

# MATERIAL SEPARATION TECHNIQUE USING GARBAGE MATERIAL

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**Abstract—** Material separation is a very important aspect for the overall development and the financial progress of every country. The Material Separation involves the removal as well as the separation of the useful and recyclable material from the available mixture or dry garbage. It involves the usage of various techniques that are used for the separation of the useful materials. Material separation plays a crucial role in increasing the productivity as well as the overall increase in the profit of the company or a firm. In various parts of our country, the material separation is not very popular and the garbage is dumped or it is just burned, So the usage of various techniques plays a very important role in the separation of the materials from the available mixture or dry garbage. The material separation involves the important parameters which plays a very crucial role in determining the separation process and also the usage of useful techniques. The material separation process also involves the usage of the various processes which are very important in the material separation process or the methods.

**Keywords—** waste management, material handling.

## I. INTRODUCTION

The scheduled closure of Freshkills Landfill in eastern Island at the end of 2005 is forcing the City of New York as well as India to explore alternative waste management options to begin overcoming its primary reliance on landfilling for waste disposal. The Department of Sanitation currently collects approximately 15,000 tons of municipal solid waste (MSW) as well as the dry waste each day from about 9 million residents and non-profit organisations. To begin the transition from solely disposing wastes at Freshkills Landfill, a considerable portion of the waste generated in the Bronx borough is being delivered to transfer stations for exportation to Virginia. The exportation of wastes is a very expensive waste management practice (costing about \$70 per ton) and additional exportation appears to be inevitable unless changes are made in the current waste management system. The increased restrictions and costs on disposal options and the community opposition to the transport and landfilling of New York City's as well as India waste provides motivation to explore other potentially more cost-effective and environmentally acceptable waste management activities.

A materials recovery facility (MRF) takes materials, whether source separated or mixed, and separates processes and stores them for later use as raw materials for remanufacturing and remaking. The main function of the MRF is to increase the quantity of recyclables processed, while producing materials that will generate the highest possible incomes in the market. MRFs can also function to process wastes into a material for biological conversion or into a fuel source for the production of energy. This paper focuses exclusively on designing and maintaining the utility of the MRF for resource recovery by means of mechanical materials separation.

1. Reasonable and Logical design
2. Analysis of the markets and economics of operation
3. Organizing and gathering of data necessary for the design
4. Complete engineering design of system
5. Construction
6. Use of equipment
7. Marketing analysis

All these factors play a very important role in Material Separation processes as the analysis is very important in this process.

These factors should be carefully analyzed as these are very much crucial for the material separation and the parameters should be carefully examined.

## II. NEED OF MATERIAL SEPARATION

Separation processes are essential to the chemical, petroleum refining, and materials processing industries. The word "separation," however, refers to different processes and functions for different industries. Separation processes comprise a large portion of the activity in the chemical and petrochemical industries. In the forest products industry, separation ranges from separating wood chips of different sizes to converting black liquor for reuse. In the aluminum and steel industries, as well as the metal casting and glass industries, the most important area of separation technology is separation of different types of scrap, sand, and cullet. Finding common ground among these definitions of separation processes or technologies is a difficult task. For the purposes of this report, however, separation processes are defined as processes using physical, chemical, or electrical forces to isolate selected constituents from a mixture.

Separation processes can be thought of in general terms as performing similar functions in all industries and is a schematic illustration of these functions and their relationships. The materials

streams may be composed of homogeneous solids, liquids, gases, or supercritical fluids, or they may be composed of heterogeneous mixtures containing any combination of these phases. The functions of separation processes include the removal of impurities from raw materials, products, and by-products; the separation of recycle streams; and the removal of contaminants from air and water waste streams.

### III. RANGE OF PARAMETERS

Equipment factors to be taken into consideration may well include the following:

**Adaptability:** the load carrying and movement characteristics of the equipment should fit the materials handling problem.

**Flexibility:** Where possible the equipment should have flexibility to handle more than one material, referring either to class or size.

**Load capacity:** Equipment selected should have great enough load-carrying characteristics to do the job effectively, yet should not be too large and result in excessive operating costs.

**Power:** Enough power should be available to do the job.

**Speed:** Rapidity of movement of material, within the limits of the production process or plant safety, should be considered

**Space requirements:** The space required to install or operate materials handling equipment is an important factor in its selection.

**Supervision required:** As applied to equipment selection, this refers to the degree of automaticity designed into the equipment.

**Ease of maintenance:** Equipment selected should be easily maintained at reasonable cost. **Environment:** Equipment selected must conform to any environment regulations.

**Financial Feasibility:** Material handling is only a part of the entire project. Hence the most important fact is the chosen solution should add value to the entire project.

**Good environment:** It is very much important to have a good and nice environment for the material separation technique. The good environment plays a very important role in the processing rate as well as in the manufacturing rate of the product.

### IV. REAL TIME SETUP

The real model have been made by the use of the different materials. These materials are to be used in every equipments so as to make the overall cost of the model easy and cheap which can easily be used by the people.

The model which have been prepared consists of the use of different materials that is easily be sorted out and can easily be made. It is a very effective process and also the process cost is also very less. The materials which is separated out can easily be used once again so that no it can be easily used again.

The diagram is shown on the prescribed space.

The model makes use if the different materials that have already been discussed above and the materials are of very low cost but the use of these materials are of great importance as the use of these materials play a good role in this model. The model consists of the use of the different materials which are easily available and also the use of the simples techniques so as to separate the elements from the mixture.

### V. CONCLUSIONS AND DISCUSSION

The conclusions which can be drawn are as follows-

- Easy set up
- Less operating cost
- Less maintenance cost
- Good separation techniques used
- Better efficiency
- Less conjutable

The material separation model has a very good impact as well. It basically consists of those simple science technologies that can easily be understandable and applied easily. If in India this is used Than it will not only clear the material but also will generate employment. This can prove the basic understanding of the public as well.

#### Impact of Project

It has a very good impact on the industries as it basically separates the recyclable products that can be used again . It not only separates but also give chances for other industries to set up the system in their firm. So we see that it has a good impact in industries and this leads to the overall development as well.

#### Limitations of Project

In our model the major drawback is that of the wet garbage . We cant use techniques that can separate out the wet garbage. For separating out the wet garbage some other techniques are to be used so that other conditions can easily be used for this process.

#### Scope of Project

It has a very good scope as it will ultimately reduce the consumption of the resources that can be saved or used in future. It will also serve the matter of resolving the dumping of waste and also the problem of waste management.

This model will create a material separation from the mixture of the waste material and also the availability of the recyclable product. It will ultimately lead to the betterment of the employees and also of the public too.

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