

The Management of Wastewater in SME/SMI and the Environmental and Economic Benefit Realized through the Implementation of PREMA and Decision Support Approach 'Case Studies'

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Abstract

The industry (SME /SMI) of developing countries must carry out enormous efforts to undertake actions as regards savings in water by lack of organization, evaluation and estimate of the economic and environmental losses generated. For correct these constraints and to ensure integration in the company of a reflection on the losses, the re-use and the recycling of water, it is imperative to set up a methodology of management allowing the perpetuation of the actions in the companies. The concept of PREMA® (profitable environmental management) based on the good-housekeeping and the NPO theory (non-product output) allows effects of synergy, opening the way with a process of continuous improvement and by consequently, to lead to a rational use of the resources. We identify, with the multi-criteria analysis method the various criteria of decision of the best solution. These criteria are classified; this classification makes it possible to apprehend in an exhaustive way the decision issues in a top management.

Keywords: Decision support, PREMA method, multi-criteria analysis method, PROMETHE method.

1. Introduction

The industry (SME /SMI) of developing countries must carry out enormous efforts to undertake actions as regards savings in water by lack of organization, evaluation and estimate of the economic and environmental losses generated. For correct these constraints and to ensure integration in the company of a reflection on the losses, the re-use and the recycling of water, it is imperative to set up a methodology of management allowing the perpetuation of the actions in the companies.

Since 1996, and after the publication of the ISO 14001 standards, an integrated concept for the promotion of environmental management, suitable especially to small and medium sized businesses (SME): "Profitable Environmental Management" (PREMA®) is implemented.

Experience shows that a considerable number of SME are interested in a systemic approach to improvements which starts from their core interest, profit, and allows for the realisation of a "triple win": cost savings (and a better environmental performance) through the reduction of Non-Product Output, as well as organisational development through structured learning processes.

The resulting variety of organisational and technical improvements in the production process of SME are based on changes in human behaviour as well as the management (system),

can lead to continuous improvements, and, eventually "bottom-up", to ISO certification.

The possible barriers regarding decision making, technology and finance may be overcome mostly by the SME themselves, by tapping the problem-solving capacities in the companies throughout the systemic and the introduction of multi-criteria analysis method.

The wide-spread application of triple win measures makes production processes and management more profitable and more environmentally sound.

2. The principle of the PREMA®

PREMA® is an instrument of management, of which the objective is a more effective use of physical flows with environmental impact such as matter flows, of energy and water. It reduces the costs and pollution by reducing the quantities of residual flows, matters, energy and water not absorbed by the manufacture of the finished product. In addition to itself method, PREMA® approach implements

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