

COST REDUCTION IN SUPPLY CHAIN OF COLLECTION AND RECYCLING WASTE OF PRODUCTION

Kovalenko V., Parkhomenko O.

National Technical University "Kharkiv Polytechnic Institute", Kharkiv

An effective manufacturing recycling solution creates a seamless process from waste creation to waste disposal and minimize waste at source. It is also important that waste materials, that can be re-used, recycled or sold, are collected and handled properly.

In most cases commonly observed wastes in manufacturing facilities include waste from overproduction, defects, waiting times, unnecessary motion and transportation, inventory, over-processing and unused time.

The purpose of this work is to develop a concept of reduction manufacturing waste and costs for it by creating supply chain's optimization system.

Inspection the nature and quantum of waste, that generated in manufacturing facility, plays one of the most important roles. It helps to control the materials being used in the manufacturing process and reduce the amount of excess raw materials in stock and quantity of hazardous materials to bring down the amount of waste generated.

Sometimes packaging section may be the main culprit of waste, so the solution is to redesign the product packaging to ensure it uses the minimum amount of materials.

One of the most popular methods in utilization logistics is also a volume reduction. It refers to the segregation techniques that remove the hazardous portion of waste from the nonhazardous portion. These methods help in reducing the volume and the cost of waste disposal.

They can be broadly divided into 2 categories – waste concentration and source segregation. The former may increase the likelihood of the material being reused or recycled and the latter consists of different types of materials within the waste being treated separately so that the metal value in the sludge can be recovered.

Recycling is another popular choice. Recycle materials like paper, plastic, and metal regularly, and avoid recycling hazardous materials as it rarely has any environmental benefits.

Sorting is an important step which should be carried out systematically before the actual recycling process. Sorting the waste ensures that the recyclable items are getting to the right place.

Adoption of a closed loop manufacturing system helps to keep track of inventory and utilize recycled materials in the production cycle. Moreover, closed loop systems assists in extending the lifespan of chemicals by maximizing how efficiently they are used. This stands in reducing the amount of contamination being produced and minimizes the number of new chemicals that need to be purchased.

Industrial sludge and wastewater make up a significant portion of manufacturing waste streams. Reduction these elements can be possible by minimizing water usage in the operations. This can be achieved by using chemical drying agents, reverse osmosis, dry machining, or membrane biological reactor.