



Evolut

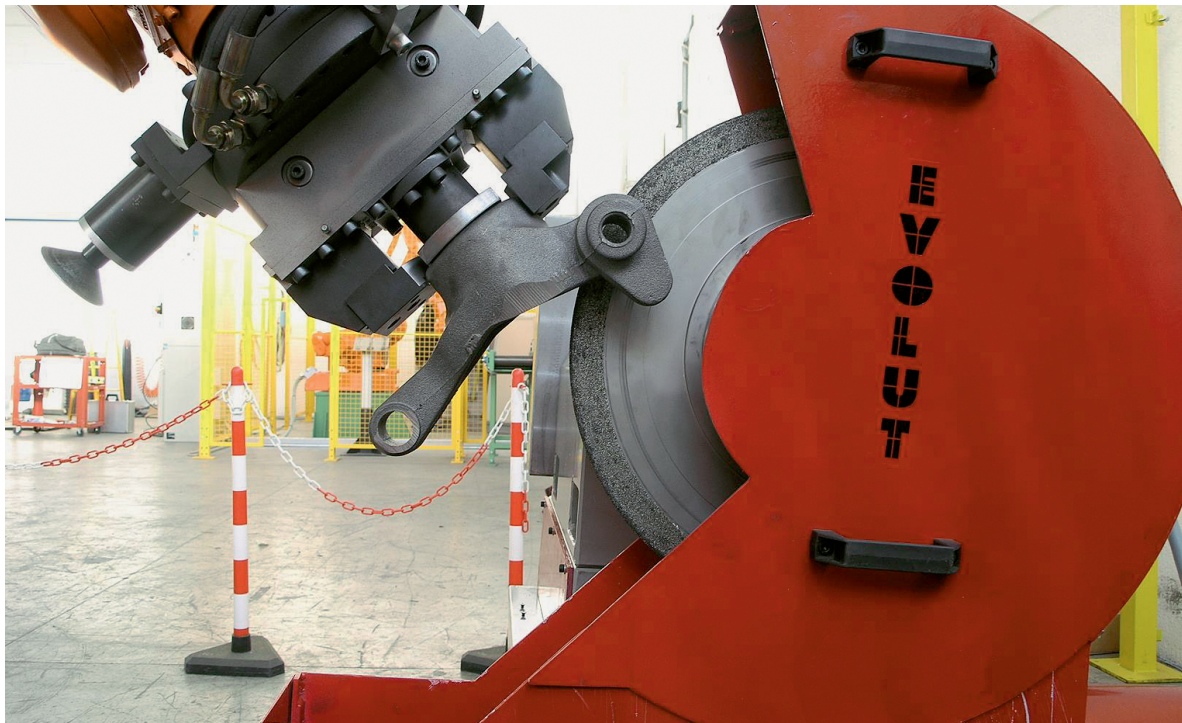
Case study: Foundry/Partner

Applications

- Deburring

Products

- Cast-iron castings



Computer simulation of deburring at Evolut

Italian integrator Evolut uses computer simulation to save time – and money – in the deburring process.

➤ Since the early 1990s, the Italian company Evolut has been in the business of integrating robotic cells for the foundry industry. Based in Brescia, Evolut works hand in hand with robot supplier ABB to provide cutting-edge solutions for a wide range of applications.

Evolut has constructed robotic systems for some of the most diverse kinds of control, such as machine tools, transfers, presses – in the hot-pressing of metals – and pressure die-casting machines. It also has robotic systems for deburring cells, polishing cells, plus robotic assembly machines, and handling and palletization cells.

The company has recently come out with new simulation software for the deburring process. “Working with

three-dimensional software such as CAD, the new software for moving and handling the robot in 3D allows Evolut’s design engineers to perform a feasibility study,” says Giordano Lancelotti of Evolut. “Plus a more accurate study of the machine dimensions, and to assess beforehand the individual points not accessible to the robot. Plant installation times can then be reduced, saving time and money.”

Virtual design and planning

The highly sophisticated simulation software allows programming technicians to conduct a simulation of real-time plant function and off-line programming. “This

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permits a kind of virtual design and planning, an indispensable transitional stage on the way to guaranteeing specific, ideal results when developing a robotized cell,” says Lancelotti.

Where the cell does not yet exist, the simulation software provides a controller on the structure interior similar to that of the robot, which generates the work program on the basis of the cell’s three-dimensional design – all graphically – telling the robot in simple terms which trajectories to follow and which points to access. “Since it does not tie up the robot, unlike the classic self-learning programming system, this program will certainly make for great time savings, particularly when programming complex routes,” says Lancelotti.

Avoiding vibration

One application of this software has been adapted to the deburring cell for cast-iron castings. High transportation costs, the ongoing need for quality control and, more particularly, the shortage of staff to carry out what is very dull, hard work, have driven foundries to seek an effective and able-bodied substitute for man: a robot.

Evolut is one of the first companies to have constructed a robotized plant for a major commission manufacturer from the Italian Midlands that is dedicated to the cast-iron deburring process.

In a nutshell, this plant is made up of a vision system which recognizes the location and orientation of the



A deburring cell carrier counterweights doing its job.

>FACTS

Evolut at a glance

- An independent company since 1991
- 66 employees
- 12.5 million euro turnover in 2006
– a 10 percent increase in sales over 2005
- 1,100 installations in Western and Eastern Europe and North America
- Strategic Partner to ABB

Benefits

- Software allows for feasibility study prior to application
- Robots can continue working while simulation is being done, thus preventing extra downtime and saving money and time

workpiece in a simple position on a revolving table. The robot picks up the piece and travels over to the special machines that perform cutting of the feeder head, then the external and internal deburring of the pieces.

“The distinctive feature is that the machines are designed in such a way as to resist the robot’s dynamic thrust forces during the deburring process so as to avoid problems of vibration and excess strain that might prove detrimental to the actual process,” says Lancelotti.

The machines are hinged on a rotating axis and held in place with electro-pneumatic cylinders that self-compensate for the thrust. Another special feature is that the process uses diamond wheels, which offer a longer-lasting tool, low emission of powders during the process and a high degree of finish, among other advantages.

“Apart from making the loading system simple, flexible and avoiding the use of special workpiece support systems, the vision system used for the workpiece feed is exploited in detecting the amount of burr or flash to remove from pieces,” says Lancelotti. ☉