



# GAMA

## Case study: Metal Fabrication

### Applications

- Bending
- Material handling
- Stacking

### Products

- Harmonicas
- Metal furniture parts
- Metal frames parts
- Chassis parts
- Coffee machine parts
- Vending machine parts
- Kitchen fitting parts

## Robots for increased productivity of delicate solutions

**The link between working with sheet metal and music may seem an unlikely one. Yet GAMA, a sheet-metal manufacturing company situated in Italy's Ancona region, began as a manufacturer of harmonicas. Today, the metal-working expertise developed through producing musical instruments offers high-quality solutions for third parties. Robots from ABB has offered an even sharper competitive edge.**

> Once upon a time, harmonicas were made of wood. However, metals, steels and light alloys soon were incorporated into their design. To do this, the manufacturing house of GAMA, a harmonica specialist, had to convert its equipment to work with metals, and it had to acquire, develop and refine the very special, delicate technologies required to work sheet metal and transform it into parts of great complexity and precision.

These days, GAMA still maintains a workshop to produce harmonicas, but its core business is producing sheet-manufactured items for third parties in thicknesses of up to 3 mm. GAMA will manufacture virtually any component in a small thickness, in any dimensions and any grade, in batches ranging from the small through medium-sized and right up to the ceiling on the large series. GAMA also produces prototypes of new products by working with product designers as part of a team in the field of co-design, with a view to industrializing and fine-tuning the products prior to their actual construction. This is how metal furniture, metal frames, chassis and structures for coffee machines, vending machines and kitchen fittings have come about, as well as a range of other sheeting products.

A few years ago, GAMA installed a small ABB robot to link up to a forming press. The results have been extremely gratifying. It has eliminated the need for an operator for the machine, which can now function by itself continuously, producing even at night. The consistency of



workpiece precision has increased as well and, although the robot's bending cycle time is slightly superior to that of manual bending, the bottom line is also a reduction in costs and a gain in productivity. During the two years since installation, it has run for more than 19,000 hours without requiring any repair action. This experience has motivated GAMA to install two more robots.

### Three robots, infinite possibilities

The three robots in operation at GAMA, are worthy of attention for a number of characteristics. The first robot, the smallest of the three, is a type IRB 2400 (maximum



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load 16 kg, range 1.5 m, six controlled axes, position repeatability 0.06 mm). The IRB 2400 is the most common industrial robot in operation, present in more than 14,000 installations worldwide. It comes in a full range of models capable of providing made-to-measure solutions for the most varied tasks, from arc welding through process applications to machine connections. The appliance boosts productivity, reduces production times and allows for more rapid product delivery. The arc welding variant attains a reach of 1.8 m, supports a 7 kg load, features slender arms and wrist, and can operate in a wide range of working environments. Other variants offer load capacities up to 16 kg with an arm extension of up to 1.8 m, giving excellent movement control, load misalignment characteristics and unlimited rotation of the sixth axis.

### A thorny problem solved

The second appliance, a type IRB 4400 (permissible load 45 kg, maximum reach 2.7 m, position repeatability 0.7 to 1 mm) is fast and compact, supports medium-to-heavy loads and is well-suited to a vast range of applications. The IRB 4400 operates in a bending and calendaring island (it comprises not only the bender but also a rotary press). The island also enables curved pieces to be manufactured, making the setup more flexible and responsive to the highly variable requirements of an advanced third-party service such as GAMA, which must be capable of producing anything requested by the market. This robot can be fitted with a seventh axis, as it is at GAMA, by means of a swing foot system. The machine features plenty of scope for communications, such as series con-

nections, user interfaces and field bus interfaces. This makes it simple to integrate the robot into either small operating stations or large industrial automation systems.

Finally, the third appliance, type ABB IRB 6400, dimensioned for power (200 kg load, 3 m reach, six axes, repeatability  $\pm 0.1$  mm) is another of the more widespread robots; 10,000 of them having been installed around the world. At GAMA, the setup involves moving items exiting a coil bending/punching line that operates at a high rate of production and is equipped with automated palletization. The robot picks up the items as they come off the line and stacks them on the pallet. Thanks to this, GAMA has resolved the thorny logistical problem of continuously evacuating, aligning and arranging the large quantity of pieces produced by the line. The options offered by the robot not only permit pieces to be picked up and stacked, but also to be turned over, where useful, to position them in this plane. ☉

### >FACTS

#### Benefits of robotization

- Faster production
- More reliable production
- High production uptime
- Long time between robot repairs
- Increased and more consistent workpiece precision