

**LEDER  
CHIMICA**  
*Chemistry between You and Leather*

## **A way towards sustainable processing**

### **Compact low-float processing**

#### **Water reduction in Leather processing**

The manufacturing of leather plays a role in the demand for freshwater to process the material. Conventionally, leather production requires an average of 40m<sup>3</sup> of water per tonne of raw material during processing (European Commission, 2012). The average water consumption can be divided into two main types, being process water which accounts for 32m<sup>3</sup> of water and technical water that is needed for energy generation, wastewater treatment, and sanitary purposes is reported to be approximately 8m<sup>3</sup>. Process water consumption varies greatly between tanneries, depending on the processes involved, the raw material used, and the manufactured articles. (Manteiro de Aquim, 2008). The beamhouse processes are responsible for the highest water consumption of 67.6% in processing compared to subsequent stages, tanning operations take 8.1%, whilst finishing uses 2.7%, however the post tanning processes accounts for a considerable 21.6% of required processing water.

#### **Organisations supporting corporate sustainability**

The demand for freshwater and its quality has become under increasing political and social pressure. The leather industry has to devise innovative systems of processing to ensure that the production is sustainable for years to come. Corporate sustainable development is an approach incorporated by businesses to ensure longevity in the operational systems, whilst considering environmentally sound routes that would be beneficial both socially and economically. Sustainable development of industrial operations has been implemented as a policy concept by different environmentally concerned organisations such as the United Nations Environment Programme (UNEP), the Intergovernmental Panel on Climate Change (IPCC) and is now becoming a central direction for many companies. The European Union (EU) and the European Commission (EC) are constantly concerned with setting up policies and legislation to promote Corporate Social Responsibility (CSR) (Azapagic and Perdan, 2000). Directive 2008/1/EC on integrated pollution prevention and control (IPPC) has dealt with deriving systems of best available techniques for the industry to reduce the pollution emissions into the environment.

## Compact low-float process for retanning

As part of this journey to encourage sustainable leather production, Leder Chimica is actively developing innovative products and processes. The compact low-float process in retanning is just one of the most creative examples of reducing water in processing to discharge less wastewater for treatment in effluent plants. The principle focuses on a combination of agents relying on the mechanism and stability of interactions occurring in a single system. The products selected for this process are particularly tailored to ensure even distribution and high exhaustion of chemicals in the structure of the skin. The low-float system is employed from exploring the role of water in processing and understanding the minimum required water in the process for adequate chemical interactions with the skin. The leather produced from the low-float process in retanning stages is comparable in properties to most conventionally produced leathers. This process can be implemented to reproduce various leathers sourced from different wet-blue raw materials, however it is not recommended for sensitive materials.

Further benefits of the low-float process aside from the inevitable water saving is reducing costs for energy as a single bath system results in less running time, therefore less power used in operating the drums. Production efficiency can be achieved, as increased production load and batch rotation is possible to meet target leathers ordered by customers. The compact low-float process has achieved remarkable low water consumption, cutting approximately 70% of float water by weight of wet-blue used during processing compared to a conventional 4 stage process commonly employed from the wetting-back stage in post-tanning as demonstrated in the Figure 1.1 below.

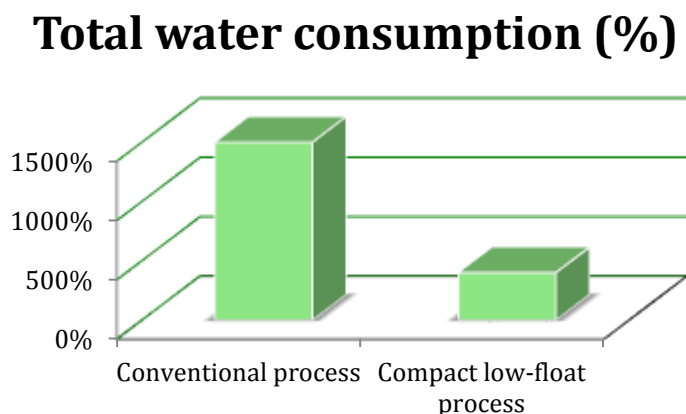


Figure 1.1 Consumption of water in compact low-float process compared to conventional process

Some of the parameters that have been observed whilst implementing the compact low-float process in post-tanning are:

- Minimised operating time of 6-8 hours including washing
- 30% less COD discharged to effluent
- Reproducible leather
- Short floats
- Process control is easily manageable

## Conclusion

Corporate sustainability needs to take all aspects of the triple bottom line criteria into account, which includes social, economic and environmental performance. Awareness of corporate sustainable growth has led to a variety of methods being developed, which mainly attend environmental performance only. It needs to be acknowledged that environmental performance of industrial operations requires a life cycle assessment perspective, as more progressive companies go further than site-specific operations, and look at the whole supply chain associated with their activities in order to choose environmentally better providers for lowering overall impact. Hence, it is practical to source materials and products locally due to transportation, than investing in international suppliers as lower costs and low CO<sub>2</sub> emissions can be achieved; therefore lower environmental impact. Other leather associated companies need to take an active approach to these issues so that it can portray leather manufacture and its products as sustainable systems.

## References

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