



Plastic Samba

The Brazilian market for plastic injection molding machines finds itself in recession, and a recovery is not expected before the fourth quarter of 2003. Despite this, companies in this industry are chalking up positive results. This is made possible, even in this sub-par economic environment, by occupying an existing niche or having more technologically developed products than competitors.



Romi's plant in Santa Bárbara D'Oeste, in the region of São Paulo.

Indústrias Romi, a Brazilian company founded in 1930, began manufacturing and marketing plastic injection molding machines in 1972. The vast experience acquired since then provides the foundation that they build on today. That is why Romi understands customer demands when it comes to the machines themselves, as well as in providing support both before and after the sale.

Electric Injection Molding Machines – The Competitive Advantage

In contrast to hydraulic injection molding machines, electric variants offer substantial advantages in terms of efficiency: lower energy consumption, shorter setup and cycle times, less noise, higher precision, more flexibility, and greater dependability. These are all advantages which give the injection molder cost benefits in the long run. Due to these facts, demands for the electric version in-

creased in a continuous way, and Romi decided to expand their existing machine lines to include electric injection molding machines in their product range.

One important requirement which needed to be met during development entailed building upon the control philosophy already present in the hydraulic version. In addition, the controller had to be adapted within five months since Romi wanted to introduce the newly developed Eletramax machine at the Brasilplast exhibition in 2003.



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“Our know-how in manufacturing injection molding machines, combined with B&R’s competence in industrial automation, secure our position at the top of the South American market.”

The platform-independent structure of B&R’s Automation Studio programming

tool made a fast changeover possible since the same software modules used for the hydraulic machines also satisfied the demands of the electric machines.

Existing Software Solution for Hydraulic Machines – The Foundation

To start with, Automation Studio provides an extensive supply of libraries specially suited for plastics technology. In addition, the application can be divided into several levels: The lowest level contains functions for handling sensors and controlling the actuators. The actual axis control is taken care of one level above that. The highest level is the process manager. It coordinates the entire machine process in all of its various modes: automatic, semiautomatic, manual, and setup. A separate unit where parameters are configured is controlled via the command interface which results in the visualization. This was written in



Facilities at Romi are equipped with the most advanced industrial equipment.

Visual C and runs under Windows XP. Automation Studio's flexible assignment of I/O points made the hardware connection possible. And a PVI connection – either over Ethernet TCP/IP or serial cable – handles the communication to the PLC.

“We were amazed by the short amount of time B&R needed to integrate completely new drive technology into the software. From our point of view, this could only have been possible due to the modular design of the software and the know-how of B&R's employees in Brazil.”



Electrical engineer Evandro Avancini manages Sales and Technology at B&R Brazil. His degree in electrical engineering, the application training he received at B&R Headquarters, and his previous application experience make him a responsible contact person for all customers. Evandro.Avancini@br-automation.com

The Brazilian Machine Manufacturing Market

Brazil is the largest machine manufacturing country in Latin America and ranks tenth in the world with a gross manufacturing volume of \$17.5 billion annually. The approximately 4,500 machine manufacturers, the majority of which are situated in the south and southeast of the country, currently use automation only to a small extent. This trend is changing rapidly. The demands confronting manufacturers in Brazil are now beginning to correspond to those faced by European manufacturers. Increased productivity is the new buzz phrase, and it is being driven by improved automation. B&R has maintained business relationships in Brazil since 1995, and trained engineers have been providing on-site support since 1996. In 2002, several OEM customers in the packaging and food and beverage industries were acquired by B&R, which meant that the Campinas office, located around 100 km north of Sao Paulo, needed to be enlarged. Since then, B&R has not only established a warehouse at that location, they have also provided a skilled team of employees in sales, services, support, and applications.


A Simple Adaptation

For the new Eletramax machines, ACO-POS drives were integrated into the existing software structure and enhanced to include the specifications for electrical drive technology. Adjusting the process manager allowed the axes to move simultaneously.

The result was a compact solution using the same software modules and a single visualization system for both the hydraulic and the electric injection



The electric injection molding machine, Eletramax, consists of four fully electric axes (clamp, ejection, injection, and plasticizing fittings) as well as a hydraulic infeed axis for the injection device. This hydraulic pump is also used simultaneously for the hydraulic core puller of the injection molding tools. ETHERNET Powerlink provides for the synchronization of the electrical axes.

molding machines. In addition, this software structure lays the groundwork for a simple conversion to future hybrid machines of all types. 

Automation Studio™

Automation Studio™ is an integrated software tool with an intuitive Windows user interface which can be used for every type of automation task. It provides project planning, configuration, programming, documentation, and diagnostics in a single environment. Familiar function elements, along with conventional automation components, ensure efficient work while eliminating unnecessary interfaces. Because of its flexibility, Automation Studio™ is able to handle open/closed loop control, visualization and communication tasks to meet all automation demands. Every project – from the simplest machines up to the most complex processes – can be implemented in just a short amount of time. User-friendly operation guarantees minimal training expense and maximum efficiency for tasks. In addition, uniform data management for control, motion, visualization, and communication tasks eliminates the need to enter the same information several times.

