Project description:  

Background

The leather industry converts raw hide into a resistant material via a process that consumes great quantities of water and chemical reagents, consequently producing a large amount of effluent. Nowadays, chrome tanning is the most prevalent technique used because the leather produced has good physical and chemical properties and the price is reasonable. The process adds chromium salt to the leather, but 20–30% of the salts are not fixed and, after chemical precipitation, are retained as sludge in treatment plants. Salt used in preserving the hides, pickling (chlorides) and in the tanning baths (sulphates) raises effluent salinity greatly.

Objectives

The main objective of this project was to demonstrate, on an industrial scale, the technical and financial feasibility of recycling the waste water from tanning baths. This would involve the design, construction and setting-up of a demonstration plant capable of handling the treatment and conditioning of 25 m3 of tanning bath fluid waste per day. This fluid would then be reused in the same industrial process, assuring the maintenance the physical-chemical properties of the leather produced. The demonstration plant would treat the waste water from tanning baths from the Mercantile Society (SME), who
participated as a partner in the project (C.M. NOSTRUM). The objective was thus to reduce the consumption of water and reagents (chromium salts, acids, alkalisation agents, etc) and, moreover, their presence in the effluent from the industrial process.

Results

The project was successful and has two-fold benefits for the environment: 1. Reduction in consumption of natural resources. The execution of this project produced significant savings in raw material and water consumption:  
- By reusing the products not attached to the leather, a 97% decrease in the use of water was achieved.  
- A decrease in the use of reactive agents ranging from 14% (chromium salts) to 55% (sodium chloride). 2. Effluent is less environmentally contaminating.  
- A 27% reduction in the quantities of chromium in the cleansing sludge, thus reducing the costs of sludge management.  
- An 18% reduction in the effluent salinity, thus improving the efficiency of the posterior waste water treatments.  
From a technical point of view, the technology could be easily applied in other countries and tanneries by readjusting the operational parameters and factory dimensions as needed. According to an ex-post questionnaire completed by the beneficiary INESCOP (Technological Institute of Footwear and Related Industries) in 2004, cooperation is still maintained with a tanning company (Curtidos Mare Nostrum S.A.) where the demonstration plant was installed, in order to provide them with technical assistance concerning the process. Likewise, contact with technology suppliers is still maintained. The beneficiary is continuing to carry out dissemination activities related to the project, as a result of the interest generated by the project among tanneries. Among these actions a tanning bath recycling scale-model has been developed that was presented at the SIMAC/Lineapelle fair in Bologna, Italy in May 2004. Several technical conferences have also taken place.

Top

Environmental issues addressed:

Themes

Industry-Production - Leather and Footwear
Water - Waste water treatment

Keywords

waste recycling, leather industry

Target EU Legislation

- Industry and Product Policy
Natura 2000 sites

Not applicable

Beneficiaries:

Coordinator: Asociacion de Investigacion para la Industria de Calzado y Conexas
Type of organisation: SME Small and medium sized enterprise
Description: The beneficiary is INESCOP (Technological Institute of Footwear and Related Industries). INESCOP's expertise lies in scientific, technical and market research and development, training and environmental issues.

Partners: Curtidos Mare Nostrum, SL.

Administrative data:

Project reference: LIFE00 ENV/E/000498
Duration: 01-OCT-2001 to 30-SEP -2003
Total budget: 991,500.00 €
EU contribution: 379,500.00 €
Project location: Comunidad Valenciana(España)

Read more:

Project web site: Internet Site
Publication: Layman report: Title: "Tannery Wastewater Recycling in Leather Industries" (ES/EN) Year: 2004 No of pages: 11
Video link: "Recirculación de baños de curtición en las industrias de curtidos" (12')