



Atlantis Industry Waste Minimisation Clubs

Case Study

Vrede Textiles

Background

Vrede Textiles was the first factory to be built in Atlantis. Today, 23 years later, this family-run business has a staff complement of 120; produces over 2 million strip meters of vertical blind fabric every month and can boast approximately 65% of the local vertical blind market.

Initially, only a spinning mill existed and three years ago, Vrede Textiles established a state of the art weaving mill and finishing plant so that the company is now responsible for the complete process manufacturing from raw fibres to rolls of slit fabric. Approximately a year ago, it began producing roller blinds.

The Process

At Vrede Textiles, raw materials are quality checked received from the suppliers. The quantity purchased depends mainly on customer demands for a specific product. The packages are opened and the contents are issued to the manufacturing depending on required quantity for processing. Raw fibre is processed at the carding machine to give it a softer feel, then the product fibre is blended to enable it for the spinning process, in which three



raw materials meet to produce yarn. The products made are Vertical blinds manufactured from a wide range of yarn structures, in different colours and sizes to suit the customer request. The fabric has a unique handle and finish.

Essentially, the difference between their vertical blind fabric and that produced by other companies is that instead of having plastic-coated fabric, the plastic is inside Vrede's fabric and it is therefore soft to touch. The resulting high-tech product is cut at the right size and the edges are trimmed, also it is washable and innately stable. The required product size is rolled and packed into cartons, shrink-wrapped, wrapped with plastic tubing and gets ready for dispatching to the customer.

Identification of Waste Minimisation Options

Through the Waste Minimisation Club, Vrede Textiles have taken an initiative to monitor different waste streams at source to reduce waste generation. With the help of the consultant and a student, the project team assessed the company for improvement options and recommendations to combat generation of waste. All Waste Minimisation options identified are listed below.

Waste Minimisation Options Identified	Status
1. Reduce machine off cuts by changing the machine settings	Investigated
2. Minimisation of polymer losses at the spinning machines by starting with lighter colours to dark colours	Investigated
3. Use of return plastic packaging material from suppliers	Investigated
4. Elimination of contamination of fibre with different colours by monitoring of raw materials from supplier dyehouse	Investigated
5. Elimination of filament waste due to negligence	Investigated
6. Improve machine inefficiency and negligence by routine maintenance	Investigated
7. Improve raw material loss by quality checks and human error (yarn waste)	Investigated
8. Re-use of pellets from raw material suppliers to pack the products for local customers.	Implemented
9. Recycling of cardboards/cartoons, plastic bags and plastic tubing	Implemented
10. Installation of water meters at the inlet water treatment tank (plant 1&2) and gardening water use.	Investigated
11. Separation of waste streams from process machines using different bins or colour coded bins for each waste stream	Implemented
12. Fixing of compressed air leakages and eliminate blowing of compressed air on the floor and human body	Implemented
13. Elimination of start-up and temporal frequent shutdown or stoppage of machine production flow and implementation of proper start-up of operating machines.	Investigated
14. Recycling of effluent and water that goes down the drain to the sewage at plant 2.	Implemented
15. Reduction of non-prime product by improved production planning (stoppages of production run) & operational settings	Investigated
16. Total Potential savings	R 1,300,000

Implementation of Waste Minimisation options

Water recycling

A high volume of water used at plant 2 for cooling applications at the spinning machines was discharged to the drain. Initially, the significance of that water loss and environmental costs of discharging that water to the sewage via the drain was unknown.

By implementing a water holding tank, pump, piping system and water treatment softener, the water loss, significant cost savings and environmental costs are achieved immediately. Approximately 31% of annual cost savings are achieved and R 28,013 of environmental cost savings through sewage charges of effluent water to the sewer.

Packaging materials

A significant amount of cartons, plastic bags and plastic tubing waste is also generated. Cartons are used over and over until they are not re-usable. Plastic bags and tubing is generated mostly through raw material bales of fibre, in other words plastic bags and tubing cannot be re-used to repack dyed fibre to avoid risks of contamination between various colours. 384 Kg/month of plastic tubing and plastic bags at R 1.20/kg and 660kg of cartons at R 0.25 are sold to waste recyclers. Thus an estimated annual cost savings of **R 5,530** of plastic tubing and bags, and

R 1,980 of cartons sold is achieved. Pellets that are received with raw materials from suppliers were dumped through WG wastech, currently these pellets are recycled or used to pack the product for local customers resulting in less money spent on purchasing the pellets for packaging purposes.

Estimated savings of at least $100 * R25.00 / \text{pellet} = \mathbf{R 2,500}$ per year.

Energy reduction

The company's electricity consumption was quite high due to compressed air leaks, consumption on process machines, poor housekeeping problems such as blowing of compressed air into human hair and clothing. After the Prevention Quick Scan the compressed air leaks were immediately fixed and elimination of poor housekeeping problems is currently in progress.

Currently under investigation is the power factor correction system and single proper start-up of the machines to save on electricity costs. Savings of up to R 102,336 per year for power factor correction with a payback of 3months.

Effluent prevention

The company was discharging an approximate 3000 KL volume of water to the drain due to outlet cooling water from spinning machines at plant 2. During the pre-assessment, this water was measured, and the following prevention project is in place:

- Building of a water tank
- Purchasing and installation of the piping system and pump

This action is a Waste Minimisation activity because it will result in less water being consumed and prevention of effluent charges as there will not be any water discharged to the drain by the company.

Other things in progress

- The formation of in-house waste minimisation teams is in progress to monitor waste generation on waste points investigated.
- Use of alternative of packaging material for yarn and other similar things instead of cardboard cartons, also recycling of plastic materials in-house.
- Increase in awareness of waste minimisation program in all areas of the company structure through a Newsletter and suggestion boxes on what must be published in the Newsletter to improve process manufacturing and cooperation with the company.
- IWEX-listing of wastes through IWEX to prevent or minimise annual transportation costs of waste to the landfill.

Economic Benefits of Implemented Waste Minimisation options

The waste minimisation activities described above resulted in the following savings achieved per year:

Item	Savings per year	Payback period
Packaging: Plastic bags & tubing	R 5,530	Immediate
Cartoons	R 1,980	Immediate
Pellets	R 2,500	Immediate
Water	R 9,000	2 months
Effluent charges	R 28,000	Immediate
Total	R 46,010	

Environmental Benefits

The programme of waste minimisation has resulted in the following environmental benefits:

- ❖ Less solid waste (packaging): 12,528Kg and 100 pellets
- ❖ Reduced water consumption: 3072KL

Social Benefits

The company is currently working on a plan to get the workers more involved through an awareness campaign and the project teams. This will help the company to monitor everything that the workers use and improve the company morale. Waste Minimisation meetings are currently being scheduled every week to involve all employees.