ITT Pumps Power Biodegradable Packaging Plant

When a Canadian packaging company created an environmentally biodegradable packaging technology, they turned to ITT for the process and water pumps required for the development of manufacturing skids.

The use of Styrofoam is all around us. From the clamshell containers used in fast food outlets to the foam "peanut" packaging that protects valuable objects in shipment, Styrofoam is ubiquitous. Since styrene (the starting material from which Styrofoam is made) nor Styrofoam is neither biodegradable or water soluble, it is a material that will be with us a long time.

Propelled by the growing global demand for environmentally responsible packaging, a team of Swedish scientists from the pulp and paper industry made a crucial discovery.

Working with a new vacuum-forming technology, these scientists developed a faster, more affordable process for manufacturing biodegradable packaging with an extremely high rigidity and strength using the same amount of fiber as weaker pulp-based products.

This new process resulted in the ability to produce small, flexible machine lines that use the proprietary formed fiber process - moulded board. As an outcome of this, a low cost business model has emerged so that the packaging industry now has access to high margin packaging products with a low cost of production.

Turnkey Skid System Required Reliable Pumps

A Canadian company with research and development facilities in Sweden. PAKIT Inc., was founded in August 2000 to develop and promote the production capacity of the new moulded board packaging.

The company is actively pursuing a strategy to become a world-wide licensor of its proprietary

The skids use one ITT Goulds brand pump model 3180 paper stock/process pump (top) for handling the fiber pulp and seven model 3196 process pumps to move the fiber through the production skids as it is diluted and prepared for vacuum forming.

moulded board production equipment and products, as well as a provider of the installation and support functions for the manufacturing systems.

To do this, PAKIT created a skid-mounted production system to manufacture the moulded board product. The idea is that a manufacturer will install the low maintenance turnkey system to manufacture the product of their choice as an alternative to Styrofoam.

Processpumpar AB, the licensed distributor for ITT pumps in Sweden, worked with PAKIT to design and select the proper fluid handling equipment for the manufacturing process. Because the production skids are designed to work with a minimum of supervision, system reliability as well as performance was crucial in the selection of

pumps. Processpumpar specified ITT's Goulds Pumps brand paper stock and chemical process pumps as well as ITT Lowara brand water pumps for service on these skids. Mats Elofsson of Processpumpar noted that the production skids are delivered to customers with all controls and piping. "The skids have been designed so that they may be put into production quickly", said Elofsson.

For the North American (ANSI) market, the skids use one ITT Goulds Pumps brand model 3180 paper stock/process pump for handling the fiber pulp and seven 3196 process pumps to move the fiber through the production skids as it is diluted and prepared for vacuum forming. For metric standard countries, the skid is equipped with Goulds Pumps model 3185 paper stock/process pumps and IC ISO chemical process pumps.

The turnkey process skids also included approximately 10 ITT Lowara brand stainless steel pumps - including model SV vertical multistage centrifugal pumps and model CD threaded centrifugal pumps with open impellers. These stainless steel pumps are used for light duty applications including clean water service, a condensate system, and water pressurization.

The result is that for the first time, packaging companies now have access to this new vacuum-forming process. Potential products include the a wide range of packaging products, from molded plates and clamshells for the food and 'on the go' industries to trays and bowls for the ready-meal and healthcare sectors. The packaging produced in the process is moisture resistant, impermeable to grease, microwavable and oven safe, making it particularly attractive for a wide range of applications. The packaging also provides a printable surface, has insulation properties, and can be shaped, formed and customized to virtually any industry specifications using FDA approved additives.

Environmental Benefits

As the molded board packaging replaces traditional Styrofoam packaging, there are environmental benefits. Polystyrene is not biodegradable. The use of hydrocarbons in polystyrene foam manufacture releases hydrocarbons into the air at ground level; there, combined with nitrogen oxides in the presence of sunlight, they form tropospheric ozone -- a serious air pollutant at ground level. Polystyrene is also manufactured with HCFC-22, which, though less destructive than the CFC chemicals that were formerly used in the manufacture of Styrofoam, it is still a greenhouse gas and harmful to the ozone layer.

The moulded board product is biodegradable, recyclable and composts. The main raw material used are fibers from wood pulp that doesn't require non-renewable oil resources, is friendly to landfills, and burns without generating toxic gases.

For the food, beverage and healthcare industries in Europe, Asia and North America, this will represent the first cost-effective and environmentally sensitive alternative to petroleum-based EPS and other plastics, requiring 40% less energy to manufacture than current industry leaders.

PakIt estimates that the demand for the new packaging technology will be approximately fifty installations annually. With maintenance and energy costs a major concern with all new production machinery, the production skids equipped with ITT's Goulds and Lowara brand pump systems will provide customers with excellent life cycle costs.