GO4 ROBOTICS

BY INTERNATIONAL FEDERATION OF ROBOTICS



AUTOMATION IN SMES

WHY LARGE-SCALE AUTOMATION ISN'T ALWAYS THE BE-ALL AND END-ALL

© OPPENT

CONTENT

03 ..... Automation doesn't always have to be expensive, elaborate and complex

03 ..... **Large-scale automation certainly not the only option!**

04 ..... Automation in SMEs – the benefits at a glance:

04 ..... Even new technology can prove profitable

05 ..... **Getting your workforce on board**

06 ..... **Robots in action: the benefits for SMEs**

06 ..... Robots offer cooperation and collaboration

07 ..... **A classic six-axis robot or a cobot: what best suits your business?**

07 ..... Benefits of collaborative robots in companies

08 ..... Which automation solution is the right one for my company?

08 ..... **Checklist: What can we automate in our company?**

08 ..... **Checklist before introducing robots**

While many companies recognise the benefits of automation, small and medium-sized enterprises in particular often find themselves asking, 'Is automation actually what we want, and is it even a suitable solution for us?'. Actually, automation doesn't mean that all production processes have to be performed by machines. Keeping this mentality in mind makes partial automation with collaborative robots in particular an attractive option for smaller businesses seeking greater flexibility, a boost to their productivity and a reduction in their employees' workload.

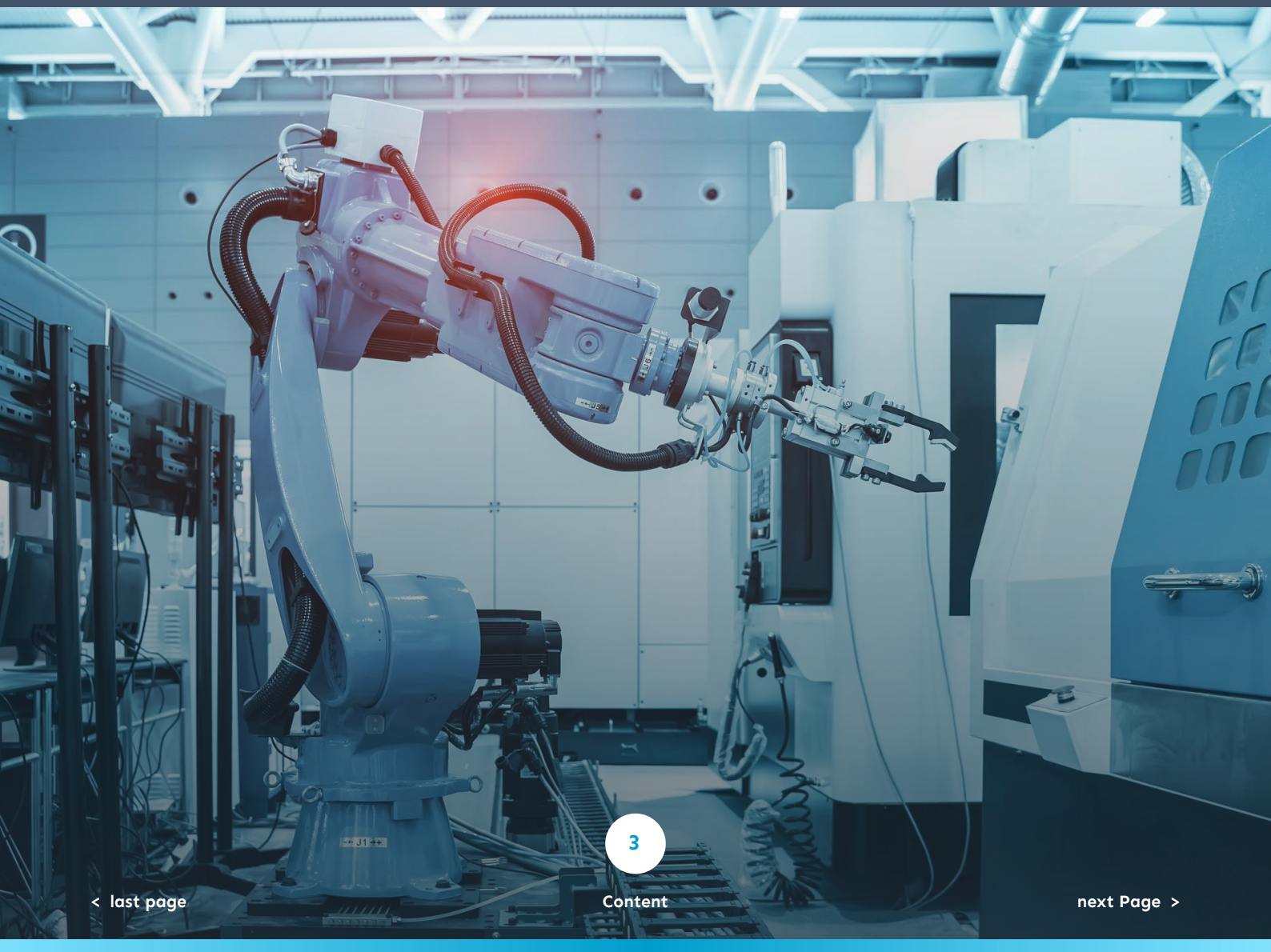
For many people, the idea of automation in companies conjures up images of smart robots being widely used in production halls, driverless transport systems independently carrying products through workshops and smart shelves stocking themselves. But day-to-day production operations in small and medium-sized enterprises are usually very different, because most SMEs have smaller production outputs than large corporations. As a result, it is rarely worthwhile for businesses to invest heavily in fully automating all of their processes. Additionally, smaller companies don't usually have in-house experts who can continuously monitor technologies like these. This is exactly why many small and medium-sized enterprises often dismiss the idea of large-scale automation.

