

SOLID WASTE EFFICIENCY CASE STUDY

The case study is based on the results provided by a manufacturer of upholstery leathers for the automotive industry, operating in the Balkans. IFC introduces the case as an example of improvements in industrial waste handling that led to significant cost reductions.

CONVERT WASTE INTO INCOME

The Company improved its operations by generating additional revenue from waste and decreasing the volume of waste going to the landfill by 40%. The case shows how investments in efficient industrial waste management can lead to cost reductions and positively affect the other businesses of the tannery. IFC's support to the Company included a review of the waste incineration plant design.

COMPANY LEATHER TANNERY IN THE BALKANS

The Company, which has more than 500 employees, is an important economic player in the region. Leather and textile upholstery is produced and distributed to leading car manufacturers.

The Company's modern tanning facility covers 20,000 m² and includes all stages of leather processing, from raw hides to leather tanning, as well as cutting and sewing leather seat covers for cars.

CHALLENGE WHAT TO DO WITH 25 TONS OF BIO-DEGRADABLE WASTE PER DAY?

The Company generates about 25 tons of biodegradable solid waste per day, most of which was buried in the regional landfill. This costs the Company an estimated \$400,000 in transportation and landfilling per year.

Waste, that was not immediately removed or recycled, generated unpleasant odor, which was difficult for both factory workers and the surrounding community.

SOLUTIONS TO SPEND ON AN INCINERATOR OR IMPROVE WASTE MANAGEMENT?

The Company considered waste incineration. Prior to its cooperation with IFC, the Company hired an experienced equipment supplier to design a new waste-incinerating plant that would comply with EU standards.

However, the new incinerating facility required economies of scale to be financially viable. The Company's waste generation volume was insufficient, forcing it to seek new regional partners. The new incineration plant was a difficult, long-term and expensive solution.

IFC proposed a short-term solution focusing on efficient waste management. The tannery had already installed equipment to separate liquid and solid phases from waste fleshings, but due to poor maintenance and damage caused by the aggressive chemical environment, it was not operational. IFC experts suggested upgrading the equipment to optimize production capacity and functionality. This equipment produces technical grease and protein concentrate – raw materials for the further production of bio diesel and pet food, which are sold to external buyers.

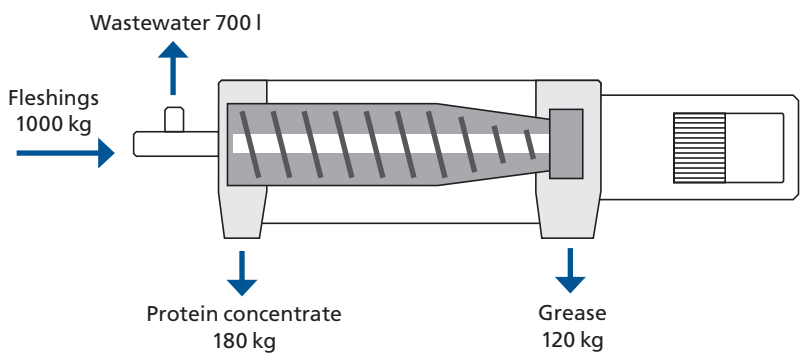


By improving waste management practices, the Company could save \$275K a year with a simple payback of just 3 months →

CASH FROM WASTE

By implementing these interventions, the company saved an estimated \$275k/year from annual fleshing volumes, avoided landfill costs and reduced treatment of concentrated wastewater. This equals to 69% of the Company’s annual solid waste management costs, before the intervention. Despite the increased equipment maintenance costs and electricity consumption, the total benefits of this measure far exceed the expenses. Following IFC recommendations, the Company gained financially and decreased landfilling of waste by 40%.

Produced materials after separation



ALTERNATIVE FUEL FROM WASTE

The Company is also able to benefit from other waste byproducts: they have contracted with a nearby cement plant to sell textile and other waste, which will be used as an alternative fuel in cement kilns. The cement plant saves on expensive fossil fuels, and the Company can avoid landfilling waste. This process has received an environmental permit.

White shavings (chromium-free) are the main waste of the tannery industry and can be used as a fertilizer via a process of co-composting. These shavings are rich in nitrogen, functioning as nitrogen donors in the production of fertilizers. Looking ahead, the Company could sell these profitably while saving an estimated \$120,000 per year, after taking into consideration expected production expansion. Additional cost savings are realized with a reduction in waste to be landfilled.

Blue shavings waste is generated during the chromium tanning. Chromium is a hazardous compound that should be recycled. When you hydrolyze the blue shavings, a chromium liquid is produced, which is a highly cost-effective tanning agent for the tanning and re-tanning processes.

EFFECTIVE WASTE MANAGEMENT POSITIVELY INFLUENCES OTHER PARTS OF THE TANNERY

A separate collection of chemicals and dye waste leftovers is planned. The Company previously flushed these substances to the wastewater treatment plant (WWTP). The presence of chemicals and dyes in the wastewater made already difficult wastewater treatment conditions even worse. Measures to separate the two will help improve effluent quality and reduce the costs of wastewater treatment. The annual cost of such a measure is estimated at around \$25,000, but operational benefits for the WWTP will exceed the costs.

NEXT STEPS TO IMPROVE OPERATION

The Company is looking at other options to further reduce water consumption. The analysis shows that by reusing water within the production and wastewater treatment processes up to a maximum level of technical and financial feasibility, the tannery could reduce specific water consumption from its current 60 m³/ton to 20 m³/ton of hide. Additional financial benefits of \$180,000 can be realized by investing \$690,000, assuming the 50% capacity expansion currently planned goes forward. The analysis proved that optimizing energy use at the WWTP could create additional savings of \$33,000 per year.

Together with waste recycling related savings, the tannery could achieve total financial benefits of \$488,000 per year by investing \$760,000.

