



Dispensing

Case study: Polyurethane in furniture at B&B Italia

Applications in Plastics

- Cutting/Finishing
- Glueing/Sealing/Dispensing
- Flaming/Painting
- Assembly
- Packing/Palletizing
- Inspection/Quality control
- Machine Tending

Afros Cannon has been using ABB robots for about 15 years. “We try to use ABB whenever we can because we prefer them. They represent reliability, quality, and worldwide coverage for replacement parts,” says Christian Cairati, responsible for communication and marketing for Cannon Afros. The gasket application in particular takes advantage of ABB robotics because the application of the polyurethane – as a kind of superglue for narrow and sometimes unusually shaped surfaces – requires speed, precision, and reliability.



SIT IN STYLE

Italian polyurethane producer Afros Cannon has long worked with furniture manufacturer B&B Italia.

Cannon was born as a result of the particular nature of polyurethane. It is a plastic formed by mixing a polyol (an alcohol with more than two reactive hydroxyl groups per molecule) with a diisocyanate or polymeric isocyanate in the presence of catalysts and additives. The formulation is purely chemical; because no heat, cold, or pressure is needed to create it, Italians right after World War II were producing it as artisans rather than industrialists. Then as now, polyurethane represented a small percentage of the rapidly-growing plastics sector, but engineer Carlo Fiorentini recognized its enormous potential for industrial applications. He had studied chemical engineering at the University of Bologna in the early 1950s, then worked with polyurethane in the research departments of Italian and American companies. He decided to strike out as an

entrepreneur, along with a fellow engineer, Leonardo Volpato, in 1964. Ignis, an Italian appliance manufacturer located in Varese, a province north of Milan, had asked the two engineers to make some pieces in polyurethane for a refrigerator Ignis was building. So Cannon set up shop in Milan to manufacture polyurethane dosing machines, and later established a production base in Caronno Pertusella, an area in the province of Varese, about 20 kilometers north of Milan.

Polyurethane expands as it forms – up to 80 times its original mass, depending on the additives in the original mixture. It is excellent as an insulator for temperature, used in refrigerators and building materials, and for sound, used as casing for motors and appliances. It is also a powerful adhesive and used as gaskets for streetlights, cooker tops, car parts, and many other applications. It can be hard – for auto-mobile parts – or soft – for furniture – and can be molded into almost any form. This material is amazingly versatile, says Christian Cairati, responsible for communication and marketing for Cannon Afros, demonstrating soft applications such as sofa seating and mattresses and hard structural forms for automotive parts and refrigerator doors. The applications are limited only by imagination. Over the years, Afros has garnered more than 160 patents, 60 of them held by Fiorentini himself. This emphasis on innovation has helped keep Cannon a market leader, in spite of competition from two German-based companies. The three together represent about 80 percent of the market for polyurethane machinery, which in turn is about five percent of the world plastics market.

Cannon differentiates itself from the competition in several ways. Its innovation ensures that clients have access to cutting-edge applications that can be tailored to their specific needs. Its worldwide network is designed to serve multinational corporations. Plus Cannon’s competitors developed from raw materials suppliers for polyurethane, so buyers of the machinery are compelled to buy from those suppliers. “We do not impose such ties,” Cairati says.

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Trend-setters in their respective fields, Afros Cannon and B&B Italia have worked together for more than 35 years. B&B Italia is a recognized leader in modern interior design: Its furniture has won many international design awards and it has worked with leading names in contemporary design, including Bellini, Citterio, Piva, and Afra and Tobia Scarpa. Its striking headquarters in Novedrate in the Como region, designed by Renzo Piano, are only 24 kilometers from Afros headquarters in Caronno Pertusella. B&B Italia is known for its achievements in coldfoamed molded polyurethane, thanks to this long-standing relationship. “We were one of the first clients of Afros,” says Alessandro Colombo of B&B Italia’s center for R & D. “One of our Afros machines was installed 35 years ago, and we still use it.” Because B&B Italia has a total of 370 different moulds in production at any given time, and because the production line changes from one mould to the next, production machinery must have maximum flexibility. Afros equipment ensures the proper dosage of polyurethane to each mould, while ABB robots ensure precision and speed of movement – although speed is not as important in this application as are flexibility and reliability.

For example, an IRB 6400 robot from ABB accurately guides the head of Cannon model fp2l32, the largest in Cannon’s mixing range, as it applies polyurethane foam at high pressure to moulds used in the production of soft furniture, such as sofas and chairs. Then the mould is closed and locked and moves slowly down the production line while the mixture inside expands. The line moves slowly because, like a soufflé, the polyurethane will “fall” if it is shaken unduly during these first critical seconds.

A distinguishing characteristic of the fp2l32 is that it can apply three different types of polyurethane, in response to the client’s specific needs: one mixture to meet Euro-

pean standards, and another mixture (green coloring is added for differentiation) with higher antiinflammable properties for the U.K. and North American markets, and other customers with high standards regarding inflammability. There is also a third category: new mixtures that change, depending on the research being conducted. This third mixture is important to B&B Italia. To remain on the cutting edge of design innovation, it spends about three percent of sales on research and development.

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Cannon Afros

- Founded in 1964 in Milan, Italy.
- Headquarters in Caronno Pertusella, Varese, Italy. Privately held.
- Annual sales: approximately EUR 300 million a year for parent company Cannon, of which 110 million comes from machines, plants and turn-key operations for polyurethane processing. Remaining turnover is generated by presses for composite materials, thermoforming lines, industrial electronics, aluminum die-casting, industrial boilers, special heating ovens, and environmental treatment plants.

ABB and the Plastics Industry

ABB’s wide range of plastics robots can handle most of the tasks involved in and around injection mould machines, regardless of required cycle time or size of the machine. Together with our partners, we provide automation solutions for most manufacturing processes in the plastics industry.