

GREEN PHILIPPINES

Greening the Philippine Industries with the **ECO**PROFIT Approach



A project funded by
The European Union's Asia-Pro Eco Programme



Material Flow Analysis Paint Machino Plastics Ltd.

Machino Plastics Ltd.

- Material Flow Analysis on Paint.
- The process involved :
 - **Paint Preparation** (Mixing of thinner and paint)
 - **Input** (loading of Paint into the spray gun bottle.)
 - **Spraying of the paint on the product**
 - **Drying** the painted products in the Oven.

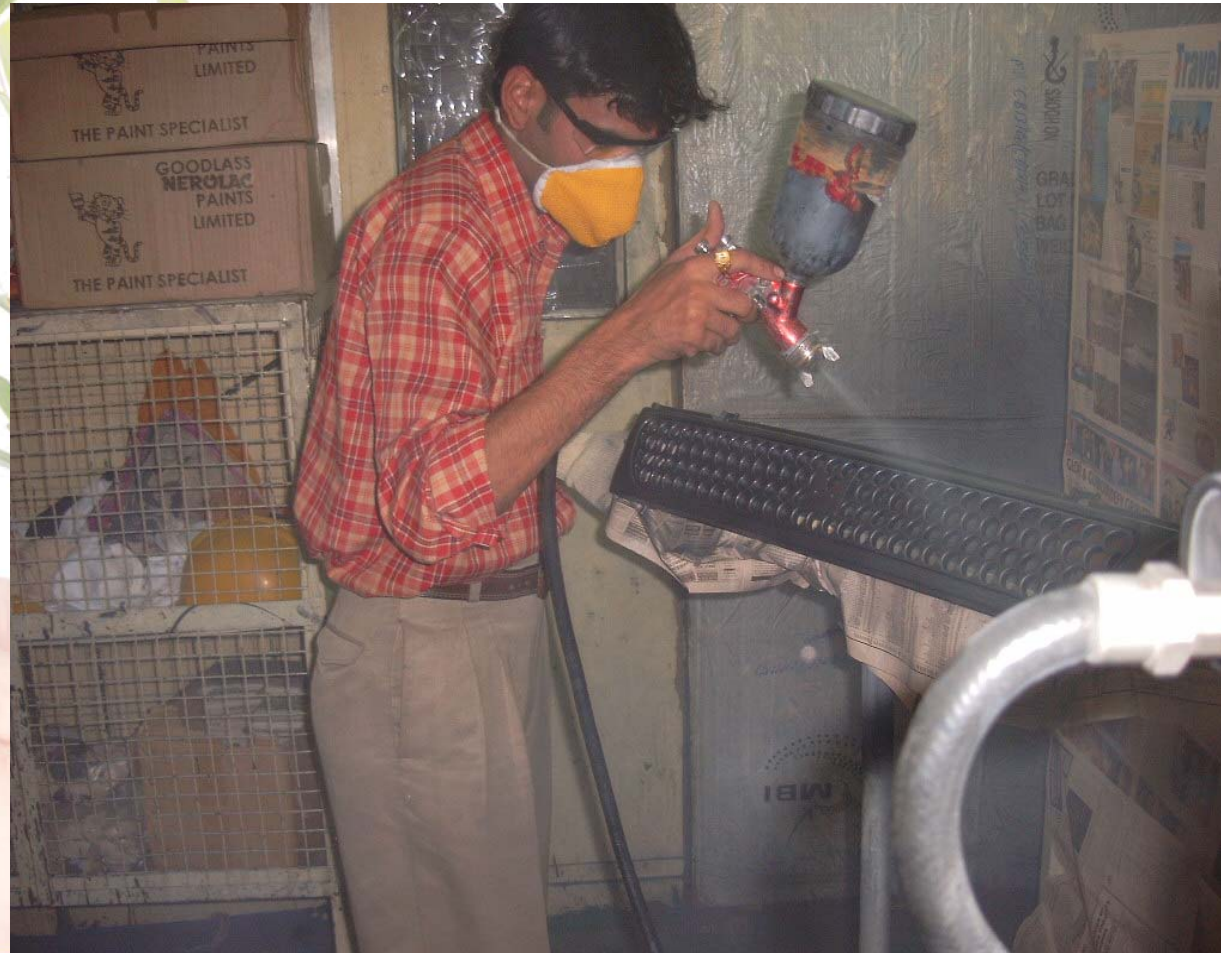
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The Process



