



Marchesini Group's additive manufacturing department, featuring an arsenal of industrial-grade Stratasys FDM 3D printers.

Additive Manufacturing Empowers Marchesini Group's Design and Production Innovation

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Mirko Fortunati

**Mechanical Processing Departments
Coordinator, Marchesini Group**



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[Marchesini Group S.p.A.](#) is a leading Italian manufacturer of automatic packaging machinery and an established supplier to some of the biggest names in the pharmaceutical, cosmetic and food industries. Headquartered in Pianoro (Bologna), Italy, the company has a network of 12 production plants in Italy, 14 international owned subsidiaries and 35 international agencies – employing nearly 2000 people around the world.

Marchesini Group's production plants specialize in the design, development and manufacture of specific packaging lines. These include its flagship cartoning machines – the company's core product – as well as deep-draw thermoformers, blister packaging machines, rotary and linear labelling machines, tube-filling machines and end-of-line systems. Leveraging almost 50 years of expertise and a suite of in-house cutting-edge technologies, Marchesini Group provides its clientele with a full-service offering for each packaging machine it manufactures.

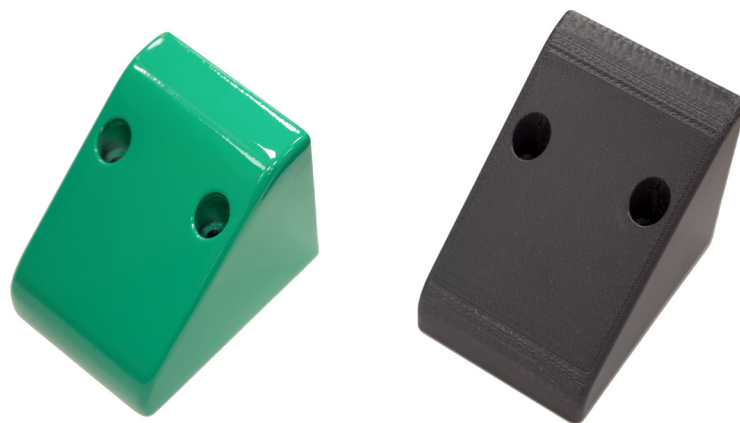
Throughout the manufacturing process, premium quality and customization are central to the company's strategy and success. Every machine is tailored to a specific industry or customer's production environment or process, which is critical in ensuring optimum performance and efficiency when deployed in the field.

"At Marchesini Group we say that 'extra-ordinary is our ordinary,' meaning that we are faced with challenging, entirely customized projects on an almost daily basis," said Mirko Fortunati, Mechanical Processing Departments Coordinator, Marchesini Group. "Our clients come to us with completely different yet demanding production requirements, so it's vital we deploy the most advanced technologies available to ensure

we effectively fulfill their specific needs in the shortest time possible. Additive manufacturing, in particular, plays a critical role in enabling this customized production business model."

Transforming Production With Additive Manufacturing

Marchesini Group's journey with additive manufacturing started in 2003 with the purchase of a Stratasys FDM® 3D printer from Stratasys' local partner, [Energy Group](#). While the mainstay of its use was for prototyping, it did not take the company long to appreciate the potential of FDM additive manufacturing for producing functional parts for its customized packaging machines. As a result, the company has since invested in ten industrial-grade Stratasys FDM 3D printers, including a large-scale [Fortus 900mc™](#), four [Fortus 450mc™](#) and five [F270™](#) systems, in addition to two [PolyJet™](#) multimaterial 3D printers.



Strong, yet lightweight 3D printed protective casing used on robotic packaging machines. Produced with the Stratasys Fortus 450mc in FDM Nylon 12CF material and finished with green varnish.

In 2018 the company established a dedicated 3D printing facility at its headquarters in Pianoro, which has become the beating heart of much of its production. The team has 3D printed thousands of functional parts and components for its packaging machines, which has brought several key benefits to its business.

“Producing complex, customized parts with traditional manufacturing methods has proved extremely costly and time consuming, which is no longer suited to the growing demands of today’s packaging manufacturing industry,” explained Fortunati. “Crucially for us, integrating Stratasys FDM additive manufacturing into our production process has drastically reduced our part lead times from several weeks to a few days. Added to that, we can cost-effectively produce the exact quantity of parts we need, without requiring expensive tooling or machining. Having this on-demand production capability enables our engineers to take advantage of the greater design freedom enabled by 3D printing, which has empowered Marchesini Group to achieve higher-quality results for our customers.”

This production capability also extends to maintenance and repair. With its packaging machines installed at customer locations throughout the world, ensuring they run efficiently is essential for Marchesini Group. As a result, the company is now able to quickly and cost-effectively 3D print customized replacement parts on-demand using its array of 3D printers – with no minimum order requirement. Not only does this allow the company to deliver spare parts to its customers with significantly reduced lead times, but it also eradicates the need for costly spare inventory storage facilities.

Enhancing Packaging Machinery for Customers

Additive manufacturing has proved particularly important for several key applications in industrial robotic packaging machinery, including protective cases, cable support systems and junction boxes, to name a few. When it comes to robotic packaging systems in particular, every single component matters in order to ensure the robot’s agility, precision and speed of movement.



3D printed component used for product handling on the robotic packaging system. Produced using FDM Nylon 12CF material.

According to Fortunati, this is an area where high-performance 3D printing materials have made a huge difference.

“With our FDM 3D printers, we have the freedom to design and produce customized components with complex geometries in timeframes simply unachievable with CNC machining. But we can also significantly reduce the weight of components, which is essential,” said Fortunati.

“Using tough and durable thermoplastics such as Stratasys’ FDM Nylon 12CF™ or ULTEM™ 9085 resin in place of traditionally machined metal components has enabled us to reduce the weight of some parts by at least 30%,” he explained. “This not only increases the speed of movement and productivity of the robot for our customers, but it also lessens the rate of degradation. Importantly, these 3D printed materials also comply with specific industry regulations, which is enabling us to expand this technology into even more production applications – helping us to further innovate our products for customers.”



A grasping pincer (left) and packaging lid (right) – 3D printed with Stratasys PolyJet technology. Multimaterial 3D printing was used to create the white structural components and black rubber-like grips all in a single print.

Marchesini Group is also using Stratasys PolyJet technology to produce parts and components for applications requiring the combination of two or more materials. “One great example of this technology is for the production of grasping pincers, which are designed to handle light items such as package leaflets or smaller jars. With the advanced multimaterial 3D printing capability, we can produce complex designs that combine hard and rubber-like materials in one single print – something that would typically take multiple processes to create costing us time and money,” added Fortunati.

The 3D printers within Marchesini Group’s additive manufacturing department is currently running round the clock. Fortunati concluded, “It’s fair to say that additive manufacturing is an integral part of Marchesini Group production. In fact, in 2019 we recorded a total of 22,480 hours of operation for our FDM 3D printing equipment – equating to almost 15 hours a day. For our two PolyJet 3D printers, a total of 1,700 hours of operation, the equivalent of about 8 hours a day. As we continue to expand these technologies across our design and production process, we can expect these figures to be even higher in the future.”

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