

Mobile network

An interest in bioplastics has taken a major distributor of additives and compounds more deeply into the packaging sector. **Steven Pacitti** met executives of the company at a recent trade fair

A turnover of €1 billion (\$1.3bn) positions Netherlands-based IMCD Group as one of the world's major distributors of speciality chemicals and food ingredients for sectors including coatings, plastics and pharmaceuticals.

Privately owned by US equity firm Bain Capital since last December, IMCD is on an upward curve of growth with its new owners planning to invest about €250 million (\$341.7m) in its development, both organically and through acquisitions.

At the time of the takeover, IMCD had only recently concluded the purchase of Warwick's distribution operations in France, Italy, Iberia and Malaysia, which added a further €80m (\$109m) of revenue. Major clients/partners include speciality chemicals companies.

Yet alongside its work in highly specialised coatings and chemicals it was the humble potato that IMCD was keen to discuss during the recent Fakuma exhibition in Germany (18-22 October). The reason for this is the extensive opportunities open to the company in the bioplastics sector.

"Our business has grown extensively in plastics over the last four to five years, mainly organically, and the medical and packaging sectors

Organic growth has been a major boost for IMCD in recent times, explains Patrick van Vugt



have become very important for us," Patrick van Vugt, European product manager Plastics for IMCD Benelux, told *Plastics in Packaging*. "Last year we took more interest in bioplastics and can now help customers choose the best solution for them. And much of this goes to packaging as 40 per cent of all plastics end up in packaging applications."

One of its key partners in the bioplastics field is Dutch firm Rodenburg Biopolymers, which manufactures packaging materials based on the waste from potato chip (French fries) production.



IMCD has become one of the world's major distributors of plastics additives, speciality chemicals and pharmaceutical ingredients

Turning the starch into a compound which ultimately becomes plastics (see sidebar) provides options for the packaging of products such as fruit, where the post-consumer waste can be composted.

Van Vugt believes that an increasing number of brands are seeking bio-based solutions that



IMCD is a distributor for some major masterbatch producers



deliver the advantages of biodegradable materials but without the disadvantages such as high-cost or limited supply.

“The availability of potato starch is high and these renewable materials can find good early opportunities in speciality niches,” he said. “We are targeting big supermarket chains along with smaller firms that are intent on penetrating the market.”

With worldwide bioplastics capacity standing at 1.3 billion tonnes, Rodenburg Biopolymers’ nameplate capacity in Oosterhout is 65,000 tonnes per year, while the company also has a fully-owned subsidiary in Brazil where production of 5,000 tonnes per year will start before the end of this year. Rodenburg also has a joint-venture in Canada where there are plans to start production.

In addition to a distribution agreement stretching back to January 2010, IMCD can offer technical expertise that will drive solutions such as Rodenburg’s Solanyl bioplastic into new sectors.

For example, Solanyl is at the moment not suitable for packaging applications requiring high temperature resistance, such as hot food and food packaging with simulants A, B and C (ethanol and acetic acid), according to the European legislation for food safety, explains Michèl Verdaas, Product Manager Solanyl Bioplastic for Rodenburg Biopolymers. ▶

Solanyl: The story behind the potato plastics

The word Solanyl comes from the scientific name for the potato, *Solanum Tuberosum*. Based on a side-stream potato starch of the potato processing industry, Solanyl is both bio-based and biodegradable and is said to require 65 per cent less energy to produce than standard polyethylene.

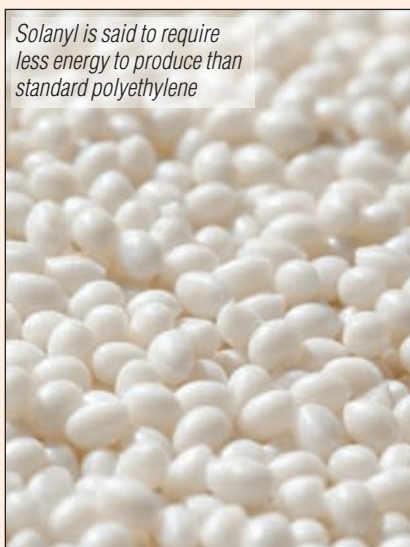
According to its manufacturer, Rodenburg Biopolymers, raw materials for Solanyl can be sourced from potato peels for animal feed, meaning that there is no competition with human food and availability is abundant due to it being an industrial by-product.

