

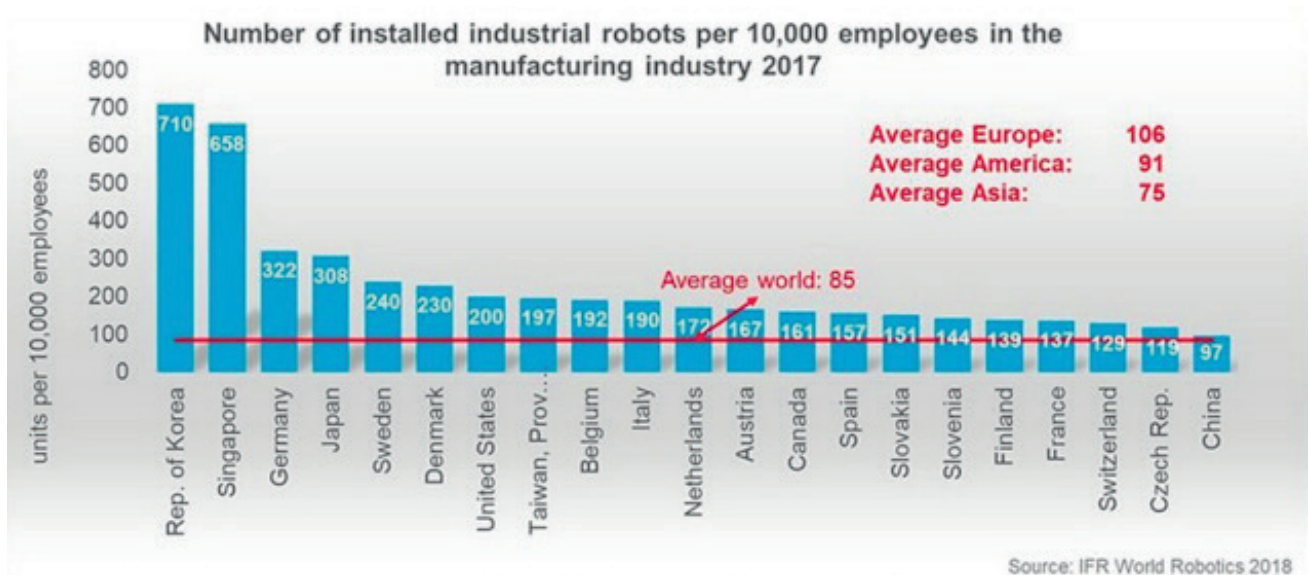
Cobots and flexible production - Future-proofing SMEs?



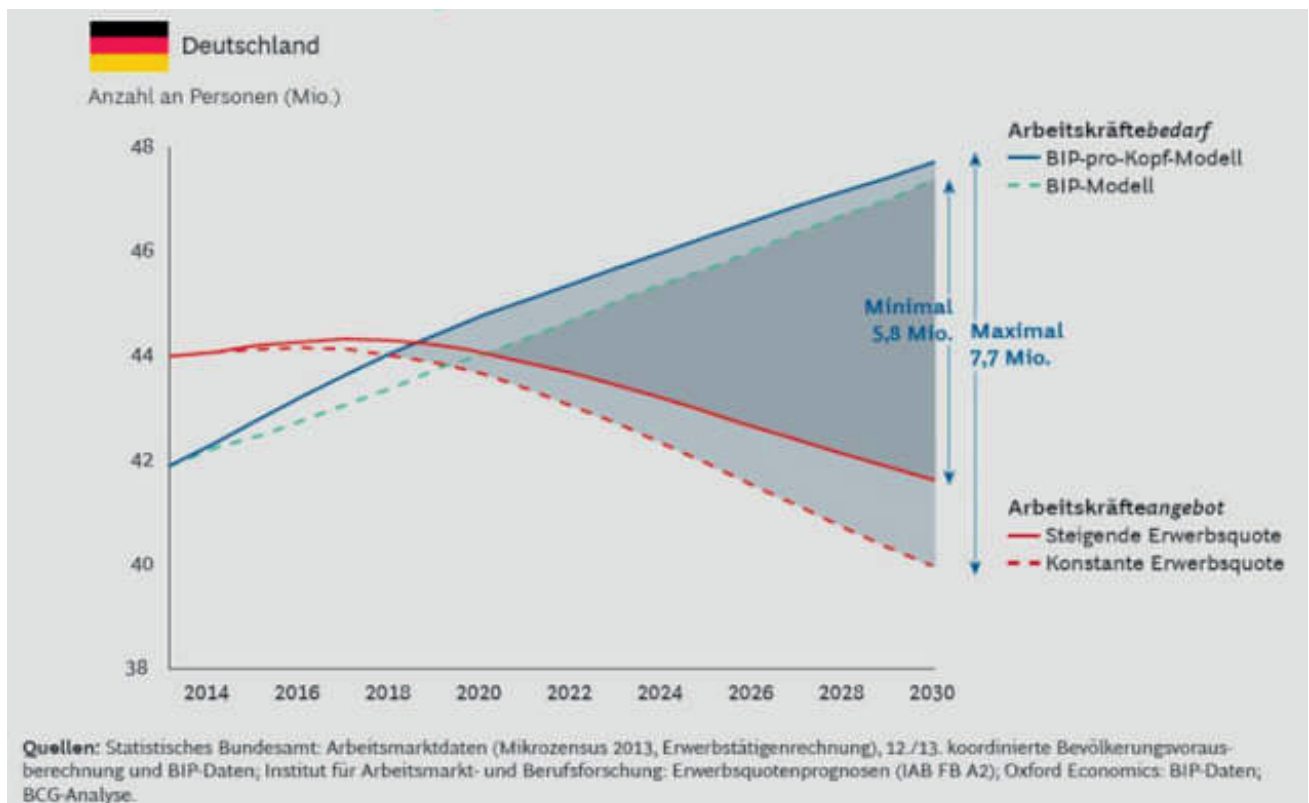
Many countries in Europe, such as the UK and Germany are likely to experience serious labour shortages over the coming decade, especially in relation to technical specialists. At the same time, product lifecycles are becoming shorter. Despite this, small and medium-sized enterprises (SMEs) might be reluctant to invest in additional automation. However, collaborative robots (cobots) are easy to set up and offer a quick and cost-effective solution. They can increase the flexibility, quality and speed of production and enable companies to respond rapidly to changing market conditions. OMRON's TM series of cobots are a good example of this versatility.

