

MedClean Propre Limpio



No. 94

Pollution prevention case studies

Cleaner production in vegetables and fruits processing industry

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|-------------------------------------|---|
| Company | FANA d.o.o. SREBRENİK |
| Industrial sector | Food production, fruit and vegetable processing |
| Environmental considerations | <p>The company produces three product categories:</p> <ul style="list-style-type: none"> • Marmalade (57% of total production), • Sour products: pasteurised pickles, peppers, beet, mixed salad, pickled foods, tomato, sauerkraut, carrot (41% of total production), • Compote (2% of total production). <p>The marmalade production process was chosen as the focus of an environmental diagnosis, based on a detailed analysis of its production process, and taking into consideration the percentage of expenditure for supply of raw and auxiliary materials, consumption of water and energy.</p> |
| Background | <p>Fana d.o.o. Srebrenik is a SME, whose main activity is vegetable and fruit processing. Production is seasonal as it depends on vegetable and fruit growing periods. The company employs 70-80 persons during the season, while only 18 are employed out of season.</p> <p>The detailed analysis of the marmalade production line, with the largest share in the total production, revealed a large water consumption. Most of that water is used for vacuum cooking and discharged into the sewage system afterwards. Considering that the annual production of marmalade is around 900 tonnes and that approximately 2% of used water is built into product, the quantity of water discharged into sewage is approximately 8.150 m³ per year. Bearing in mind that this is potable water from the water supply system, the damage is significant from the environmental and economic points of view.</p> <p>In addition to that, it has been noticed that, due to the inadequate storage space located next to the packing machine, a significant percentage of damaged final product of approximately 1% has appeared as a result of glass fractures. Moreover, the workers have to spend many hours to move and rearrange the final products, which reduces their work efficiency.</p> <p>Fana industry produces significant amounts of packing waste (i.e. cartons, crates, PVC packing materials and bags) which can be recycled. Moreover, this packing waste represents a large part of the total amount of solid waste that has to be disposed on the city's landfill site.</p> |
| Summary of the initiative | <p>In order to solve the above stated problems, the company has undertaken the following measures:</p> <ol style="list-style-type: none"> 1. Construction of a reservoir for the collection and recirculation of water from the cooking system to the vacuum devices. In this manner, the clean water, already used for cooling the vacuum device, can be used again several times for the same purpose as before. 2. Building of a well-organised storage space to stock the finished products. 3. Collection of cardboard, PVC packing material and foil in order to sell them to the recycling companies. |

Photo



Balance

| | Old process | New process |
|--|--|--|
| Balance of materials | Balance of materials | Balance of materials |
| - Water consumption | 9,24 m ³ /t of marmalade produced | 3,76 m ³ /t of marmalade produced |
| - Construction of a storage space | 1% loss in weight, less effective work | 1% loss in weight, less effective work |
| - Collection of cardboard, PVC packing material and foil | 30 t disposed on waste dumps | 30 t sold to recycling companies |
| Economic balance | | |
| - Water consumption | 6.71 €/t of marmalade produced | 2.7 €/t of marmalade produced |
| Annual saving on the base of 700 tonnes of marmalade produced | | |
| - Water consumption | | 2,740 €/year |
| - Construction of storage space | | 2,556 €/year |
| - Collection of cardboard, PVC packing material and foil | | 511 €/year |
| Total annual saving | | €5,807 |
| Total investment | | €27,200 |
| Payback period | | 4.6 years |

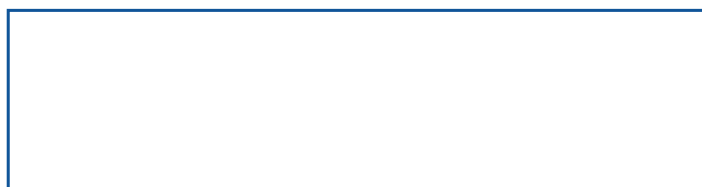
Conclusions

With the construction of a reservoir for the water collection and recirculation, the clean water, previously discharged into the sewage system after being used for cooling of the vacuum device, can be reused. The consumption of potable water from the municipal water supply system has been reduced by 60%. With the construction of a well-organised storage warehouse, the losses caused by glass fractures and inadequate storage of finished products, have been eliminated, and the number of working hours of employees in the storage house has been reduced.

Through the collection and recycling of the packing material waste, the amount of waste disposed in the waste dumps has been reduced by 30 tonnes per year.

NOTE: This case study seeks only to illustrate a pollution prevention example and should not be taken as a general recommendation.

Case study presented by:
Center for Environmentally Sustainable Development - CESD
 Stjepana Tomica 1a 71 000 Sarajevo - Bosnia & Herzegovina
 Tel.: + (387 33) 212 466
 Fax: + (387 33) 207 949
 E-mail: coorsa@bih.net.ba
 Web: www.coor.ba



Regional Activity Centre
for Cleaner Production

Dr. Roux, 80
 08017 Barcelona (Spain)
 Tel. (+34) 93 553 87 90
 Fax. (+34) 93 553 87 95
 e-mail: cleanpro@cprac.org
 http://www.cprac.org