Paint preparation



Loading

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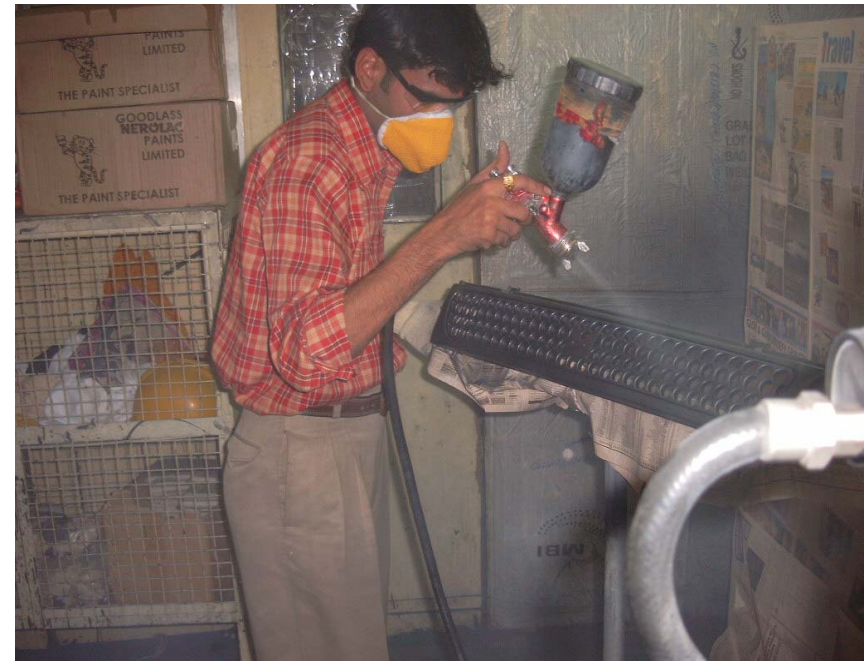


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The spray gun



The painting process



Collecting the waste paint paper



Weighing the paint paper



Drying the wet painted products



The ready products



The figures.....

