

The Free-Pixel panels designed by Indexlab and vacuum formed on Formech technology

Shaping Italian design

Thermoforming and design came together at Plast 2015. By David Eldridge

With Expo 2015 currently taking place in Milan, the eyes of the design world are on Italy over the next few months. In May, some of the design magic from the architecture of pavilions at Expo was transmitted to the stand of UK technology company Formech at the nearby Plast 2015 exhibition.

Formech, which makes thermoforming machines for lab, design and industrial operations, devoted the wall of its stand to an installation created by Indexlab, a Milan-based design studio.

Architecture

The Free-Pixel project with Formech is "an interactive installation merging architecture and programmed art", said Pierpaolo Ruttico, founder of Indexlab. "The installation is a composition of thermoformed panels that build a complex space."

The panels represent "an array of 'programmed pixels' following a bitmap-driven process with continuous and systematic variation of its elements", said Ruttico. The aim is to create a sense of motion on architectural facades.

Indexlab's work involves the programmed creation of the design in CAD, followed by robotic cutting of the shapes and placement of the various elements in the correct order at the correct depths. Then the panels are thermoformed over these element shapes on a Formech 686 machine.

The resulting Free-Pixel installation

on Formech's stand was back-lit so the white panels were illuminated in a variety of colours.

The Indexlab approach combines computational design – in which the designers write algorithms that generate unique designs – and robotic fabrication. These are "two of the fastest emerging and most radical technologies reshaping architecture today", said Ruttico. "The aspiration is to achieve complexity of form and mass-customisation of building components."

Thermoforming is very suited to Indexlab's fabrication needs and Ruttico paid tribute to Formech's involvement.

"Together we handle complex operations in a very fast time-frame," he said. "The Formech 686 we use is really good at meeting our specific needs: it's very flexible, quick and easy to operate, it allows us to form and build parts extremely fast. Quartz heaters provide an energy efficient solution and accurate heating profiles give consistent and precise results."

The 686 is a mid-size machine in Formech's range with a vacuum form-

ing area of 646 x 620 mm. The company also makes desktop models, automatic machines and machines suited for specific purposes, such as prototyping and film insert moulding.

"At Formech we like to think of ourselves as the most progressive company in vacuum forming offering the latest technologies to advance what is fundamentally a traditional method of shaping plastic," said David Vukovich, chief operations officer at Formech.

Collaboration

He said that working with designers like Pierpaolo Ruttico shows that while vacuum forming may be one of the oldest plastics fabrication methods, "it is still the preferred and most efficient means to create certain shapes and rapidly replicate".

"We are delighted to work with innovative customers like Pierpaolo as we learn so much from them," he said.

Formech machines are also used by a large number of universities around the world, working on projects to extend the boundaries for vacuum forming applications. These include: Cambridge University, Bristol University, Brunel University, London College of Fashion, Central St. Martins London, Domus Academy Italy, German Malaysian Institute, University of Western Sydney, RMIT Melbourne and Yale University.

Vukovich said: "We have developed a highly advanced machine for Bristol University featuring a sophisticated control and heat profiling system to test composites and technical materials. We are working with Cambridge University on a fully automated manufacturing cell to study production tolerances to benefit industry."



Installation of the panels on Formech's Plast stand