Comments

Mrs. Le Thi My Linh
Director, Tan Thuan Export Foodstuffs Processing Factory

Pressurized washing is really an efficient option for cleaning. It helps the company save time for cleaning and gives better cleaning performance, especially for food processing machines. We have ordered three pressurized washers to use in three workshops, which consume large quantities of water.

Mr. Vuong Tai
Director of Frozen Seafood Factory of District 8

The company has been using pressurized washing system in two workshops since last year. Now, the system has been expanded for the whole factory since July 2002. We are happy to note that 25% reduction of total water consumption has been obtained after expansion of this system.

Contact

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ABOUT THE PROJECT

- The Cleaner Production project in HCMC funded by the French Agency for the Environment and Energy Management (ADEME) was aimed at:
  - Reducing energy consumption and pollution in industrial sectors and
  - Enhancing local technical and managerial capacity to deal with the energy-environment issues faced by the industries.
- The Department of Science, Technology and the Environment (DOSTE) of Ho Chi Minh City implemented the project with technical support from ENERTEAM and CEFINEA, and with guidance from experts of the Asian Institute of Technology (AIT). The plastic and the seafood industries were targeted. The project was initiated in September 2001.
- The methodology adopted to carry out the project was as follows:
  - Project initiation workshop
  - Preliminary survey to identify the current status of the industries.
  - Discussion with factories, and carrying out audits in selected factories to identify options.
  - Implementation of suggested options.
  - Preparation of fact sheets of viable options and detailed reports.
  - Final workshop (August 2002) to highlight and disseminate the findings.
- It is believed that the results of the project can be used as references for similar improvements in other factories.

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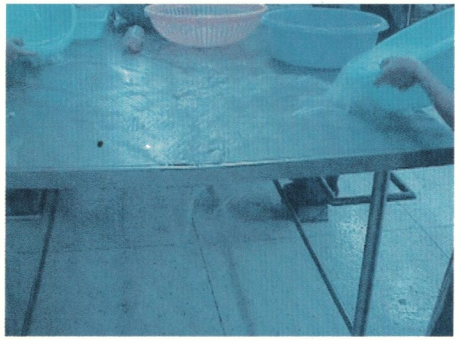
Pressurized Water Use Reduces Cleaning Water Consumption in the Seafood Processing Industry

DEVELOPMENT PARTNERS

Users: Tan Thuan Export Foodstuffs Processing Factory (Agrex Saigon Company), Tan Thuan Dong, District 7, Ho Chi Minh City, Viet Nam

District 8 Frozen Seafood Company, 2 Tung Thien Vuong Street, District 8, Ho Chi Minh City, Viet Nam.

Promoter: Department of Science, Technology and Environment (DOSTE), 244 Dien Bien Phu Street, District 3, Ho Chi Minh City, Viet Nam.



Cleaning without and with pressurized washing system

Summary

Seafood processing factories require a large amount of water for cleaning (processing tables, floors, walls, machines and containers), and also to guarantee hygiene in the production chain. Companies are becoming aware of the benefits of using pressurized washers to reduce water consumption.

After an initial demonstration and trial use of pressurized washer system, the Frozen Seafood Factory of District 8 has decided to employ similar devices in the different areas of the factory.

In Tan Thuan Export Foodstuffs Processing Factory, studies carried out to reduce the water use have shown significant reduction in water consumption.

Up to 70% of water consumed for table and floor cleaning could be saved by using pressurized hoses. The payback period of adopting such devices ranges from 2 to 6 months.

A Cleaner Production activity sponsored by the French Agency for the Environment and Energy Management (ADEME) and assisted by the Asian Institute of Technology (AIT)

The problem

Seafood processing is one of the major industrial activities of Vietnam in general and Ho Chi Minh City in particular.

Seafood processing industry is characterized by its use of large quantities of water. Most of the water is used for washing and cleaning the raw materials and products, and for flushing the work floor and the tables.

Significant savings in the water consumption can be obtained in all these areas by adopting cleaner production techniques. Most seafood processing factories supply water through an unpressurized hose for cleaning. The use of unpressurized hose requires:

- large amounts of washing water;
- large quantities of detergents;
- increased time for washing;
- bigger wastewater treatment plant (WWTP); and
- more manual labor (brushing and sweeping)

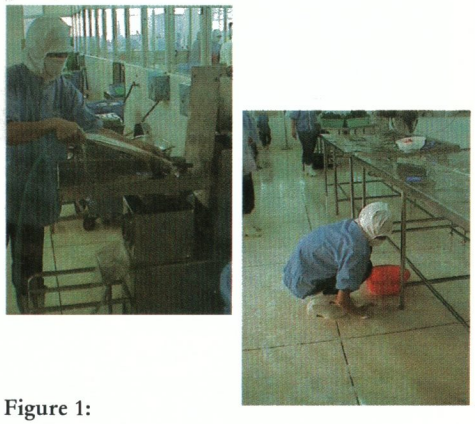


Figure 1:

Washing and floor cleaning operations

The answer

The introduction of pressurized washing can reduce water consumption significantly. Supplying water at high pressure (greater than 10 bar) will reduce its consumption for cleaning, and thus reduce the total water consumption and related costs.

