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
permits a kind of virtual design and planning, an indis- 
spensable 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 soft- 
ware 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 tra- 
jectories 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 com- 
plex 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 con- 
structed a robotized plant for a major commission manu- 
facterer from the Italian Midlands that is dedicated to the 
cast-iron deburring process.

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

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-com- 
pensate 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, flexi- 
ble 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. ☞

>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

www.abb.com/robotics