RECP Best Practice Catalogue

Improved management of cleaning solvent

Developed within the framework of MED TEST II

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INDUSTRIAL DEVELOPMENT ORGANIZATION

switchmed

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Best Practice - Improved management of cleaning solvent

SECTOR:	**Paper, printing and plastic products**
SUBSECTOR:	Printing and service activities related to printing
PRODUCTS	Different types of printed rolls (Polypropylene, polyethylene, silicon,…etc) that are used in the packaging process of all wound care dressing products.
CATEGORY	Process control or modification
APPLICABILITY	Utilities

COMPANY NAME	--- Project boundary: The printing department
COMPANY SIZE	Large.

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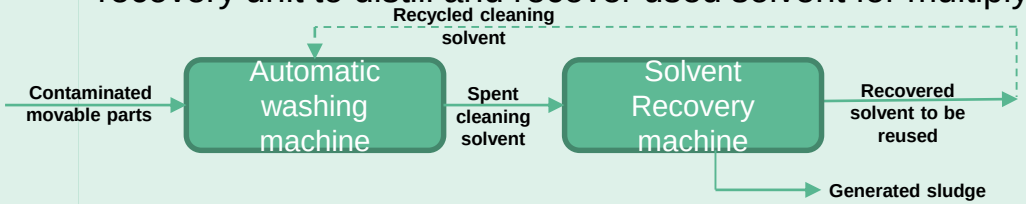
Description of the problem (Base scenario):	The printing process requires the use of solvents both for process and for cleaning of the machines. Investigations revealed high losses of solvent used in the cleaning process. The movable parts of the printing machines are cleaned by soaking them in container filled with solvent. As the solvent is a volatile substance, high losses in cleaning solvent result, together with problems in workplace environment. After several cleaning cycles solvent is collected in an underground pit presenting a risk of soil penetration and potential adverse effects on the underground water quality.
Description of the solution	Installing an automatic washing machine for cleaning the movable parts of the printing machines through spraying of cleaning solvent under pressure saves cleaning resources. In addition it is recommended to install a solvent recovery unit to distill and recover used solvent for multiply usage. 

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Economic Benefits	Current quantity of cleaning solvent is 9,160 Kg/y By installing the automatic solvent washing machine, about 50% of cleaning solvent consumption will be reduced (4,580 Kg/y) After installing the new solvent recovery unit, about 95% of the remaining solvent will be recovered and reused (4,351 Kg/y) Cost of 1 Kg cleaning solvent is 1.8 Euro/Kg Total amount of cleaning solvent saved = 8,931 Kg/y (97.5% from the baseline) Annual saving due to good management of cleaning solvent = 16,076 Euro/y.
Environmental Benefits	Reduce significantly the amount of discharged solvent to the environment in the form of VOCs by 8,931 Kg/y (97.5% of baseline). Avoid the environmental penalties paid by the company every year due to incompliance which is estimated to be 2,500 Euro/y Demolish the existing underground collection pit for removal of spent solvent to avoid possible soil penetration and hazard effect on underground water quality.
Health and safety impact	Protect the worker's health from the direct exposure to cleaning solvent vapors thus improve workplace environment.

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Capital investments & financial indicators	Cost of new automatic washing machine is 30,000 EURO Cost of new solvent recovery unit is 30,420 EURO Total economic saving = 16,076 + 2,500 = 18,576 EURO/y Payback period in case of buying new washing machine = 60,420 / 18,576 = 3.25 years
Suppliers	Imported
Other aspects	• The company has an old washing machine therefore it is preferable to maintain and rehabilitate this old machine before thinking of buying new one. This idea, if succeeded shall save around 30,000 EURO in investment costs, and consequently reduce the payback period to 1.6 years. • The generated sludge from solvent recovery unit will be disposed through the landfill.
Implementation	The measure is under implementation by the company as it started to rehabilitate the existing washing machine.

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Replicability sectors	The same concept can be replicated in • Printing Companies. • Solvent Extraction Plants.
Aspects to investigate for replicability	Method of solvent recovery. Disposal method of used solvent.
Useful resources	https://www.youtube.com/watch?v=SCm6vrXDbA4