

Since its founding in 1992, SIAPI's plant in San Vendemiano has been supplying small/medium sized linear blowing machine models up to the new model that manufactures 19,000 bottles per hour.



Linear Blowing Machines

With its company know-how, its 60 employees and its solid engineering skills, SIAPI's machines meet the whole range of industrial requirements from small 0.25 liter bottles to extra large 3 and 5 gallon bottles designed for the American market.

SIAPI is set up as a company supplying highly specialized industrial automation solutions. In 1995, new business partners joined the company, which have wide-ranging expertise in the area of stretch blowing machines and make a significant contribution to building the blowing machines for PET bottle manufacturing. "Our machines", explains Mr. Russo, the Sales Area Manager, "are two-stage machines; they process the preform to make the final product, not plastic granulates as is typically done by one-stage machines".

The new generation of compact linear blowing machines with an electrically powered stretch and press is the pinnacle of SIAPI's machine range. The new EAS 14, which was recently presented in Germany, manufactures about 19,000 bottles per hour (5 bottles per sec.); a speed record for the "linear" blower.

The important choice

Technological market advancements and a commitment to meeting costumers' requirements has brought SIAPI to evolve its machine range from pneumatic and hydraulic systems to electric-powered machines.

"In our old production", continues Mr. Russo, "the press was pneumatic-powered in the small machines and hydraulic in the bigger types. Now, we manufacture nearly exclusively electric-powered machines to meet an increased demand for high-speed, more reliable and easy-to-operate systems".

"Our goals", emphasizes Mr. Casagrande, the electrical designer, "were to lower production cost and to find excellent and enduring solutions to ensure quality and reliability for the future."

The long-term business partnership with B&R to build pneumatic machines, has contributed to the smooth and steady development of the new products. "Our mission", states Mr. Casagrande, "was to create a high performance, flexible system that is easy to assemble and simple to start-up. B&R has chosen a complete architecture - the CPU supervises control, motion

and visualization - this configuration reduces possible wiring errors to a minimum and also eliminates the need to configure inverters and brushless drives during tests. In the same way, it is extremely easy for us to replace or update parts because components are automatically recognized and configured."

Research and Development

To ensure the feasibility of the project, SIAPI carries out laboratory tests on preforms, makes molds and tests machines on-site. SIAPI itself carries out every single step of the process for analysis, design, drawing, prototype preparation and machine production. Mr. Russo highlights, "The creativity and the desire to test new cutting-edge solutions, also experimenting on our own engineering innovations or co-operating with customers', are what make us successful. Before delivering machines to customers, they undergo double final testing and inspection to guarantee the high quality standard of the machines".

SIAPI focuses on quality. Quality certifications testify to the commitment of fulfilling customers' require-

ments and to improving the products steadily, which are marked by a high standard for operation, durability and flexibility.

“Our quality system”, explains Mr. Russo, “defines the strict policy and the compulsory standards, which are applied to both raw materials and to electrical components”.

The high quality of the final product is ensured, from start to finish, in the supply chain, in which every operation, every element is carefully analyzed, tested and recorded. The mechanical, electric and electronic components of every machine as well as the elements comprising the mold and the raw material of the preform must meet SIAPI's strict quality standards. B&R guarantees the high quality of its products according to international standards. Last but not least, B&R also offers its expertise in planning and developing machines as well as its after-sales and assistance services.

Customers who purchases SIAPI's machines do not only make bottles by designing and producing a customized and tailored mold, they also benefit from the partner's technical assistance to solve production problems. SIAPI offers this service with its presence in Italy, in different European countries in Middle East, in North Africa and in America with a consolidated business network. “Our customer care”, continues Mr. Russo, “ensures scheduled maintenance service and gets an engineer to the customer's site within 72 hours of the request, everywhere in the world”.

The machine

The movement step, which is electrically actuated, puts the preforms in a hopper. Then, the preform is arranged on a conveyor and carried to the heating unit, where it is heated.

From the oven, the heated preform is transferred into the press and stretch units and placed into the mold, (where the preform is sealed but it is not yet shaped). Finally, the preform is carried to the air blowing unit where 40 bar of



“We are very happy with B&R's technical solutions, competitive prices and assistance, which we are offered when planning and developing our machines.”

Marco Russo
Sales Area Manager
SIAPI

compressed air is blown in to shape the bottle. After the blowing process the bottle is transferred to cooling unit.

The linear blowing machine EAS 14 is equipped with B&R electronic modules. The core of the machine consists of a B&R 2005 family PLC with some analog, digital and communication modules, which are operated directly by CPU. The PLC is connected to the fieldbus I/O consisting of digital, analog and temperature modules placed on the machine.

Managing press, stretch and feeding units is controlled by brushless motors fed by ACOPOS™ servo drives. ACOPOS™ servo drives communicate with the CPU via an Ethernet Powerlink bus, the well-known open standard for high speed, easy-to-use, and true real-time data transmission. Other equipment, such as inverters and valves controlling pneumatic actuators, are also easily integrated thanks to the additional CAN communication bus.

The operator terminal consists of a B&R Industrial PC from the Panel PC family, with touch-screen display connected to the CPU via Ethernet TCP/IP. The dialog pages have been developed using standard visual applications. The PC also manages the shared connection

remotely supported by an industrial modem.

The future

“Our future projects”, concludes Mr. Russo, “exclusively involve the

production of stretch-blowing system machines in co-operation with B&R. Riding the wave of the EAS 14 model, SIAPI has already been studying a small-size machine, which manufactures 6,000 bottles per hour, with the same reliability and quality marking our products. We have tried completely new engineering solutions on these machines, starting from pneumatic-hydraulic-powered machines to mixed-controlled machines, in order to fulfill our objectives from the very beginning, in just one year”.

Preforms just heated in the ovens are divided into two streams, and then directed to the machine's two blowing presses.

Heated preforms, ready to be inserted into the press, where they will be blown.

Bottles just blown and extracted from one of the two presses are held by the neck to be delivered to the transport system downstream of the blowing machine.

