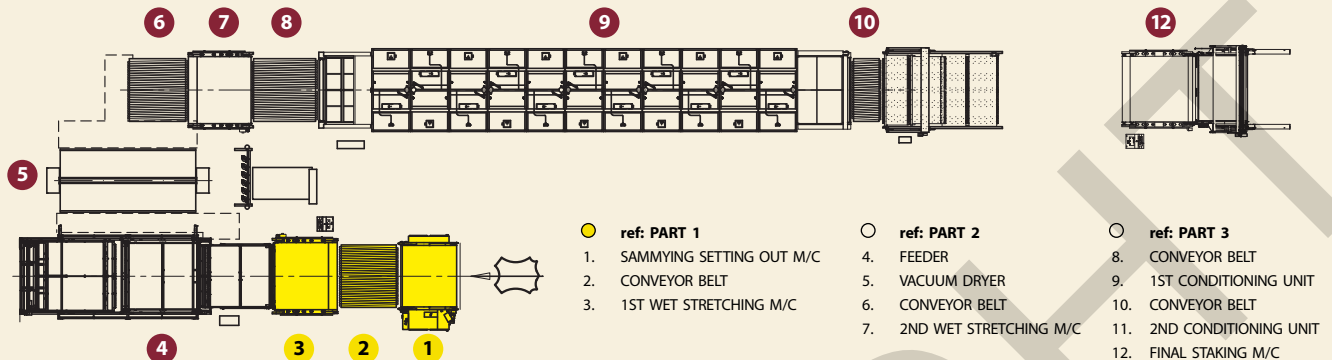


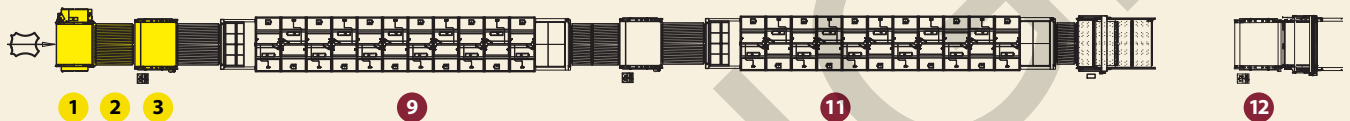


Panel 1: Versatility of the Cartigliano “Just in time” line: diagram shows two Cartigliano line configurations

(i) Complete Cartigliano Line with Vacuum Dryer and Conditioning unit



(ii) Complete Cartigliano Line with Double Conditioning unit



An overview emphasising the versatility of the Cartigliano “Just in Time” line was published in “World Leather”, August/September 2011. This article (Part 1) highlights the background to the samm/setting and the wet stretching processes. The feeder operation, vacuum drying and second wet stretching, will be highlighted in Part 2 in a subsequent issue of “World Leather”; Part 3 “Taic” conditioning, followed by the final staking phase, will be featured in a later issue.

1 Cartigliano – The ‘Just In Time’ line is an excellent example of innovative synching. This article focuses principally on the areas highlighted in yellow on the diagram in Panel 1. The cycle of the line commences with the feeding of the leather into an essentially classic throughfeed samm/setting machine. Leather coming wet from the retanning and dyeing drums is immersed in water in a tank placed directly behind the samm/setter operators who manually feed it immediately in the machine which is fitted with a spreading device to ensure wrinkle-free passage. Effective multiple roller type samm/setting opens, enlarges and flattens the leather, also releasing 50% of the free water contained in the leather. At the same time an exit device ensures that the leather reaches the band conveyor free of wrinkling together with a rotating brush, to ensure that the leather is released cleanly from the setting felts as it transfers to the conveyor leading to the next operation, i.e. the wet stretching machine. An important element is that the speed of the release brush is automatically photocell controlled at the transfer conveyor; if the leather is delayed in detaching from the samm/setter, the brush drive is signalled to increase brush rotation; it then reverts to normal speed when outfeed to the conveyor has stabilised.

It is largely due to the wet stretching process that the onerous slicking out operation is minimised at the later stage when the vacuum dryer is reached.

The samm/setter is able to handle up to 120 hides per hour necessary to satisfy the required overall line design output. It will be clear that at the subsequent vacuum drying feeding point the

process switches from a continuous throughfeed mode to a transfer where there is the need to handle leather pieces individually. Thanks to the feeder system a continuous flow solution is generated.

