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Regional Activity Centre for Cleaner Production

MINISTERIO DE MEDIO AMBIENTE

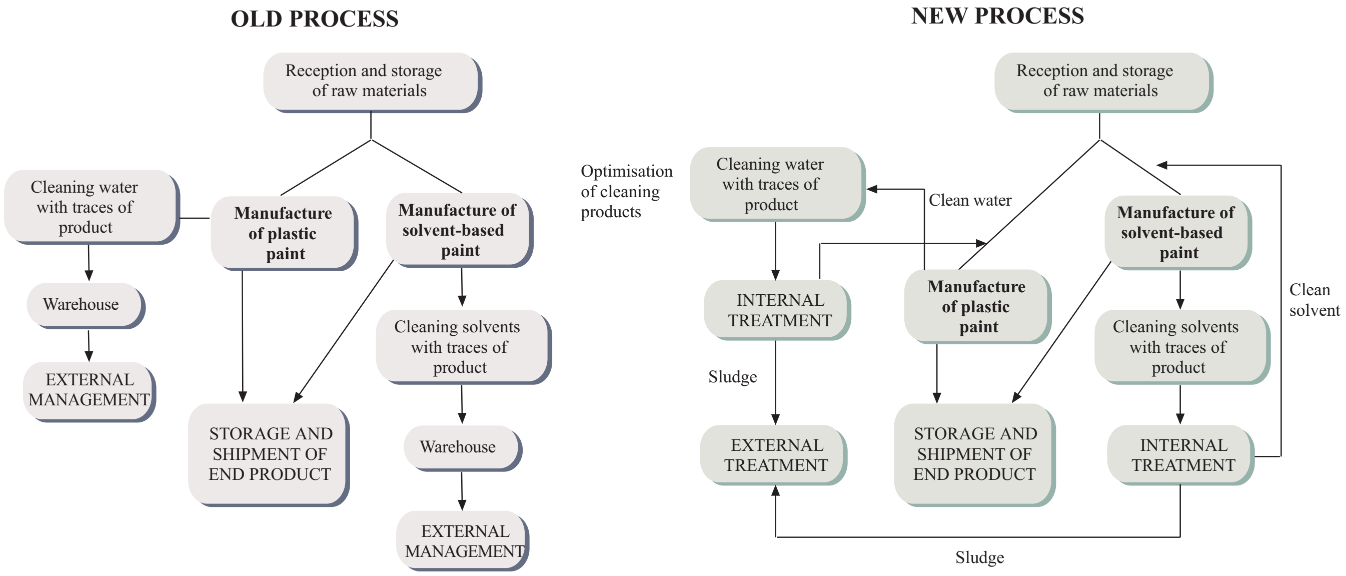
Generalitat de Catalunya
Government of Catalonia
Department of the Environment and Housing

No. 82 Pollution prevention case studies

Reduction and recycling at source of cleaning water and solvents

Company	Pinturas Jallut Ibérica, SL. Polinyà, Spain.
Industrial sector	Manufacture of paints, varnishes and similar finishes.
Environmental considerations	In the manufacturing process of plastic and enamel paints and varnishes, waste flows that are generated in the cleaning stage include dirty solvent with traces of pigments and resins and dirty water with solvent and/or traces of pigments. These cleaning residues (solvent and water) must be treated externally as liquid industrial waste. For dirty solvents, a percentage of this distilled solvent was returned to the company and reused in the cleaning stage.
Background	Pinturas Jallut Ibérica decided to carry out a Minimisation Opportunities Environmental Diagnosis (MOED) in order to reduce the generation of this (and other) waste and, at a later stage, recycle the remaining wastes at source after reduction measures had been taken.
Summary of actions	The company optimised the cleaning process and undertook a series of measures in order to reuse both the water and the solvent used in the above stage. Optimisation of the water cleaning process was achieved: • With the installation of hoses with high-pressure auto shut-off nozzles and a water flow control unit, which leads to a reduction in the amount of water used to clean the plastic paint manufacturing facilities and, • as a complement to this measure of reduction at source, a unit for the physicochemical treatment (flocculation – coagulation and decanting) of the cleaning water was installed for the reuse of the water in the process. Optimisation of the process of cleaning, with solvent, of the enamel and varnish manufacturing facilities involved a recycling-at-source alternative and the implementation of a distillation unit to recover the solvent and subsequently reuse it in the process. The company thus managed to reduce cleaning water and solvent waste flows by 100%. As a result, two new waste flows from the sludge from physicochemical treatment and from the solvent recovery unit, respectively, were generated.

Diagram of the process



Balances	Old process	New process
Balance of materials in the cleaning stage		
Water consumption	150 t/y	20 t/y
Solvent consumption	7 t/y	1 t/y
Consumption of reagents in the physicochemical treatment of wastewater	0 t/y	2 t/y
Externally managed wastewater	150 t/y	0 t/y
Externally managed dirty solvent	7 t/y	0 t/y
Generation of waste by solvent distillation	0 t/y	30 t/y
Generation of waste by solvent distillation	0 t/y	2 t/y
Economic balance		
Cost of water consumption	161.37 €/y	21.52 €/y
Cost of solvent consumption	6,310.63 €/y	1,262.13 €/y
Cost of wastewater management	18,030.63 €/y	1,923.24 €/y
Cost of management of the solvent as liquid waste	2,103.54 €/y	0 €/y
Cost of management of the sludge in the physicochemical treatment of the wastewater	0 €/y	6,310.63 €/y
Cost of management of the solvent distillation residue	0 €/y	1,442.43 €/y
Total savings		**15,647.59 €/y**
Total investment		**€50,611.23**
Payback period		**3.23 years**

Conclusions

A combination of reduction and recycling at source enabled the company to optimise the water and solvent cycles used in the cleaning stages. Thanks to the installation of units that enable savings in the amount of water used, correct design of the physicochemical treatment unit (without over-sizing) was possible.

This measure is an example of how minimisation measures may be combined to achieve optimisation of processes, a reduction in the consumption of materials and resources, and a reduction in the waste flows generated.

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

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