
ABB

Red robots in the red house

ABB robots help a traditional Black Forest brewery

ANDREAS SCHWADERER – Germany's Black Forest has long been famous for its natural beauty, clean water and clean air. It also has a tradition of precision workmanship going back many centuries, with products such as its clocks being famous the world over. These high standards in mechanical deftness and accuracy are a strength that is shared by ABB's robots. Finding these robots at work in a traditional Black Forest brewery may be unusual, but is, nevertheless, consistent with the tradition of precision. The Rothaus brewery, maker of the famous "Tannenzäpfle" beer, uses four ABB robots in handling and packaging.

High up in the Black Forest in southwest Germany sits the 221-year-old Rothaus ("red house") brewery → 1. The beer brewed here has long since achieved a cult status among German beer drinkers and the brewery's distinctive beer bottles, with their foil cladding and label showing a German Fräulein, are known throughout Germany, and beyond. Despite being over two centuries old, the brewery is equipped with the latest in modern technology, including four ABB robots that handle the beer kegs and cases.

On the production floor, the scene is like one from a delicate and very precise ballet of technology: An ABB robot bends gracefully forward and grips a stainless steel beer keg gently but firmly around its "waist," then smoothly rotates 90 degrees and carefully places it,

Title picture
One of the brewery's two IRB 6640 robots at work as a keg handler.

1 From monks to ministers

The Rothaus State Brewery was founded in 1791 by monks from the nearby St. Blasien monastery. Enough spring water and wood was available near “the red house”, above the picturesque village of Grafenhausen, to adequately supply the water- and energy-intensive beer operation. After the monastery was dissolved, ownership passed to the Grand Duchy of Baden in 1806. Later, it was taken over by the state, in whose ownership it remains. The famous stylized Fräulein figure, essentially unchanged since the 1960s, has been dubbed “Birgit Kraft,” from the local pronunciation of “Bier gibt Kraft” (beer gives you strength).

With an annual production of 840,000 hectoliters, the Badische Staatsbrauerei Rothaus AG is one of the biggest in the Baden-Württemberg region.

2 The IRB 6640

A strong robot for a range of applications
The IRB 6640 comes in different arm lengths and handling capacities. The robot can bend backwards fully, providing a large working range while permitting it to fit into space-restricted production lines. Typical application areas are material handling, machine tending and spot welding. The robot is also available with different options for different working environments, such as Foundry Plus 2, Foundry Prime 2 and Clean Room.

Payload
The maximum payload is 235 kg, which makes the robot suitable for many heavy material-handling applications. The robot also follows the ABB tradition of having outstanding inertia capabilities, so it can handle not only heavy, but also wide parts. Collision resistance is another feature for which ABB robots are valued.

Easy maintenance
Simplified forklift pockets and more space in the robot foot allow for easy maintenance.

Increased path performance
IRB 6640 runs the second generation of TrueMove™ and QuickMove™. This gives the robot highly accurate motion, which translates into less time for programming as well as a better process result. This software also supervises internal robot loads, meaning reduced risk of overload and longer robot lifetime.

Passive safety features
Passive safety features include load identification, movable mechanical stops, EPS (electronic position switches) and a stiff steel structure.

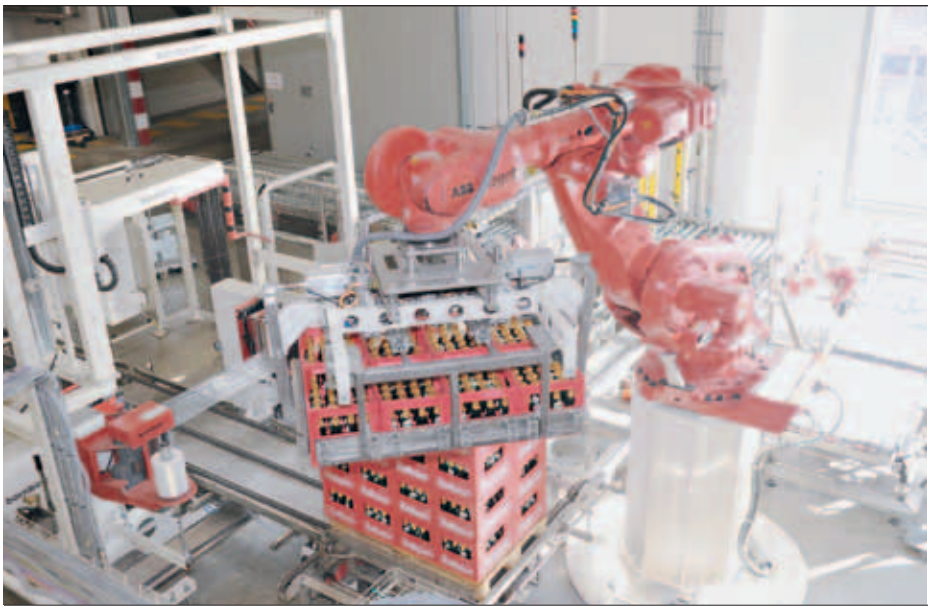
inverted, in the packing area. For many years, keg handling was done by hand; then, later, by an elaborate gantry unit. Now two identical ABB IRB 6640 ➔ 2 robots perform the task, like clockwork and with much less fuss. The special Foundry Plus 2 robot variant is ideally suited for conditions in the brewery. One jockeys the empty, not-yet-cleaned, stainless steel kegs from a wooden palette onto a conveyor belt. A good 10 minutes later, its partner neatly stacks the now thoroughly cleaned and filled kegs ➔ title picture. The two comrades-in-arms are painted the fiery Rothaus RAL 3000 red, like all other moving equipment in the brewery. “They couldn’t be more reliable and low-maintenance,” reports Robert Jäger, who is in charge of the beer-filling operation, “and in comparison to the earlier gantry unit they take up a lot less room, too.”

An IRB 6640 robot “assists” the automated packing machine in which a 24-bottle crate is repacked into four six-packs.

Packing a six-pack

Only 10 percent of the Rothaus beer ends up in kegs; the rest goes into the attractive bottles so loved by beer drinkers up and down the country. Of the bottled beer, one in every eight is sold in a six-pack – and here, again, an ABB robot has a hand in hand in passing around the beer. Since 2005, an IRB 6640 robot has been “assisting” the automated packing machine in which a

3 An IRB 6640 robot assists the packing machine



One ABB IRB 6640 robot jockeys empty kegs onto the conveyor belt; an identical unit at the other end of the belt stacks the cleaned and filled units.

4 The smaller IRB 140 working alongside the larger IRB 6640 in the world-famous Rothaus brewery

24-bottle crate is repacked into four six-packs. The IRB 6640's strong beer-lifting arm can effortlessly whisk its 142 kg load onto a conveyor belt → 3.

The beer crates come tied together, for safety during transport, in a four crate wide, two crate deep configuration. Removing the safety band is the job of the fourth member of the ABB robot team: the small IRB 140 → 4. With its rather diminutive size compared with its colleagues, it may be like a "Bonsai" of industrial robots, but it is very capable nonetheless.

Project leader Ralf Krieger, is also pleased with the ABB products, saying "Like the two robots in the filling area, these two were also brought into service really quickly." These are words that the ABB team members like to hear – maybe they will celebrate them by clinking together some of those attractive foil-topped bottles.

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