

# Green Plant Manufacturing Model and Implementation to Minimize Waste and to Maintain Sustainability of Industry

## A Case Study in PT Coca Cola Bottling Indonesia

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**Abstract** –Environmental is a current important issue that more frequently discussed in many forums. It is caused by environmental condition in recent year is very worrying. One contribution of its condition is the industrial activity, especially the industry which polluted the environment. Industry is needed for economic growth or prosperity, but on the other hand it can give negative impact, such as byproduct waste. In the future, every business must go green, therefore they must do something to reduce waste, improve the environment, and play an important role to achieving environmental sustainability. PT Coca Cola Bottling Indonesia (PT CCBI) believed that the green industry concept will make industry more efficient and survive in the future. It was a necessary to develop Green Plant Manufacturing (GPM) model to minimize waste and improve environmental quality. This research used the action research method and did for four months. This research shows that implementation of GPM model in PT CCBI can improve the environmental quality around the industry and also provide economic benefits to the community surrounding the industry. Besides, the industry can conserve water by a reforestation program and use the compost produced by the GPM program.

**Keywords:** green manufacturing industry, reduce, reuse, recovery, compost

### 1. INTRODUCTION

Environmental in business or industry is a current important issue. It was not just caused by the impetus of global agreement about the importance of minimizing environmental impact, but also was caused by the tendency of consumers' desire to use environmentally friendly products (Olson, 2010). International scale enterprises that especially engaged in food and beverage industry must effort to minimize waste because it will build a better image for their consumers. It can maintain company's sustainability.

Many companies assume that the attempt to minimize waste was a high cost, so it was considered as waste. It was caused by end of pipe waste management approach. If it was integrated throughout the product life cycle, it can be more efficient (Esty and Winston, 2009). Integrated waste management approach, which performed throughout the product life cycle to reduce waste was using the 3R (reuse, recycle, recovery) principal.

PT Coca Cola Bottling Indonesia (CCBI) is an international beverage company realizes the importance of

integrating waste management in the company's management. Therefore they must designed a concept of Green Plant Manufacturing (GPM) that integrates the concept of waste management with 3R pattern into the company's management.

### 2. METHODOLOGY

Development of GPM model at PT CCBI used an action research approach, involving employees (two persons) and delegation of the company communities (two people). The steps being taken consists of five stages (Davison, Martinsons & Kock, 2004) :

#### 2.1 Diagnosing

Diagnosing is an activity to identify the principal problems associated with various types of waste generated in the PT CCBI, that are physical and chemical characteristics of the waste, the quantity of waste, and handling waste at this time. The research will focused on

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