



Collaborative Robots in Global Companies



**BEST PRACTICES FOR
SUCCESSFUL IMPLEMENTATIONS**



Collaborative Robots in Global Companies

LEAN 
ROBOTICS

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Lean Robotics: Simplify Robot Cell Deployments

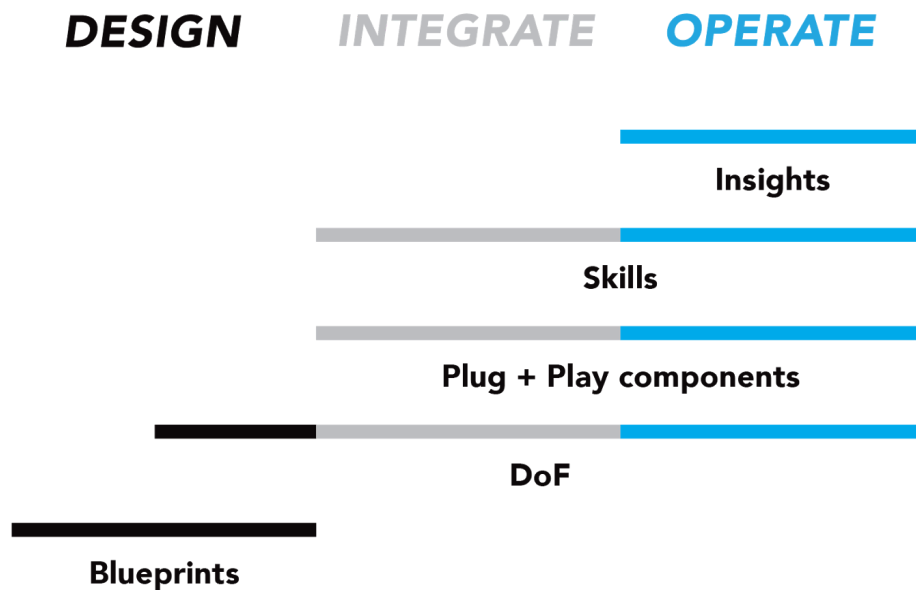
Whenever you ask if robots could work in your factory, the answer you receive is always a hesitant “It depends.” It depends on your factory, your team, which robot you choose, what you want it to do... and a whole lot more.

If you're a first-time robot user, how can you get started? How do you get from your initial idea to a productive, working robot? And if you've already got a few robotic deployments under your belt, how can you scale up your robotics efforts throughout your factory—or across multiple factories?

The answers can be found in **lean robotics: a methodology for simplifying robotic cell deployments**.

Lean robotics is a systematic way to complete the robotic cell deployment cycle, from design to integration and operation. It will empower your team to deploy robots quicker and more efficiently than ever before.

Lean robotics divides robotic cell deployments into three phases: Design, Integrate and Operate.



Robotiq's library of eBooks covers the different phases of the robot cell deployment to ensure that you have access to tips from robotics experts all along.

Learn more about Lean Robotics on leanrobotics.org.

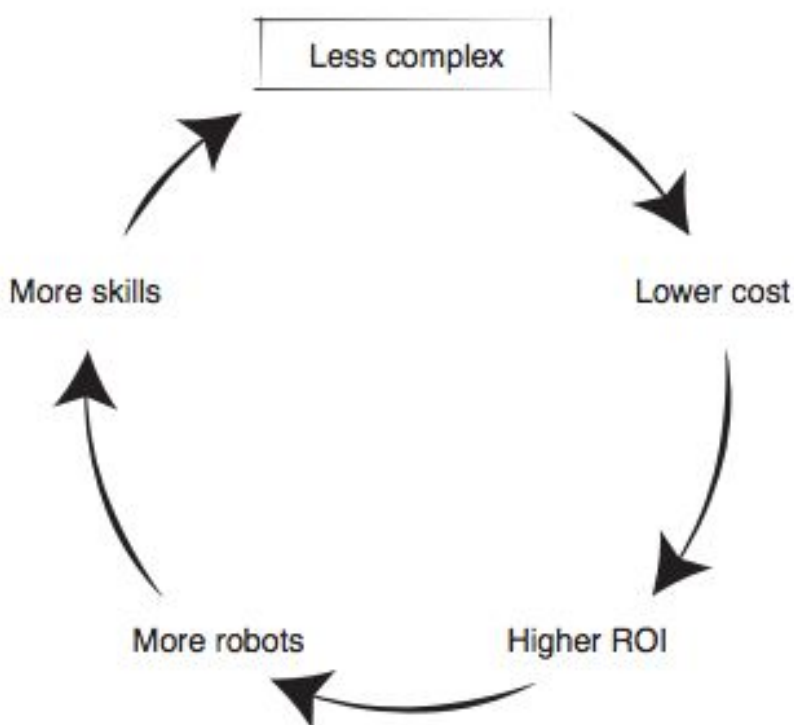


This Ebook Covers the Operate Phase

The operate phase represents the end goal of deployment: having a productive robotic cell that does its job properly on an ongoing basis.