Robots: job killers or essential for the future?

Are robots likely to kill jobs or will they help to future-proof SMEs? Robots were first used in industrial manufacturing in the 1960s and since then, their number has increased inexorably. Some 500,000 to 600,000 new robot systems are now becoming operational throughout the world each year, although the increase is particularly noticeable in the Asian market, as reported in 'World Robotics 2019' by the International Federation of Robotics (IFR) and Fraunhofer IPA.



If small and medium-sized production companies in Europe want to keep up with constant economic growth internationally, they need to invest more in automation for cost reasons alone. Meanwhile, there's an increasing shortage of workers. According to forecasts by Germany's Federal Statistical Office, low birth rates will reduce the available workforce from around 44 million in 2013 to around 40 to 42 million in 2030. Other European countries are likely to experience similar shortages. According to BCG (Boston Consulting Group), there could be a labour shortage of up to 7.7 million people. Greater automation is therefore needed to counteract this decline.



Cobots provide greater flexibility

However, classic industrial robotics won't be the solution in many areas. This technology requires a high investment but isn't sufficiently flexible for current and future needs. Traditional production lines are designed for manufacturing large numbers of products. However, product lifecycles are getting shorter. For example, in the 1970s, the average product lifecycle of a vehicle was eight years. Today, car models often get their first modifications after just two to three years. In almost all industries, the intervals between new product developments are shortening and many of them have to respond to new trends after a relatively short time. Production and automation must adapt to this scenario and cobots can help with this.

Traditional industrial robot

Traditional industrial robots must be separated from human activity by a safety fence or cage, and must be fixed to one place as they are normally used for one specific task.

- Complex configuration
- Robotic experts are required
- Rigid solutions
- Large footprint
- Protection fences are required
- High additional cost associated

Collaborative robot

Cobots were created to work safely and in harmony with people. They can be moved from one location to another to work on different tasks.

- ✓ Quick configuration
- ✓ No experts are required
- ✓ Flexible and easy to re-allocate
- ✓ Space saving / Small footprint
- ✓ Human-machine collaboration
- ✓ Short ROI

Cobots were first introduced in 2008 and represent a relatively new category of industrial robots. In contrast to traditional robots, which have to be shielded from the human workspace by a security fence, cobots were developed to work safely with people. Users also need less time and money to program an application with these 'helper robots'.

In addition, cobots can be easily moved from one location to another to work on different tasks, whereas conventional industrial robots have to stay in one location and can normally only be used for a specific task within the robot cell. Cobots therefore provide much greater flexibility. The diverse tasks they can handle vary from simple pick-and-place applications for parts handling, sorting and palletizing, through to machine assembly, order picking, packaging and testing. They can help to apply adhesive and sealants, assemble or disassemble parts, measure, test, check and take over screwing operations. This results in significant benefits for the employees, who no longer have to carry out monotonous, physically demanding or even dangerous work, but will receive support with precision work and can concentrate on their core abilities.

Cobots are user-friendly and versatile

OMRON's TM series of cobots illustrate how versatile and straightforward cobots are today. The different versions are suitable for practically any environment, such as the automotive, semiconductor, food, packaging and cosmetics sectors. Due to the flowchart-based programming, an intuitive HMI user interface and simple, hand-guided teaching functions, almost no previous knowledge of programming is required. Like a PowerPoint presentation, the user can assemble complete function blocks and fill the predefined attributes with the desired parameters. The cobots have options that include an integrated camera, vision and a lighting system which enable them to precisely handle and trace items.



Many core functions (such as pattern, barcode and colour recognition) enable detection, inspection, measurement and sorting applications to be implemented easily and, if necessary, adapted to other requirements. With the help of OMRON's Landmark positioning recognition facility, the cobot knows where it is and can be aligned with another machine, for example, without much effort or recalibration. It can even move autonomously and work wherever it's needed, because cobots can be combined with OMRON's LD series of mobile robots.

From needs analysis to support

Additional components (such as extra axes, grippers, force sensors, communication devices or screwdrivers) can be easily used by the cobots via plug-and-play system. OMRON has set up a partner network that offers a range of suitable components. The company's automation experts also provide support with any queries about the use of cobots. This starts with the analysis of the production task and the environment; the selection of the appropriate cobots and grippers or additional components; and also includes risk analysis and assessment, commissioning, training and technical support. All of this makes it easier for SMEs to gain a foothold in the flexible manufacturing industry of the future.

About OMRON

As a leading company of automation centred on its proprietary Sensing & Control + Think technologies, OMRON Corporation is engaged in a wide range of businesses, including control equipment, electronic components, social systems, healthcare, and the environment. In the field of industrial automation, OMRON supports manufacturing innovation by providing advanced automation technologies and products, as well as through extensive customer support, to help create a better society.

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