SEAFOOD PROCESSING INDUSTRY IN HCMC

- Seafood processing is a key industrial sector in Ho Chi Minh City. In 2000, more than fifty enterprises were involved in the export of processed fish and other seafood. A quarter of the processed fishery products are exported. The export value of seafood products in 2001 amounted to 375 thousand tons or 1.77 billion USD. The seafood export from HCMC alone was 239 million USD.
- However, lack of knowledge on resource conservation along with the increase in production has led to energy inefficiency and environmental deterioration. Some options to improve the present conditions are:
  - Housekeeping: measuring and recording production, energy, water and raw materials data; regular checking and maintenance of equipment, collecting solid waste on the floor before cleaning, and avoiding the overflow of water in packaging or processing.
  - Improvements to machinery and other installations: Use of pressurized hoses for cleaning, replacing manual tap valves with solenoid valves, and installing high-pressure spring-loaded nozzles and self-cleaning brushes.
  - Energy saving options: insulation of cold refrigerant pipes to reduce heat gains; improve power factor by installing capacitor banks to reduce operational costs.

Other benefits include:

- Reduced detergents use for washing;
- Better cleaning performance;
- Reduced washing time;
- Reduced investment, and operation and maintenance costs for the waste water treatment plant (WWTP); and
- Less labor and enhanced productivity.

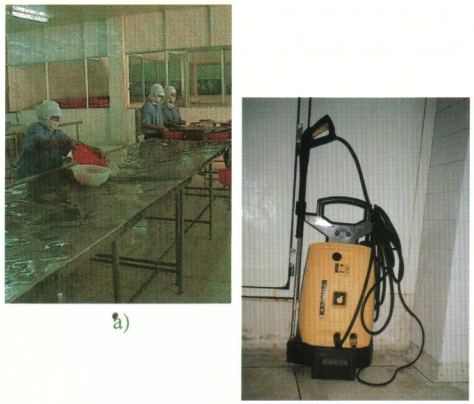
Tests and trials undertaken in selected factories in Ho Chi Minh City show that adopting pressurized washers can help reduce the water consumption remarkably in the seafood processing factories.

Water conservation

Tan Thuan Export Foodstuffs Processing Factory

Normal cleaning (using unpressurized hose and basin flushing) of each table and 4-5 m^2 of floor in this factory consumed about 2-3 m^3/h of fresh water.

Use of high pressure washing showed that the water consumption for cleaning was only 0.25 m^3/h. The water use for cleaning was thus reduced by about 80%, and the total water consumption reduced by about 6%.



a)

Figure 2: Washing operation at Tan Thuan Export Foodstuffs Processing Factory

(a) Normal washing operation and (b) high pressurized water machine

District 8 Frozen Seafood Factory

The flow rate of the existing water supply system is about 0.9 m^3/h. The washing required involvement of 6-7 workers for a period of about 30 minutes before lunch and at the end of the day.

In comparison to normal cleaning practices, the pressurized water cleaning reduced water consumption by as much as 50%. At the same time, pressurized washing needed only 2 workers cleaning the area within 30 minutes. Thus, the daily working period with the high pressure cleaning was reduced from six to two hours.

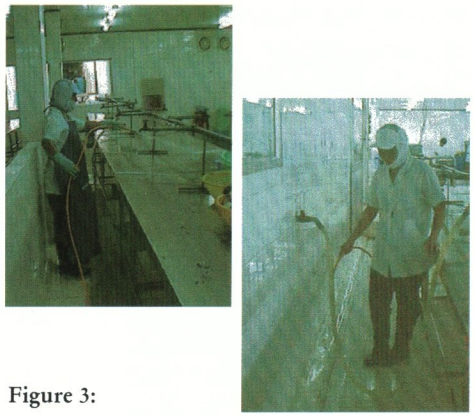


Figure 3:

Washing and cleaning by pressurized water at the District 8 Frozen Seafood Factory

Cost- benefit

Investment includes pressurized washers and the pipe network. The saving is evaluated only on the basis of the water cost saving. Table 1 summarizes the cost-benefit of the pressurized system. Additional benefit is in the form of reduced wastewater to be handled in the wastewater treatment plant.

Table 1. Cost –Benefit of the pressurized washing option

Company	Investment (Mil. VND)	Water saving (m^3/d)	Savin g (%)	Saving (Mil. VND/month)	Payback period (year)
Tan Thuan Export Foodstuffs Processing Factory	15	15	6	2.4	0.5
District 8	6	27	28	3.8	0.2

Note: 1 US$ = 15,300 VND (August 2002)