Biosk technology to reduce tannery wastewater discharge

A tannery wastewater recycling technology workshop took place at the Xinji leather cluster, Hebei Province, China, on July 8. Chinese tanneries have experienced tougher environment protection regulations since 2017. The meeting held in Xinji City was supported by the Chinese Leather Industry Association (CLIA) and hosted by the Xinji leather cluster zone management committee.

Experts and scholars from several well-known environmental protection technology enterprises, universities and scientific institutions together with local tanneries discussed the latest research and applications around tannery wastewater recycling technology.

Chen Zhanguang, Secretary General, CLIA, emphasised during the workshop that conventional tannery wastewater recycling technology faces two major difficulties. Firstly, the composition of tannery wastewater is very complicated, so quality issues can easily occur in later treatment phases. Secondly, wastewater recycling is prone to the generation of mal odours. The CLIA organised a group of experts to visit the site of the Huanghua Defu Leather Product, which has implemented wastewater recycling technology from Chinese company, Biosk. The technology has provided some positive results.

Tannery wastewater recycling workshop in Xinji

During the workshop, Professor Zhang Chuanbo and Prof. Li Wenxin from Shaanxi University of Science and Technology, Prof. Zhang Zongcai from Sichuan University and Prof. Jin Liqiang from Qilu Industrial University, compared the Biosk tannery wastewater recycling technology against conventional technology. They looked at the economic and environmental benefits, as well as how easy the system was to implement.

Results showed a stable and improved quality of finished leathers, an effluent load discharge reduction with remarkable environmental and economic benefits. There was a "zero-discharge" of chromium through effective management using the Biosk system.

Based on biotechnology developed from the pharmaceutical sector, the liming agent DO-PRO from Biosk softens and enlarges the cellular structure in the raw hide tissues, such as blood and lymph vessels and sweat glands, to facilitate a rapid penetration of the liming float through these cellular channels into the inner tissues of the raw hide. Hair degradation products (polypeptides or amino acids) together with calcium forms an amino acid chelate to increase the solubility of calcium. A high concentration liming float with DO-PRO can prevent the protein in the lime liquor from degrading and prevent bad odours in the crust leather or liming bath.

This technology has been implemented in tannery production across a number of large Chinese tanneries for the past eight years showing that it has practical applications. The company is now presenting its technology to global tanneries outside of China.

During the workshop, Biosk President, Zhang Zhuangdou said that the technology was developed following a crossover study from both the leather and pharmaceutical industries. Dr Wang Hongwei, a biomedical expert from Chicago University, underlined some the difficulties which he encountered in the research and development of the technology. However, he thinks there is still a great potential in the future for further crossover between the leather and pharmaceutical industries.

Xie Shenghu, General Manager of Hebei Dongming Leather Manufacture, Ran Qihua, Engineer of Xingning Leather Group, and Zhang Hongzhou, Engineer of Huanghua Defu Leather Product, presented the practical implementation conditions of the Biosk recycling technology under tannery conditions. They said that the wastewater recycling technology has been fully adopted into their production processes and it is stable. The physical qualities of the finished leather have no obvious difference from the conventional process, and the discharge of the effluent pollutants is greatly reduced as are the tannery pollution control costs.

Cromogenia update retan and fatliquoring ranges

Spain based chemical manufacturer, Cromogenia Units, has developed a new line of sustainable products comprised of eco-friendly retanning and fatliquoring products.

The different characteristics of the new ST Series products include biodegradability, renewable raw material origins, high efficacy (high fixation, hence, reduced COD), lightweight, user-friendly and they have low toxicity.

According to Cromogenia, extensive research is also being conducted into new chemical formulations for the retanning stage to reduce free-formol content in products and develop new retanning agents; different from those already in the market such as amphoteric sulfones.

TFL launches pre-tanning agent

Specialty chemicals manufacturer TFL has launched Sellatan LI-G Liq, a highly masked pre-tanning agent with a low impact on health, safety and the environment.

In response to the demand for chromium-free technology, the Germany headquartered chemical supplier has launched Sellatan LI-G Liq, with an optimised GA content, aimed at automotive leathers as well as footwear and leather goods. TFL says it has developed the product "with the recent changes to the classification for Glutaraldehyde (GA) in several Asian countries and the EU in mind".

This non-ionic pre-tanning agent features a low vapour pressure to substantially reduce the typical aldehyde smell during application, hence, helping to improve workplace health and safety, according to the manufacturer, which claims the highly masked Sellatan LI-G Liq also features an excellent penetration and distribution throughout the cross-section; even on full substance pelts. "It is highly efficient as almost all GA applied is exhausted from the bath. In addition, it reduces the drying out of the wet-white and provides a good wetting back behaviour", says TFL.