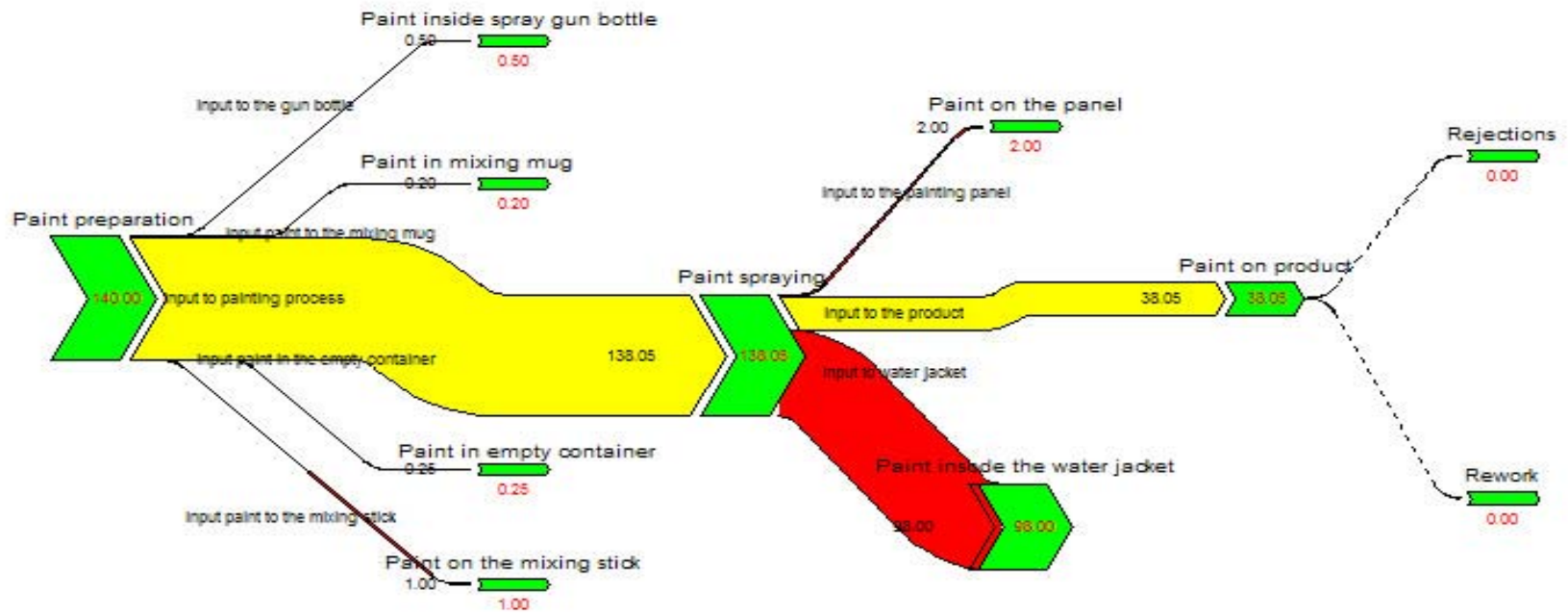
Input 140 kg ~ 38.4 kg (OK product) + 100 kg (overspray) + 0.5 kg (paint inside spray gun bottle) + 0.2 kg (Paint in the mixing mug) + 0.25 kg (Paint in the empty container) + 1 kg (Paint in the mixing stick) + 0 kg (rejections)

* Total no. of products painted : 19200

Quantitative material flow analysis Paint (Monthly)

Input	Quantity unit (kg)	Output	Quantity unit (kg)
paint	140	Painted Product	38.4
		Paint inside spray gun bottle -	0.5 kg
		Paint in mixing mug	0.2 kg
		Paint in empty container	0.25 kg
		Paint on the mixing stick	1 kg
		Waste paint after removal from water jacket	100 kg
Total	140	Total	140

Sankey Diagram- Painting process



Tasks for the company

The questions yet be answered:

- How much paint is being issued by store?
- Surface area of each component?
- Weight of unpainted component and the painted one, (difference)?
- How much are the leaks, during spray, handling, stirring & transportation?
- How much paint is remaining inside the container?
- The no. of rejections after painting. The amount of paint on the stirring rod or stick. Paint wasted during paint preparation.
- Amount of paint going inside water jacket?
- Painted spilled over to the side walls and the roof?

