

114th Annual Convention of the American Leather Chemists Association

The 2018 American Leather Chemists Association's annual convention took place at the Eaglewood Resort in Illinois, June 19-22. This year, the John Arthur Wilson memorial lecture, which traditionally opens the event, was delivered by Jon Clark, chief executive of tanning group PrimeAsia. Entitled 'Leather: An Honest Material in a Confusing and Changing Environment', his talk offered a high-level overview of the leather industry, ranging from where it stands at the present moment to the long-term direction it should take.

A total of 12 other papers were presented during the two-day technical programme, with a focus mainly on wet-end processing. With current issues covered in detail, there was a comprehensive overview of matters developing within the global leather industry.

The subject matter included changes that have affected raw hides such as the phenomenon of 'fine hair', which has been attributed to cattle experiencing harsh winter conditions. In this situation fine hair is difficult to remove and remains after processing. This is not a new problem, but it still causes a drop in quality. The subject of bacterial contamination of hides was reviewed, too, in particular the use of environmentally friendly anti-microbial biocides in the spray wash during cattle processing.

To continue the theme of raw materials, a study was presented showing the positive results achieved by reducing the use of common salt as a preservative. During this research, brine solutions of 35% saturation were applied along with various preserving formulations, enabling hide preservation to be extended to more than 30 days. The quality of end leathers from these investigations was comparable with that of leathers created using traditional 95% saturated brine solutions.

Techniques to meet the challenges of sustainability in leather making was a dominant theme during the conference sessions. This included a detailed report based on surveys carried out at four Chinese tanneries, where advanced recycling for the processing of salted bovine hides to the wet blue state was discussed. This has been established in full-scale manufacturing for many years. Central to this technology are two closed-loop applications that result in zero wastewater from the unhairing/liming process and from the pickle/chrome tanning operations.

Using the advanced recycling technology developed by Chinese company Biosk Chemicals, more than 70,000 wet salted European and US bovine hides per week are being produced in the wet blue state for in-house use and sale. This approach results in a significant reduction in chemicals required during these two processing stages. Moreover, the whole approach to wastewater treatment is being rationalised and solid waste is being minimised.

Other studies presented at the ALCA convention included the application of new chemical agents that employ 'lock and key' mechanisms to stabilise the collagen structure and to

increase the shrinkage temperature. The resulting intermediates can then be processed conventionally, but the process avoids the acid/salt picking and basification stages of chrome tannage.

The focus on the pretanning phase continued with discussion of the use of a sulfonic acid derivative as an alternative to the conventional acid/salt pickle. In this study, the chemical and physical properties of the final leather were assessed and compared with values from systems using conventional acid/salt pickling processing. The area of retanning and fatliquoring was also reviewed with the objective of optimising the value of the raw materials, especially appropriate at times of falling raw material quality.

An important new study concerning the evaluation of the environmental footprint of leather was also presented. It was based on the findings of a joint project between COTANCE, the leather industry's representative body in the European Union, and several European partners, which aimed to establish product environmental footprint category rules (PEFCR) for leather. This information has been made public and is available for tanners to use to evaluate the environmental footprint of their products.

The challenges of raising standards and the performance of various leathers, including those for the automotive industry, were also addressed. In particular, the main challenge was deemed to be how to retain traditional leather characteristics while also meeting rising performance standards in the final leathers.

The subject of machine operations was discussed in two particular areas. The first was the simplification of the feed system for limed splitting. Accuracy and operative safety are imperative within this approach, with an innovative belt feed system employed to reduce the labour required and to produce high-quality lime splitting while reducing trimming waste. The feed system can be combined with through-feed lime fleshing, resulting in improved splitting accuracy and a work rate of 300-400 hides per hour.

In the second, drying methods and mechanisms were studied, with the emphasis on good control in order to produce predictable results. The keys to achieving the best results in this major stage of leather processing were a basic understanding of the physics of the leather structure, and precise control of temperature and relative humidity throughout the whole drying cycle. These conditions were fundamental in producing predictable grain characteristics for both plain and fine texture milling effects.

The role of education also received close attention, included as part of the John Arthur Wilson memorial lecture. There is an awareness that with the industry facing constant change, leather education must continually shift to meet new demands and to attract young people to the sector. In Illinois, it was stressed that more support is needed from tanners in particular and that educational institutions and the industry must work closely together in order to have a viable future. ☉