



When start-up company Samrey Generators & Turbines Ltd wanted an initial batch of 30, 1-metre diameter plastic propeller blades for its range of innovative micro wind-turbines, it turned to rapid injection-moulding specialist Protomold®.

Renewable energy is front-page news and sprawling wind farms are now a common sight across the UK, on land and at sea. However, for those who want to take energy production into their own hands, there is an alternative to relying on the national grid: Micro wind-turbines.

Since he started trading as Samrey in August 2006, entrepreneur and engineer Dave Samuel has been designing and manufacturing compact, low-cost wind-turbines for use on homes, smallholdings and farms all over the world. The company's products range from deceptively powerful 1m diameter turbines, up to 3.5m diameter models capable of generating as much as 90-120% of the electricity required by an average farmhouse. Thanks to clever design and engineering, Samrey's products are so efficient that they're no longer the reserve of windy Hebridian outposts and are sprouting up increasingly in urban as well as rural locations.

In Samrey's early days, Dave Samuel made the turbine in glass fibre using labour intensive and very messy manual lamination techniques, times he recalls with a shudder.

Samrey Generators and Turbines

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“The early fibre glass blades make me itch just thinking about them,” he says. “It was clear we could not go into production using this technique so we began to search for an injection-moulding and toolmaking company that could supply production prototypes. We did a search on the Internet and we came across Protomold, based just down the road from here, in Telford.”

Samuel submitted a 3D model of its turbine blade

“Obviously as a start-up company we were working on limited capital and Protomold understood our situation,”

via Protomold’s website and within a few hours a quotation for tooling and parts arrived in his e-mail inbox. The ProtoQuote cost and manufacturability quotation is, primarily, a summary of potential problems with the part, explained in a clear, simple and non-technical way, incorporating suggested changes and, if necessary, redesigns.



“The ProtoQuote from Protomold was excellent,” says Mr Samuel. “Obviously as a start-up company we

were working on limited capital and Protomold understood our situation. They were very helpful in suggesting possible ways of reducing the cost.”

One of the main benefits of the ProtoQuote system is that it simplifies and demystifies injection-moulding for everyone involved in the product development project and takes a lot of the guesswork out of the process.

The Samrey turbine blade is a complex part. Each of the

blades made by Protomold is 480mm long and is used on the company’s 1m diameter Wren Micro turbine. It is quite a large part for injection-moulding techniques, complicated further by a steep pitch twist at the root, where it then blends into a classic aerofoil shape.

However, using DuPont Zytel nylon resin, which is designed specifically for injection-moulded components, Protomold produced a 30-off batch ahead of the original 15 days quoted lead-time.

“I really can’t fault Protomold or the parts they supplied,” confirms Mr Samuel. “We did some tests on the blades and were so pleased we have

subsequently ordered another batch of 600. In fact, thanks to growing demand, we’ll place another order for the same quantity any day now.”

Samrey has recently struck a license agreement with a US manufacturer to produce the wind turbines in North America. Part of the license agreement is that Samrey will supply certain parts for these turbines, one of which is the turbine blade currently produced by Protomold.



“I think it’s safe to say we will be using Protomold’s services for the foreseeable future,” concludes Mr Samuel. “In fact, we have a few other parts that we will be submitting to Protomold for quotation in the coming months and I am confident they will do an equally professional job.”