OPERATE

When you're in the operate phase, your robotic cell is finally producing valuable parts for your company, and all your hard work will start to pay off. Since the operate phase is a continuous loop, there are many tips to optimize your robot cell and planning for the next one.



Introduction

Global companies have been embracing automation and large-scale robotic implementations for many years now. Traditionally, companies focused their efforts on high-volume, low mix production—the “sweet spot” for automation—and large-scale industrial automation was implemented wherever it made sense.

But now, with the safety features, smaller footprint, user-friendly design, and greater flexibility of collaborative robots (also known as cobots), more opportunities exist to automate tasks that previously were not feasible or practical with traditional automation. Enterprises whose manufacturing processes were not good candidates for traditional industrial automation can now use cobots as an entry point for robotic automation.

Collaborative robots offer great advantages to global companies. With cobots, companies can realize increasing benefits and returns as they scale up their implementations worldwide.

This ebook explores the answers to important questions:

- How can enterprises with a wealth of experience in manufacturing technology use collaborative robots to become even more competitive?
- Who are the key people needed to successfully introduce collaborative robots in a multinational company?
- What are the crucial steps in the process of robot integration?
- How can global companies best transfer their knowledge of collaborative robot implementation from one plant to another?



1 — Understand How Collaborative Robots Differ from Traditional Industrial Robots

The term “collaborative robot” covers a wide range of models with different features. However, they all share a common goal: to work alongside humans and help them with their tasks. “Collaborative” might mean that the robot is working directly with a human, or it may just be co-located in a space where one or more humans are working. Collaborative robots are typically designed to be safe, user-friendly, and extremely flexible in terms of applicability.

Collaborative robots *are* industrial robots—but they’re quite different from the traditional ultra-fast, super-powerful, caged-for-human-safety industrial robots that you might be picturing when you think of robots in manufacturing environments.



Example of a traditional, caged industrial robot

Collaborative Robots Are Designed With Extra Safety Features

A key component of collaborative robots is safety. Note that these features will vary from model to model.

- **Power and force limits:** In a force-limited robot, every joint is monitored by a force-torque sensor, so the robot can “feel” if there’s an abnormal impact while running its program. These sensors are extremely sensitive and can detect even a small impact. They are designed to stop when an external force is detected, so if someone bumps into a force-limited collaborative robot, it will stop moving. Force-limited robots also operate at slow speeds to reduce potential force of impact. These limits and settings will vary and have a range of parameters for different applications.



Example of the smooth, “soft impact” design of a collaborative robot



- **Speed and separation monitoring:** A robot equipped with vision systems or proximity sensors can avoid collisions by anticipating them and maintaining a safe distance. A “presence aware” robot can even slow down or stop when it senses someone in close proximity to it, and then resume its operation after the person moves away. However, for certain applications or locations, it may still be necessary to set up additional guarding.
- **“Soft impact” design:** Collaborative robots are designed to allow for “soft impact.” Compared to industrial robots that have sharp edges, exposed joints, and pinch points, collaborative robots have rounder shapes and integrated features that reduce the risk of pinch points and the severity of impact.

In addition to these extra safety features, collaborative robots are also designed to be more user-friendly and require less programming expertise.

The following comparison chart gives a broad overview of the typical differences between traditional industrial robots and collaborative robots. Note that specific models’ features will vary.

Comparison factors	Traditional Industrial Robot	Collaborative Robot
Safety	dangerous; requires guarding	designed to be safer; still requires a safe cell environment
Proximity to human workers	proximity not allowed; requires barriers	close proximity allowed with proper safety evaluation and precautions
Footprint	large	smaller
Programming expertise required	high	much lower
Payload	high	lower
Reach	long	limited
Speed	high	limited
Mix	best for high-volume low mix	also often makes sense for lower-volume, higher mix
Adaptability, flexibility; re-deployability	limited	higher



Safety Considerations

Collaborative robots have been designed to be used safely alongside humans. However, you must conduct the same risk assessment and make the same safety considerations with a collaborative robot as you would for a traditional industrial robot.

