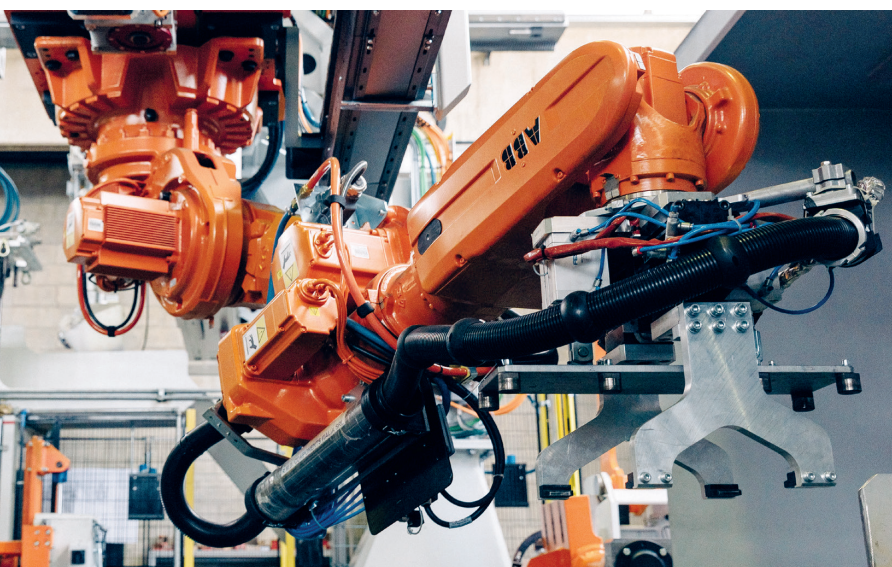


ROBOTICS

An innovative die-casting line from Artimpianti using ABB Robotics



An innovative solution for the world's aluminium foundries improving safety, flexibility and productivity.

Two matching plants designed for a Russian foundry confirm yet again the ability of the Costigliole Saluzzo (Cuneo) company to supply increasingly ground-breaking solutions.

A story of success

Artimpianti was founded by Alberto Bott a and Walter Genre in 1984. After having worked installing industrial plants and in a large paper mill, the two partners decided to take advantage of their skills and create their own company. In the early years, the technical competence and willingness of the team were recognised and the company considered itself as professional industrial plant installers in both the automotive and paper industries.

Over time, the business focused itself on foundries with the objective to introduce modern automation concepts adapted from the paper industry. From the beginning, the company worked alongside some of Italy's largest industrial entities during their process of internationalisation, proposing themselves at the time as one of the few able to install 'turnkey' industrial plants in both North and South America.

In order to support these commitments Artimpianti de Mexico de CV was created in 1998 with its headquarters at Monterrey. In 2012 again in Mexico, the Artcubing Division was set up specialising in the CNC pre-machining of cylinder heads as a production add-on contributing to the management of the cyclical trend inherent in production equipment. In 2013 Artimpianti opened Artimpianti India Private Limited to give themselves a presence in the Asian market.

The company today

Presently Artimpianti has 43 employees in Italy and another 32 in Mexico. It works essentially to supply turnkey production lines for aluminium foundries for cylinder heads and other components in the Czech Republic, Slovakia, India, China, Mexico, Russia, United States, Ireland and France. In Italy, it also supplies the railway and tyre industries. The company now has 92% of its turnover in export markets. Key to the company's success is the technological know-how of integrating robotics into production lines. Artimpianti's strong point is its project and production skills (with advanced 3D simulation tools) in addition to advanced software expertise.

The plants, pre-assembled and tested in the works, are then re-assembled by the company's personnel on the client's site, commissioned, tested and delivered to the client's staff complete with training and post-sales service. Depending upon the individual case, the company draws upon its experience to propose innovative solutions or works to strict briefs from the commissioning company guaranteeing in all cases affinity, responsiveness and efficiency.

Robots

The first articulated robots, one of which was from ABB, were installed by Artimpianti in 1991. Their integration into plants was targeted initially to eliminate dangerous activities for the workforce and facilitate maintenance rather than reduce working times or improve quality. ABB, very active in the foundry industry and one of the first to propose robots into this uncompromising environment, has collaborated for ten years with the Costigliole Saluzzo company and they have fully appreciated the reliability of the robots, the global footprint of the Group and the excellent post-sales support from ABB. Artimpianti technicians also used with satisfactory results the RobotStudio simulation tool that, over and above reducing the start-up period of the plant, gives clients the chance to see the proposed solution real-time right up until the final phase of negotiation.

A technically unique solution

Today, the demand from automotive industry to foundries is production flexibility rather than high volume and pressure tends to concentrate at the three bench die-casting lines with capacities of between 33 and 45 piece per hour where quick and easy production changes can be made.

For a Russian foundry that was producing castings for a major European car manufacturer, Artimpianti designed and installed two highly innovative and automated three-bench lines to replace the traditional Cartesian axes or articulated robots floor-mounted on a 'trackmotion'.

In collaboration with ABB and another key supplier, a system was developed whereby a unique special beam supports two cantilever arms, never before applied, positioned behind the benches, to manipulate the cores and the liquid metal. From the same beam a robot IRB6620 was suspended that manages the unloading procedure by removing the casting from the mould and moving it to the pre-finishing area where it is cooled, sand is removed from the outer surfaces, feeders are cut and it is placed finally on a special multi-level cooling conveyor to reach the correct temperature and then passed for final finishing.

The plant layout was designed to improve operator mobility and safety in addition to giving visibility in the work-station where manual activities are undertaken and can pose a risk to personal safety. Consequently, an operator is now able to be close to a mould for analysis, carry out service or change it without stopping the robot working in the other two work zones. The real possibility to change the mould and the tools without stopping the line has significantly improved the OEE and as a result the productivity.

When considering automation one has to bear in mind a complex application: the plant has 14 axes and the IRC5 Robot Controller manages six axes of the robot itself in addition to all the Cartesian axes dedicated to the moulding and die-casting processes.

Artimpianti's collaboration with ABB has improved plant ergonomics, safety and productivity satisfying the demand from markets fully aware of the advances in innovation technology.