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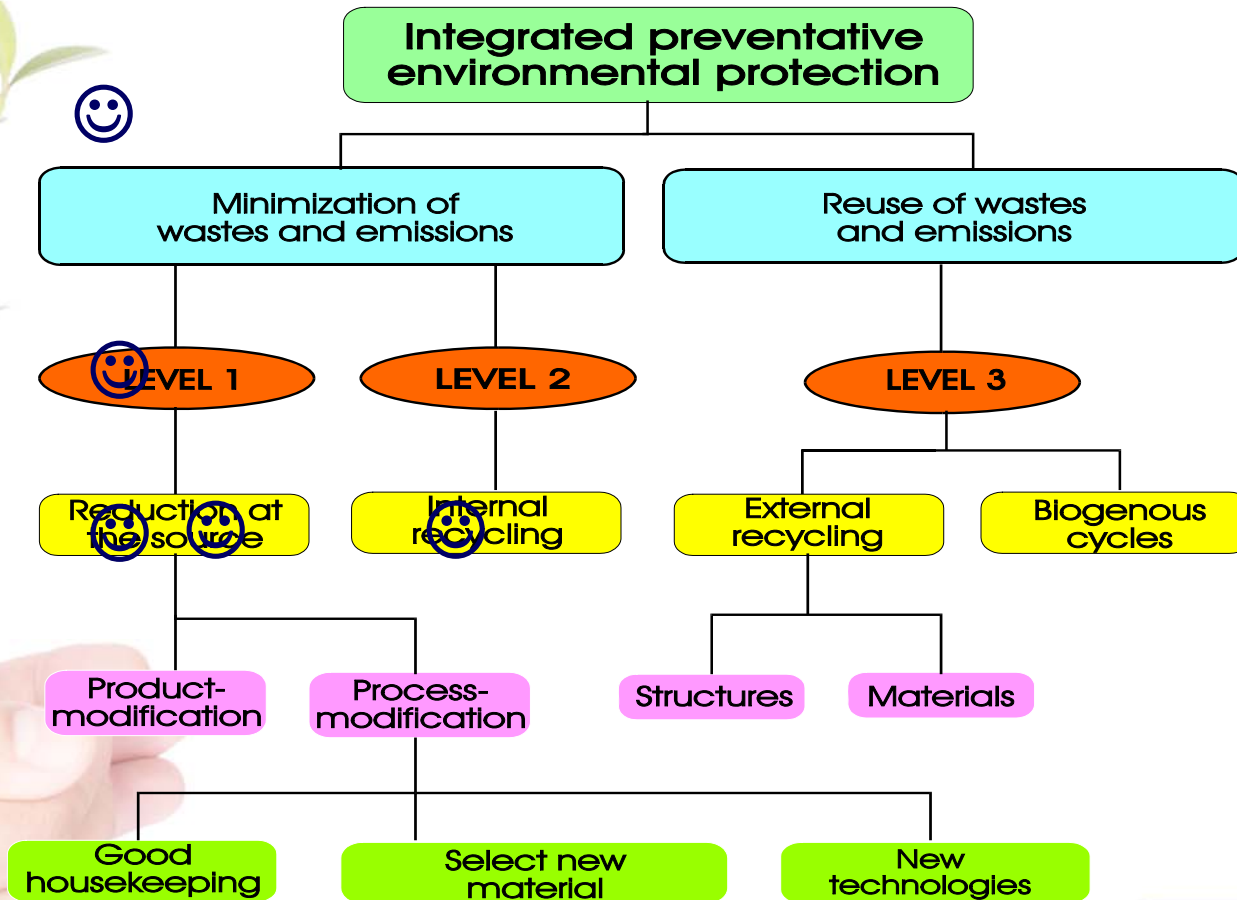
Ecoprofit-The low hanging & lying fruits



Options for Improvement

Option	Action plan	Implications			Final result
		☺ ☺ ☺		☹ ☹ ☹	
Trained people	Training of people in right handling of spray gun	Reduction of overspray	Cost of paint going as waste	Convincing people for correct handling	None
Optimized process	Shifting from High pressure to HVLP-system + Training of people in maintaining	Reduction of overspray		None, equipment already purchased put not used	None
Process efficiency in heating	Optimum use of trays in oven, sealing of oven	Increase of productivity Less time for drying (15'->12')		Change in tray design	8000,- Rs

Strategies for Cleaner Production



Figures for controlling (Indicators)

ABSOLUTE	RELATIVE
<ul style="list-style-type: none">- Kg. of paint- Capacity of paint bottle- Weight of the unpainted product- Weight of the painted product- Surface area of the product- How much lost during spray, handling, stirring & transportation?- How much paint is remaining inside the container?- The no. of rejections after painting.- The amount of paint on the stirring rod or stick.- Paint wasted during paint preparation.- Amount of paint going inside water jacket?- Painted spilled over to the side walls and the roof?	<ul style="list-style-type: none">-Amount of paint per product-No. of product per kg. of paint-Time taken to paint one component-Amount of overspray per product-Amount of paint going waste per day-Amount of paint going waste per month