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Please release me: Stuck on recycling

The manufacture of silicone release paper might sound low-key business, but it is used in everything from wind turbines to F1 cars. **Geraldine Faulkner** finds out how Techlan is making its version as sustainable as possible

The next time you step into an aeroplane, watch Formula One cars racing or pass a wind turbine, bear this thought in mind: most of the structures of these items are made of a resin that is impregnated with carbon fibres, a process that involves a large amount of silicone release paper in the manufacturing process.

"That is not to say that aeroplanes are made of paper," says Mark Thompson, director and head of innovation at Wales-based Techlan, with a grin. And Thompson has got lots to smile about. He and his business partner Roger Banks have developed a clever way of giving a second life to waste silicone release papers.

Not a sticky end

In case you are wondering, these silicone release papers are used to prevent a sticky surface from adhering to something else prematurely.

We have all come across silicone release papers probably without realising what they are called, the most common everyday example being the backing paper for sticky labels. "The manufacture of the pre-impregnated composite generates massive quantities of waste silicone release paper in the UK and mainland Europe, with thousands of tonnes of paper being wasted on a monthly basis," explains Thompson. "And with the prepreg composite industry having projected growth in the next five years at 10.5%, it means that the problem of waste silicone release paper is only going to get bigger."

Taking the idea forward

Having spotted the financial impact on companies for single use of the paper and the disposal cost through landfill or incineration, Thompson explains what he did next.

"I put an idea of how to deal with waste release papers to Roger. He liked the idea immediately, so we decided to both invest money with the objective of developing technology to solve a global waste problem."

The director also says it would not have been possible without the support Techlan received from the Welsh Government and WRAP Cymru.

The development process began in late 2009 and was successfully completed early in

Lessons learned

1 Innovation: Finding numerous ways to fail is equally as important as finding the right solution. Be prepared to explore ideas that do not at first appear feasible or practical.

2 Listen: Find out what would help your customers. During our research stage we discovered that minimum-order quantities were equally as important as price to smaller businesses.

3 It is important to build relationships with all aspects of the supply chain. Solve problems or issues together.

4 Invest in R&D: We are constantly looking at new ways to adapt and improve our technology. A significant proportion of our budget is allocated to the development of new ideas. You need to keep moving to maintain a competitive edge. We have filed numerous patents in recent months

A Formula One car comprises a resin that is impregnated with carbon fibres and which involves silicone release paper

Mark Thompson, director and head of innovation at Wales-based Techlan

2014. Techlan is now in full production at its Swansea plant, with a current capacity of several million square metres of paper per year.

Manufacturing process

"Imagine a long roll of paper which travels the length of a production line. This has a resin poured onto it, followed by the 'impregnation' of carbon strands. The release paper supports the resin film during the process and prevents it from sticking to the manufacturing line," explains Thompson.

At the end of the line, the finished prepreg composite is peeled away from the release paper as the saleable end product. Finally the release paper that is contaminated with residual resin is rewound into reels and treated as a waste product. "We receive the rolls of used release paper at our site in Swansea where they are sent through our cleaning process to remove any residual manufacturing contaminant. The release paper is then converted and packaged, before either being supplied back to the original user for a second or third use, or it is sold into different industry sectors," he adds.

"A sophisticated camera-based inspection system enables us to certify the cleanliness of the release papers in accordance with each customer's requirements. It is able to identify faults, defects and contaminants down to a particle size of 175 microns."

Techlan cleans both sides of the paper in one pass and ends up with a release paper that has still got virgin qualities in terms of strength and release characteristics, but is 100% recycled. "On top of which, the cleaning process is not resource-hungry. It is incredibly efficient with minimal usage of power or cleaning materials," states the company director with pride.

However, Techlan's biggest benefit for its clients is the fact that its prices are up to 50% cheaper than virgin release papers.

"This means companies can save up to 50% on purchasing costs," emphasises Thompson. "Added to which we have very short lead times and a small minimum order quantity of only 250m^2. Companies do not have to order significant quantities of paper and tie up capital in stock that they may or may not use in the months to come."

What about the future?

"The business is growing steadily and, in order to expand, we have acquired a third industrial unit at our current location," states the company's head of innovation.

The company has plans to extend its portfolio of silicone release papers in 2015 and the director is confident the new warehousing capacity will allow it to further develop these products for supply in larger quantities for the UK and European markets.

"Now that we have the process and the market in the UK, we plan to use it as a model for European countries such as France, Germany and Spain; basically as far afield as we can go. We can take paper from a prepreg composite manufacturer, run it through our process, clean the paper, certify it and either supply it back to them to use for a second or third time, or sell it into other markets. Clients will be able to get multiple uses from the same virgin paper, which makes them much more sustainable, as well as reducing costs."

Furthermore, the technology is said to lend itself to other industries. Techlan is currently trialling a different manufacturing process that uses release papers once and then discards it as waste. According to the company, the results are very promising.

All in all, Thompson has every reason to be pleased with what Techlan has achieved. "Our product is unique and produced to a high standard." Finally, what does the company director have to say to producers of virgin silicone release paper? "You must be worrying," he says, before adding mischievously: "I do hope so." **RWW**

Company information

Location: Swansea, South Wales

Established: 2009

Products: Recycled silicone release papers that provide a release effect against all types of sticky material for a product or a manufacturing process

Number of staff: Techlan has five full-time members of staff and is currently recruiting further employees for its production facility in Wales

System: Techlan's cleaning technology recovers waste silicone release papers and enables them to be re-used again either for the same or another process or product. The company has spent over £300,000 on developing the technology