



NCT advances further towards the fully automated tannery

NCT Leather Limited, a member of the Scottish Leather Group, is a modern wet blue tannery located in the rolling Renfrewshire countryside to the west of Glasgow. NCT Leather's current output is sold both within the Scottish Leather Group and to external customers outside the group.

The factory is all under a single roof, and contains sixteen 3.5 x 3.5m beamhouse drums and fourteen 3.5 x 3.5m tanyard drums, all of conventional wooden construction, and arranged in four groups, each with a central concrete mezzanine platform. When NCT was first built, all hide movement between drums and process machines was by fork lift truck, using pallets for loading and drop bins for unloading. The cost of maintaining the fork lift truck fleet in the harsh tannery environment was high, and frequent damage to drums and structure was inevitable. In 2003, collaboration with Italian automation specialists Feltre of Chiampo (VI) saw the introduction of a fully automated system for loading and unloading the lime drums, and delivering the limed hides to the fleshers (see *World Leather* Vol. 17 No.1). Further Feltre automated handling has now been installed to link fleshers and wet splitter to loading of the tan drums, resulting in a continuous automated flow line from raw hide input through to tanning (*Figure 1*).

NCT's hide input is roughly 30% salted and 70% green, but all hides follow the same process path. They are tipped into a rotary drum desalter, which opens the hides out after being stacked on pallets. This discharges hides individually onto an



