



The company insists it's not only about milling drums, but that if anyone has the right to bring milling drum innovation to the market, it's Erretre.

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The machinery company that wants to bring space-age telemetry to tanneries

Chemistry is vital in producing leather on an industrial scale, but as it moves into its fifth decade in the business, Italian machinery manufacturer Erretre is determined to help tanners see the importance of physics too.

Italian tanning machinery manufacturer Erretre has said it is now ready to talk in public about a change in thinking it began to introduce to its business a number of years ago.

Speaking at an event to celebrate Erretre's fortieth anniversary at the company's headquarters in Arzignano in September, chief executive, Antonio Galiotto, said: "We are no longer looking at things from the point of view of what a machine can do. Instead, we want to think first about the processes tanners need to carry out and, working from there, to build machines that can help."

Most famous for its milling drums and for spray-finishing lines, Erretre aims to develop new products in future and, naturally, to gain market share if it can. It wants to use the knowledge and experience it has gained from working with tanners since 1974 to help tanners achieve better yield and greater consistency in their finished leather, without compromising on the volumes they need and want to produce. Processing two hides well is not the same as making leather to your customer's requirement from 2,000 hides, the machinery manufacturer points out.

What happens to hides

Antonio Galiotto says he agrees with comments suggesting that, following many decades of focus on leather chemistry, it is important for the industry to pay close attention also to the physics involved in producing leather. "This is exactly the case," he says. "The challenge is to explain it well and help everyone in the leather industry understand. There has not been enough analysis, and I mean in a scientific way, of what happens, particularly in finishing. We want to make this a truly industrial process."

Mr Galiotto says careful, detailed, science-based analysis of what happens to hides during the tanning process is the key. By way of an example, he says that better knowledge and control of the relative humidity inside a hide will allow tanners to improve the consistency of their finished leather.

"Leather needs heat to evaporate moisture and to allow the fatliquors tanners use to penetrate the fibres," his colleague Massimo Valente explains. "That heat can be self-generated, by



friction (because when hides inside the drum drop, they generate heat and friction), or supplied from the outside.” He points out that there is considerable variation in the length of time it can take for moisture to evaporate from the hides and for leather chemicals to penetrate properly, with the size of the load and the dimensions of the hides among the most obvious variables. Relative humidity and moisture levels are also variables, as is the amount of time it will take to reach the optimum temperature inside the milling drum. “Consistency is the challenge,” Mr Valente says. “We want to be able to help tanners produce the same quality all the time.”

Master of milling

New developments also include a new milling drum, a new version of its Ambra drum, with Mr Valente suggesting that, while Erretre is “not only about milling drums”, if anyone has the right to bring new milling drums to the international tanning industry, it’s Erretre, which has been producing these in stainless steel tanning machinery since the end of the 1970s; it painted many of its early products brown because it was hard for tanners to accept that a vessel made from anything other than wood could do the job. Mr Valente says of his chief executive: “Antonio is the master of milling; he’s practically the inventor of modern milling in the shape of the stainless steel milling drum, which is now the norm. And it’s important; milling is strongly related to what happens in the beamhouse.” This interesting comment prompts obvious questions about how milling can continue to be “strongly related” to what happens in the beamhouse if more and more tanners opt not to run their own beamhouses but bring in wet blue, wet white or crust instead.

Because of this, Antonio Galiotto jokes that most tanners nowadays “are not real tanners”, but makes the more serious point that the mentality of producing a material that will still look the same after ten years, which he says is American, and the mentality of making sure the material has a natural look, which he says is European, are now coming together as big buyers of leather demand the best of both worlds.

Erretre chief executive, Antonio Galiotto, explains the thinking behind the company’s latest developments.

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Understandable reaction

The answer, which the new model of Ambra milling drums provides, to inconsistency in moisture evaporation is to offer better control of friction and heat inside the drum by controlling airflow, concentrating on analysis of what is going on inside the drum and removing, as far as possible, the effect the variables can have on the end result. Erretre has developed a new method of hooking the milling drum up to a central system, which makes it possible to take a reading any time there is a change in the environment inside the machine. The company has spent years trying to annotate these changes in humidity and temperature, with its earliest manual records going back to 1996. “This was a starting point,” Massimo Valente says. “Now we have invented another system that takes into account all the parameters and understands the reactions of the machine. And it works remotely: we can understand what’s going on in a machine in China, South America or Arzignano. It’s very user-friendly; the management team can set all the parameters before anyone puts a load on.”

One obvious benefit from having better control of moisture is that drying operations in the tannery can become more efficient, Erretre says. It points out that bringing Fratelli Carlessi into the business as a division of Erretre helped a great deal in making advancements in drying systems. In 2009, Fratelli Carlessi was forced by the global economic crisis to “reinvent itself”, in the words of long-standing director, Giulio Tandura, in this way and, crucially, was able to do so by integrating itself into Erretre “without losing its 60-plus years of experience”. Fratelli Carlessi developed its first toggle-dryer, a machine for small skins, as long ago as 1955.

Cell culture

From this sharing of knowledge and ideas, a new Cell Rotaring Conditioning (CRC) system has now emerged, developed directly from detailed analysis of what really



happens when a hide dries. Mr Galiotto says in-depth examination of all types of drying systems for tanneries was part of this and that for each hide that went through tests in the CRC system, it took 200 different measurements. He explains that using separate cells or chambers inside the system, each with 20 toggle frames measuring 3.4 metres by 3 metres, means being able to treat batches of hides with different levels of humidity according to their needs. Each chamber has robotics inside and the technology will stick to what it is told to do and adapt as it needs to (see separate review of the CRC system in this section). Tanners trying out the system have reported increases of 10% in cutting yield, giving yields that are comparable to those achieved by tanners using vacuum dryers. Erretre says it has “nothing against vacuum dryers” and acknowledges that for certain articles, such as footwear uppers, vacuum dryers are often the best and sometimes the only option. But it insists that the new CRC will save many tanners time and energy because it can dry hides at lower temperatures (40°C as opposed to 70°C) and in less time (three hours as opposed to five), all because the moisture content is easier to control.

Early tests on wet white suggest it too can be dried effectively in the CRC system. Massimo Valente says he and his colleagues came to ask themselves quite quickly why it would not be possible to toggle-dry wet white under the same circumstances as the blue hides they had tested. “It came out too soft, too rounded,” he said, “instead of too hard, as usual. So we adjusted the parameters slightly and have had fantastic results.”

NASA in the tannery

Antonio Galiotto talks of being able to extend the concept of remote-control to other machines in the tannery through telemetry, or automated communications. And he talks of the difficulty in changing the mentality of some tanners; they have become used to the finishing in some hides in a batch being bad (because of moisture) and good in other hides in the same batch (because the moisture dried out better in some parts of the drum than others). “There is no need to accept this,” he insists. “The

Italian tanning machinery company Erretre has entered its fifth decade with the conviction that a new approach, putting tanners' needs first, can yield a rich harvest.

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new milling system has two very sensitive humidity probes, probes that even check on each other and tell you when it's time to change them. With this, and with the telemetry, we are allowing companies to bring NASA, National Aeronautics and Space Administration, to tanneries. It's something we have been developing for the last five years, probably analysing about one million hides in that time; it's been expensive, but the results are fantastic. We believe this is a new age for tanning.”



Analysis of what really goes on inside the drum is at the core of the latest Erretre innovation, a new version of its Ambra milling drum.

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