Automation doesn't always have to be expensive, elaborate and complex

That's just one side of the coin. The other is partial automation. Since small-scale automation – for certain processes only, and at lower costs – is yet another option, it can still prove highly beneficial. So partial automation may well be the perfect solution, especially for small and medium-sized enterprises, for boosting productivity without incurring high costs, optimising processes and thus relieving the strain on staff.

Large-scale automation certainly not the only option!

After all, SMEs are also well aware that there are many benefits to automation. In a highly competitive global market, the days when competition was just local or regional are a thing of the past. Now, companies are competing worldwide. At the same time, customer requirements are on the rise too. Customers are calling for greater flexibility, more product variants and smaller batch sizes – not to mention consistently high quality on top. Added to that, the manufacturing sector is suffering from a shortage of skilled workers – a situation that is very apparent to highly specialised SMEs in particular. And this is also where automation harbours tremendous potential.



Automation in SMEs – the benefits at a glance:



Sustainable corporate growth



Increased competitiveness on a global scale



Less time and material needed



Greater flexibility



Reduced employee workloads



Cut production costs

Automated processes reduce workloads and thus increase productivity. What's more, information forwarding in intelligently networked processes is faster and more efficient, so faults can be rectified more quickly or errors can even be avoided in the first place. This ultimately saves on both time and materials too, conserving resources. But there's another major benefit to automation, too: it relieves the strain on staff.

So, on the one hand, automation is highly complex and doesn't appear to go well with smaller business' requirements. But, on the other hand, SMEs are also naturally familiar with the benefits that automation could bring along. So, what to do? The key lies in partial automation.

Even new technology can prove profitable

Companies don't have to implement automation solutions with the 'all or nothing' principle in mind. Indeed, an approach like that usually has one of two outcomes: hasty decision-making or stagnation.

What companies should do instead is ask themselves the following questions:

1. What customer requirements do we have to meet?
2. What are our strengths – and how can we use them to
3. set ourselves apart from the competition in future?
4. Where could we improve our production process?
5. Which processes do staff find particularly inefficient and frustrating?

The answers to these questions usually provide clear guidelines for automation. Companies can automate gradually in those areas where the individual business and employees gain most of all. There are several benefits to this form of partial automation. It costs less, and it is easier to integrate gradually introduced new technologies into everyday operations as opposed to complete changeovers.

At the same time, carefully selected automation measures, even on a small scale, lead to noticeable improvements in everyday operations – from increased productivity to reduced employee workloads. So investments pay off faster and offer greater flexibility in use. Team acceptance is also improved. Staff realise the benefits of automated solutions more quickly, too, as opposed to feeling overwhelmed by them.

Getting your workforce on board

Employees are often sceptical when it comes to automation, viewing it as a threat to their jobs. While their fear is indeed understandable, the reality is actually quite different. Because, as a matter of fact, automation measures such as robots don't replace people's jobs. Instead, they take on tasks that are difficult, unpleasant or monotonous.

But it is important to communicate this in an appropriate way. Otherwise, your team will reject automation before it's even introduced. Studies show that team resistance is often the biggest obstacle to automation in companies.

This is why honest dialogue with employees and managers alike should be held at an early stage. The likes of factory managers are an important source of information when it comes to identifying repetitive processes within businesses, because such repetitive tasks cause both staff motivation and performance to drop. If companies show that automation aims to relieve the strain on staff to complete precisely these processes, they will more likely find their workforce to be understanding and approving of automation. At the same time, taking this approach is also a huge help in selecting automation processes that are relevant to the business, as opposed to introducing new technologies haphazardly.