“Rodenburg started with the transport and conversion of co-products of the potato-processing industry into livestock feed,” said Michèl Verdaas, product manager for Solanyl Bioplastic at Rodenburg Biopolymers. “After several crises in the feed industry during the 1990s, Rodenburg came with the idea to create a bioplastics with potato starch.”

Verdaas explains that unlike NatureWorks’ bioplastics, in Solanyl there “really is starch as a biopolymer”. In addition, some grades contain PLA.

In the production process for French fries (and potato chips), potatoes are washed, peeled and cut, with the cutting done by water. The water

Solanyl is said to require less energy to produce than standard polyethylene



pushes the potatoes through a kind of sieve, resulting in the final product.

In this process water, there is a large amount of starch granules. The water is put into basins where the starch is settled, before being dried and purified to create the raw material that Rodenburg uses.

“The starch is therefore a waste stream of the potato processing industry,” said Verdaas. “We make the starch thermoplastic and compound it

with additives and components and that end compound or pre-compound is sold to converters and compounders.”

To manufacture products, Solanyl is said to require a slightly higher injection pressure on conventional machines, requires lower processing temperatures, and a hot runner is recommended, alongside temperature control of the mould.

Properties of the material include a melt index of between 5-15, wall thickness of 0.5mm with a 10cm flow or 1.1mm with a 35cm flow, density of 1.3, and processing temperatures between 110-170 deg C. By contrast, polyethylene processes at higher temperatures, has a lower density and a somewhat lower melt index.

Solanyl granules can be combined with natural fibres as well as being blended with other biopolymers, and future developments should lead to increased availability, reduction of price level, and the development of new applications.

Existing commercial applications include plant pots and plastics bags, with horticulture, promotional and sports, and toys among the targeted areas for the future.

End of life processing includes burning, composting, fermentation, biodegradation and recycling.

“It took us 15 years to develop the science behind Solanyl and we are learning every day,” said Verdaas.

“Packaging requires a high heat-deflection temperature, so you need to bring starch-based plastics up to 85 deg C for drinking cups or trays, but then it becomes over-priced. So it is important to work on improving the plastics in this area,” added IMCD’s van Vugt.

On a technical level, IMCD is keen to work with customers beyond the realms of being simply a distributor.

“Companies continue to reduce their R&D spend so we can support them in the formulation work, as well as offering training and technical sessions for customers, introducing them to an entire portfolio of raw materials for their specific needs,” said van Vugt, with 15 years of experience in the coatings business prior to IMCD, which he says enables him to understand the relationships between customers and suppliers.

“We are a sales arm for big producers, such as additives market leaders, but also for smaller accounts. Our sales people have a technical history so they know what they are selling. Our tag line is ‘Value through Expertise.’”

And it is IMCD’s growing list of partnerships with suppliers that is enabling it to offer a more comprehensive plastics product portfolio.

Since Fakuma, IMCD announced that it had agreed a distribution deal with FMC BioPolymer for the latter’s cellulosic and hydrocolloid



Moving beyond the traditional role of a distributor is important in today’s fast-moving packaging industry

excipient range in China. IMCD has been active in China for 15 years and covers a variety of market sectors in the country.

It has also acquired the South African speciality chemical distributor, Ethnichem, an important regional player in personal care and

pharmaceutical industries, as the group seeks to strategically expand its operations.

“We are present in 35 countries and have a strong presence in Europe, Asia-Pacific and Africa. We do have suppliers in North America but no sales there currently.”

For Ethnichem, the opportunity to become part of an internationally recognised company was exciting, making it possible to provide customers with everything from ingredients to formulations, using the laboratories and research IMCD has to offer.

“We have eight laboratories and are imminently adding two more, one in Germany and one in China. This helps us to maximise our growth opportunities and offer expert distribution, and there is a big demand for this.”

Gone are the days when distribution to customers meant simply dropping off a container with the product – today, specialists are needed to deliver speciality product. Distributors need to be all-singing and dancing, and IMCD is certainly making the right noises.

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