

ASPIRE Case Study – Polymer Recovery

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Closed loop polymer recovery and recycling of solid sheet thermoplastic products

The Challenge

Around the world, petroleum resources are used for producing an enormous variety of plastics for an even wider variety of products such as extending the shelf life of our food products. Many applications involve polymer products with a life cycle of less than one year, after which time the vast majority of these plastics are then discarded. Unfortunately plastics are a big contributor to our global waste problem.

There is a growing trend towards the reuse and reprocessing of industrial plastics for economic, as well as environmental reasons. This is because plastics have a great durability for reprocessing, most plastics are able to be 100% recycled and readily accept additives to modify or replenish any depleted properties.

Corex Plastics (Australia) Pty Ltd (see Figure 1), have developed their own closed loop programme to provide a socially responsible, 'cradle to cradle' waste solution for reclaiming and recycling their own solid sheet thermoplastic products.



Figure 1: Corex Plastics in Dandenong South



Figure 2: Corex Plastics solid sheet thermoplastics

The Solution

Corex Plastics (Australia) Pty Ltd commenced production in 1985, establishing the first high-tech, twin wall sheet extrusion line to operate in Australia. Their Corflute®, Fluteboard® and other solid sheet products (see Figure 2) are used in hundreds of diverse applications, such as signboards, solar heating panels, automotive tote boxes, fresh produce packaging, bulk packaging, divider boards, vacuum forming, slip sheets, pallets and steel and cable packaging.

In 2011, Corex identified with its customer base the need to adopt and implement environmentally sustainable practices and strategies. As a result, a new recycling division was formed.

Corex Recycling exploits the ability of products made from thermoplastic to be reprocessed at the end of their life into other useful products. Their shredding, granulating and polymer reprocessing facility can partner with polymer re-processors to ensure continuity of supply of commercially effective, reusable polymer. As well as granules,

Rebound Graphex sheet and other plastic products are produced from recycled polypropylene (PP). Corex recycles more than 3,000 tonnes of thermoplastics each year.

Corex Recycling encourages their clients and others to return clean PP and high density **Polyethylene**, also referred to as HDPE for reuse, including products made by Corex Plastics, such as Corflute and Fluteboard. Recycling is accomplished by employing the latest technologies from Europe and elsewhere to improve recycling efficiency, including choosing materials for extrusion or fabrication that can be recovered and converted into quite different future products.

Corex Recycling charges no fees for reclaiming the thermoplastic sheet. They provide clients with bins for waste collection and then collect the bins, once they are full.

Beneficial Outcomes

Recycling of thermoplastic polymer sheets saves businesses money otherwise spent in disposal costs, conserves natural resources and provides Corex Plastics with a reliable, cost-effective and sustainable feed stock.

In reclaiming and recycling these thermoplastic sheets, landfill space and costs are saved. Thermoplastic sheets are not a biodegradable material, which means that they have the potential to remain in landfill for many years, posing ecological dangers. One tonne of recycled plastic can save approximately 5.7 cubic metres of landfill space.



Figure 3: Corex products

Through recycling, energy is conserved. In recycling the thermoplastic, Corex Plastics can produce new products using approximately 80% less energy than with raw material production.

Emissions are reduced, as the production of plastics from raw materials produces greenhouse gases. By using recycled plastic material, production time is greatly reduced, which means that fewer greenhouse emissions are released into the atmosphere.

Natural resources are conserved through reclaiming and recycling processes. Oil and natural gas are two of the main components used in the production of plastics. These natural resources are not only of finite supply, but are also in high demand in other industries. As plastic materials are already in such great abundance in the supply chain, recycling existing materials means that fewer natural resources need to be used in the production of new plastic products.

Information Sources

Corex Plastics: www.corex.net.au

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