Anticipating what will be explained in Part 2 when the feeder is to be discussed, the feeder device has a magazine capacity used to overcome momentary interruption of the flow of leathers. It is also possible that the loading of the vacuum dryer may be temporarily interrupted or delayed when the feeder magazine will act as a temporary buffer station. As this is limited, the feeder/loading station has the facility to alert samm/setter operators to cease feeding and resume only when signalled by an indicator light.

The samm/setting and set leather now transfers to the conveyor system integral with the Just in Time line. Cartigliano, in thoroughly investigating the behaviour of leather in relation to mechanised transfer systems, aiming to keep the leather open, has addressed the problems of area losses and pleat formation. It has concluded that the leather fibre structure must not be allowed to relax in transfer nor that flatness is lost. Time, temperature and tension are the factors entering the equation.

Time between leaving one operation and starting the next one must be as short as feasible as fibres under tension will relax as soon as a given operation has ceased and temperature falls below the required level. Loss of tension will also cause fibres to shrink back. Therefore, apart from the obvious time element, the transfer conveyor developed needs to be designed to maintain tension. Firstly conveyor speed is increased



Machines in the Tannery: Innovators & Research

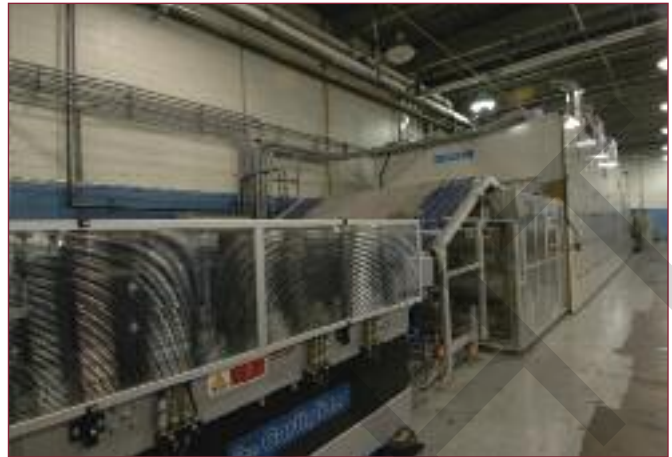
compared with that of the previous operation, in the case of samm/setting to wet stretching of the order of 9 to 10 per cent and secondly by spreading out the conveyor bands between entry of leather and its exit from a band centre. The conveyor in this manner plays an important role. The conveyor bands are in a non absorbent material which will not pick up colour that could be transferred on to other leathers.

The next step in the line will be the transfer of the leather to the wet stretching. Water content at this point will still be 50%, with the fibre structure effectively lubricated by the water and remaining flexible, thus being fully responsive to the treatment exposed by stretching action. The primary objective in this phase is to maximise the opening of the leather which in this process gains some 3% to 10% in yield. Wet stretching is superior in action, this system being innovative. The leather travels through a specially designed tool system, where the three head wet stretcher opens across all of its area evenly including the shanks, and ensures overall uniform substance. This latter aspect is vital to achieve consistent drying at the following vacuum drying. An important constituent of the stretching configuration is the ability to open the leather radially from the centre outwards, contrary to toggling where the stretch occurs principally at the periphery of the leather. The tools are made in stainless steel, avoiding any corrosion. Stretching pressure is PLC controlled, variable to suit various types of leather and its substance being processed. The leathers are now in an ideal elastic condition with the fibre structure ready to be thermally fixed, fully opened, flat and even in substance.

Any remaining need for manual spreading out on the vacuum dryer plate is eliminated.

No time loss is allowable at this stage so the leathers proceed via the automatic feeding equipment, without delay to the vacuum phase where fibre fixing now takes place. ☺

With reference to Panel 1, in this configuration below, operations 1, 2, 3 are followed by Cartigliano vacuum drying. This will be described in Part 2.



TAIC conditioning units often follow wet stretching in the Cartigliano Just in Time line. Courtesy of Midori Hokuyo.



Sheepskins throughfeed drying line composed of wet stretching, conditioning unit and staking machine. Capacity of this line: 1,380 skins per hour. Courtesy of Dongming Bright Leather.

Courtesy of Boxmark World Leather