Figure 2: Hides are diverted off transport conveyor to drop into drum

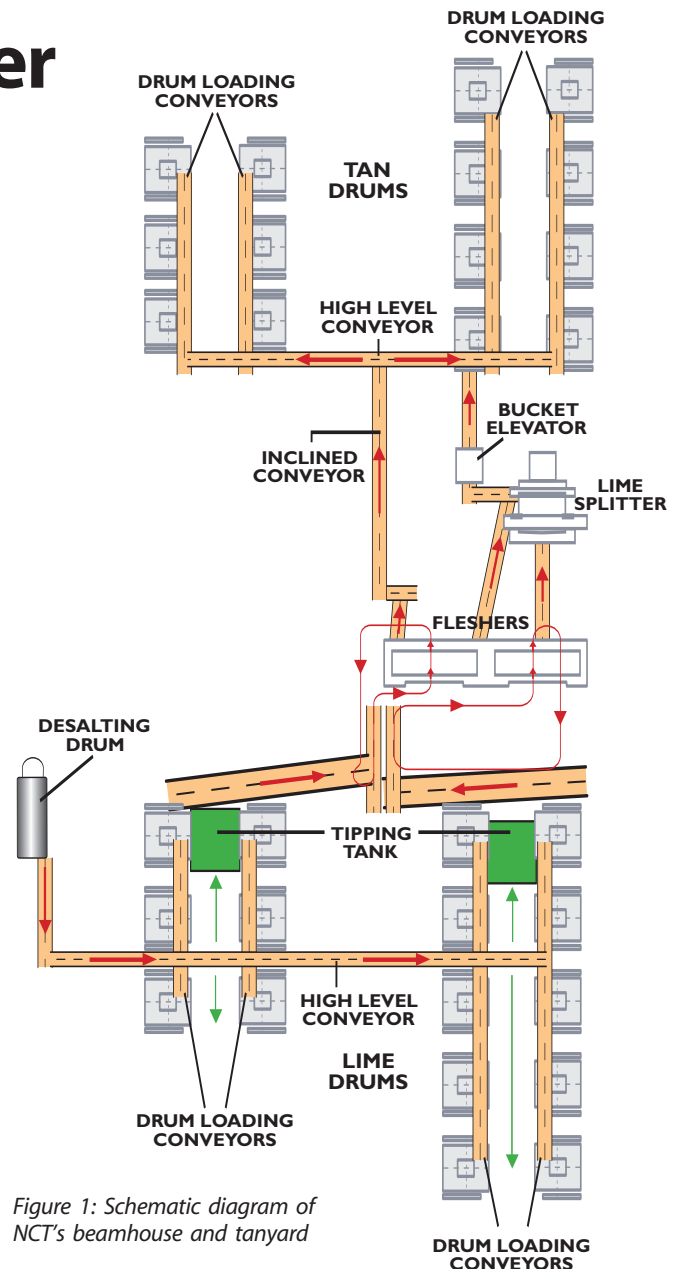


Figure 1: Schematic diagram of NCT's beamhouse and tanyard

inclined slatted-belt conveyor, which carries them up to just below roof level, and drops them onto a conveyor that straddles the two beamhouse mezzanine floors at high level. This conveyor has pneumatically operated diverter gates which can drop the hides onto any of the four drum loading conveyors which run above the lines of vessels. These in turn are also equipped with diverter gates at each drum (*Figure 2*), which divert the hides to drop into the open drum door when positioned at top dead centre. Using a floor level control panel near the desalter, the operator selects the lime drum to be loaded, and the diverter gates on the conveyors are automatically set to feed the selected vessel. Each lime drum is loaded with 6-7 tonnes of hides, which takes 30-40 minutes.

For the collection of limed hides after processing, a massive mobile bin is arranged running on rails beneath each mezzanine. When the drum to be emptied is selected from a control panel on the mezzanine floor, the collection bin moves into position adjacent to the drum; when the drum door is opened, the limed hides are directed by a chute into the bin, which can hold half a drum load. The transfer to the bin is watched by the operator ➤



NCT ADVANCES FURTHER TOWARDS THE FULLY AUTOMATED TANNERY



using a CCTV monitor linked to four cameras beneath the mezzanine. When full, it travels to the end of the row of drums and is tilted by a hydraulic ram, which discharges the hides onto a large belt conveyor to carry them to the transfer station (Figure 3). Here, an operator clips each hide to one of two overhead monorail chain conveyors, which carries them to either of two Persico throughfeed fleshing machines (Figure 4).

One flesher is linked by conveyor to a new Mosconi lime splitter (Figure 5). The grain splits are then transferred to a vertical bucket elevator, which deposits them onto a conveyor which feeds another conveyor straddling the two groups of tan drums—the elevator was necessary because restricted space precluded a long inclined conveyor (Figure 6). Flesh splits are manually trimmed and collected in boxes. These splits are normally tanned and sold for later processing within the Scottish Leather Group. The second flesher is normally used for full substance hides, which are carried up to the straddling conveyor by their own inclined conveyor. The straddling conveyor is reversible, and can feed hides to either of the two groups of tan drums, which, as the lime drums, have a delivery conveyor with diverters above each line of drums (Figure 7). The drum to be loaded is selected from a control cabinet at floor level, and conveyors and diverters are set accordingly. The inclined conveyors for the full substance hides incorporate a loadcell

Figure 3: Operator clipping hides onto monorail chain conveyor feeding flesher

Figure 4: Limed hides carried by chain conveyor to flesher

Figure 5: Throughfeed flesher linked to lime splitter – operators trimming flesh splits

Figure 6: Bucket elevator fed with grain splits from splitter on right

weighing station, where each hide is weighed; each drum is loaded by weight, and the weight of hide delivered to each drum is totalised and recorded. Drum loads for split hides are also governed by weight.

Normally, one group of tan drums is used for full substance and the other for splits, but the system is arranged so that each flesher and each group of drums can be used for full substance or for hides for splitting. There is provision for manually loading the bucket elevator to the tan drums, which is done if flesh splits are to be tanned in-house.

At present, tan drums are discharged in to drop bins which are moved by fork lift truck to sammying. Further extension of the automated handling will be possible in the future to replace this operation, with motorised drop bins beneath the tan drum mezzanines as has been done in the beamhouse. Feltre has also supplied NCT with a “Viewer” selection and grading unit, which is fed from a Baucé Bluestar throughfeed sammying machine,



Figure 7: Delivery conveyors with diverters run above tan drums



Figure 8: Operators stack folded hides from Feltre Viewer unit onto pallets

and is mounted above an automated hide folding unit. Folded hides are currently delivered to operators to manually stack onto pallets according to grade (Figure 8).

It is worth noting that, although the extensive introduction of automated handling in NCT has increased productivity and reduced manual handling, the principal benefits have been seen in avoiding the maintenance cost, damage to plant, and safety risks involved in operating large fork lift trucks on the tannery

floor. With over two-thirds of its transfer operations now automated, no doubt NCT may find that the law of diminishing returns will apply to further investment in automated handling. However, it will be interesting to see in the future just how far NCT will be able to take themselves towards the goal of a fully automated tannery. 🌐

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