Other starting points might be technicians or maintenance engineers, who might feel concerned that they are not qualified enough to deal with the new technologies. So you should also discuss the technical side of the solution with them, including the question of whether the automation solution is a good fit for the business from a technical standpoint and whether it will be reliable in the long term.

Even if collaborative robots in particular can work very safely side by side with humans without any need for protective measures, there may be specific safety requirements in operation. Here, it is important to consult with the safety officer beforehand. The team's concerns and objections should be taken seriously, and a solution to the problem found collectively. After all, the workforce is the beating heart of every single company – and if staff don't support automation, it's doomed to failure from the start.



So partial automation is a good way for small and medium-sized enterprises to boost their flexibility and improve their results at low cost, not to mention achieve higher employee acceptance than they would do with full-on process automation.

One example of partial automation is robotics.

Robots in action: the benefits for SMEs

As an automation solution, robots offer companies a diverse range of benefits. On the one hand, they are very versatile – they can be used in everything from furniture construction to the food industry. On the other, they can also be put to flexible use within companies, offering them more than one way of improving their operations. After all, robots can work around the clock, conserve resources, and thus increase productivity without compromising on quality. A study conducted by ISG[1] , a consulting agency, determined that robot usage can speed up business processes five to tenfold.

Dutch scientists[2] also examined the impact of robots in the workplace. They found that robots ensure that employees can once again take on more meaningful tasks, with the triple outcome of boosting staff satisfaction, motivation, and productivity. This is another important argument in favour of robot-assisted automation, especially for SMEs struggling to contend with the shortage of skilled workers.

So it comes as no surprise that robot usage in companies around the world has almost tripled over the last decade.

Robots offer cooperation and collaboration

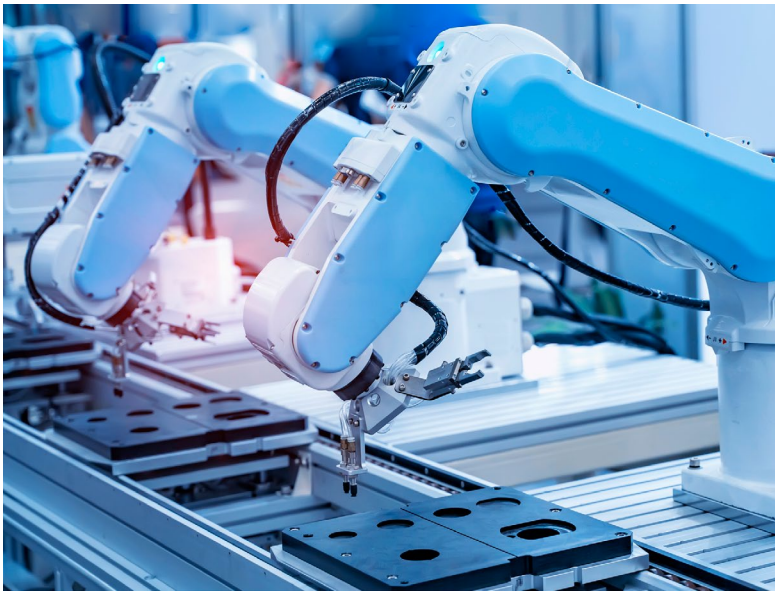
Both larger standard industrial robots and smaller, collaborative robots have their place in SMEs.

The likes of standard industrial robots are the most suitable solution when a company manufactures products at high volumes or at high speed. They can handle processes very well, and with consistent quality as well. The larger standard industrial robots are also a useful addition to companies' resources if they are looking to outsource high-risk processes and protect employees or are needing to lift particularly heavy weights.

On the other hand, smaller collaborative robots ('cobots') are ideal when individual work steps – as opposed to entire production processes – are being automated.

Cobots are still a relatively new development on the robot market. Compared to the classic six-axis robots, they are smaller, they weigh less, and they are suitable for lighter loads. But those characteristics are also their benefit, because the small robots can be placed right next to the employees. This means cobots and people can work hand in hand, closely and flexibly, in production facilities without any need to take the likes of special safety precautions.

While cobots can perform similar processes to a human arm, they are beneficial in that they have a wider range of motion, they do not get tired, and they perform monotonous and unergonomic processes without any risk.



At the same time, they are extremely straightforward to operate. For example, an untrained employee can unpack, set up and program a cobot to perform initial simple tasks in less than an hour.

So cobots are particularly well suited to simple, repetitive, and manual tasks (such as screw driving processes and assembly activities) in companies.

1 https://isg-one.com/articles/isg-studie-robotic-process-automation-rpa-sorgt-fur-mehr-produktivitat-und-nicht-fur-jobverluste-DE
2 https://link.springer.com/article/10.1007/s13347-019-00377-4#Sec17

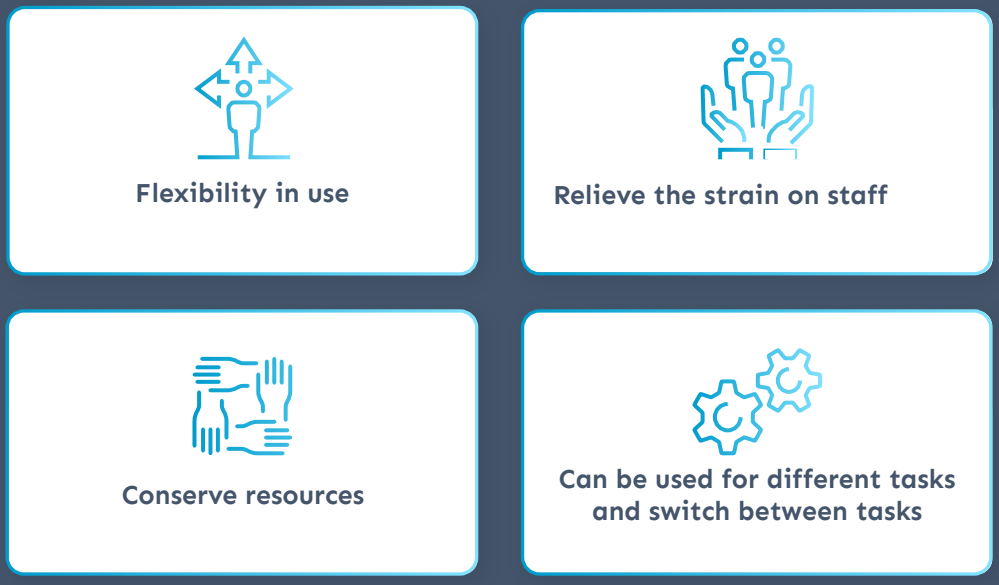
A classic six-axis robot or a cobot: what best suits your business?

Classic six-axis robot	Cobot
More floor space is needed depending on how big the robot is	Has a small footprint
Produces large quantities	Small quantities
The throughput time should be as short as possible	Requirements are in line with the human workflow
The robot's place in the production facilities is fixed, and it is not moved often	The robot can be easily repositioned and used at different workstations

However, the use of collaborative robots and standard industrial robots is not an 'either-or' decision. Actually, one solution might be better for one business than another, or there may even be many benefits to parallel use.

So, the guiding principle that companies should follow is: Whatever form they take, robots are worthwhile when they make work processes easier and when humans and machines work together in a meaningful way.

Benefits of collaborative robots in companies



Which automation solution is the right one for my company?

Note: Automate what genuinely makes sense for your production processes, in the form that is most beneficial to your company.

Have a good think beforehand, asking yourself: 'Which processes do we want to automate, and which robots do we want to use to do that?'

Checklist: What can we automate in our company?

Use this checklist to check which processes can be automated in your company.

- Packaging and palletising
- Materials processing (e.g. grinding, polishing, deburring)
- Analysing and testing
- Repetitive handling processes (e.g. transferring workpieces)
- Quality control
- Machine feeding
- Assembly processes (e.g. screwing, plugging, gluing)
- Physically demanding work (e.g. in very hot or dusty environments)

Some companies may find it more beneficial to use several identical robots in parallel. Others may profit more from a range of robots with different areas of application. Naturally, this can be a very difficult decision to make in the first phase. But that is precisely why robotics experts are on your company's side.

Checklist before introducing robots

This checklist helps you to plan your robot introduction process perfectly.

- Determine the area of use
- Consult with all the internal stakeholders: the management team, employees, workers' representation, occupational health and safety management
- Bring robotics experts on board to advise you
- Identify and implement a specific pilot project

About IFR / Go4Robotics

As a non-profit organization IFR's mission is to promote the use of robotics to address societal challenges and improve the quality of life for all. Our vision is that robotics will revolutionize various industries and create a better future for all. With almost 100 institutional members from more than 20 countries representing over 3000 robotics organizations worldwide, we offer the all-round view of the world of robotics across industries and countries. With our Go4Robotics campaign, we want to provide beginners with easily accessible and understandable information and experts with deeper insights into trends and innovations in the robotics industry.

GO4 ROBOTICS | BY INTERNATIONAL FEDERATION OF ROBOTICS