SAFETY FIRST

Even with a collaborative robot, a risk and safety assessment must be performed. If the collaborative robot is handling a sharp object or toxic material—or if anything else about the situation could be unsafe when a human worker is nearby—then Appropriate safety measures must be taken.

Ideal Applications

Here are several examples of popular applications for collaborative robots.

1. **Dull, repetitive movements** that can cause repetitive strain injuries in workers. For example, a collaborative robot could be used to place several screws on an assembly, and then a human worker could perform the final screwing operation or verification. In this case, the robot works next to the human and they collaborate to enhance the worker's productivity.
2. **Dirty jobs.** For example, a collaborative robot could be used to dispense a toxic product such as strong glue or other harsh chemicals. Using robots for these types of applications prevents the human worker from directly contacting the toxic product and frees these workers to do value-added jobs such as quality assurance.
3. **Dangerous tasks.** For example, a collaborative robot could be used to tend a machine that requires extra precautions such as unloading a brake press. Using a robot for applications that are potentially dangerous for human workers to perform removes or lessens risks for the worker.

Collaborative robots' small footprint and ability to work next to humans makes them a viable automation option even in high-traffic areas.

How Easy Are Collaborative Robots to Program?

Compared to traditional industrial robots, it is much easier to program a collaborative robot. In certain models with particularly user-friendly interfaces, you can hand-guide the collaborative robot to show it what to do, which is enough for the simplest applications.

However, to integrate a collaborative robot into a production cell and have it interact with other equipment, more programming will be required. Collaborative robots are extremely flexible and easy to re-deploy to other tasks. The fact that collaborative robots are so simple to program can contribute to significant cost savings in programming.



Learning about integration and programming is a key part of the first implementation. After your team has completed their first implementation, they can speak with authority about the actual time and skills that are required for your company's specific needs.

Agility Is Valuable in Changing Environments

Collaborative robots are valued for their agility and ability to do different things. This includes re-deployment on another line and accommodating changes that occur on a given production line. Thanks to flexible automation and the ease of programming collaborative robots, you can accommodate basic changes simply through programming, rather than having to build a whole new machine.

Flexible automation lets you accommodate the uncertainties of the future, and in some cases, enables you to do more with the same asset.

Strategies for Success

- ✓ Know what makes a collaborative robot different from a traditional industrial robot.
- ✓ Understand the types of applications best suited for a collaborative robot.
- ✓ Understand that while much of the programming is simple to learn, some more complex integration programming will likely be required as well.

Missteps to Avoid

- ✗ Confusing the built-in safety features of a collaborative robot with the overall safety of the production cell.
- ✗ Underestimating the complexity of integration.



2 — Build a Strong Team

The idea of implementing a collaborative robot might come from a technology group, someone at the corporate level, or a plant manager. But even if the originator is 100% convinced that collaborative robots are ideal for your production line, how do you get everyone to see the possibilities and introduce the first one as an example to copy? To make the project come alive and ensure a successful large-scale deployment of collaborative robots, five key players need to be involved.



**Innovative
Plant
Leader**



**Technology
Expert**



**Visionary
High-Level
Manager**



**Global
Streamliner**



**Communications
Strategist**

Innovative Plant Leader

Profile: The plant leader (or manufacturing engineer with great leadership skills) is convinced of both collaborative robots' potential to make a difference for the enterprise, and the advantages of technology.

Key functions:

- Installs the first robot in one of the plants, taking the first visible step of the global effort. The main goal is to build an internal knowledge base and set a precedent for the company, by making it the first case people can relate to internally. Manages change and gets workers on board, communicates clearly, and explains benefits of cobots to leaders at other plants.
- Innovates, looking for opportunities to grow professionally and stretch the comfort zone of the company.



PLANT LEADER
**Sees the potential
of collaborative
robots; able to get
plant floor
workers on board**



Technology Expert

Profile: Highly skilled engineer with good communication skills. Demonstrates enthusiasm about collaborative robots as they exist today, and keeps up with new developments. Must be seen by the plant managers and corporate management as someone with credibility who can measure performance, not just someone who only likes to “play around with cool technology.”

Key functions:

- Supports the first integration project spearheaded by the innovative plant leader.
- Creates documents for internal use. Makes technical concepts accessible to a less tech-minded audience.
- Applies relevant safety standards.
- Provides technical expertise so the plant can meet its operation requirements, corporate financial goals, and strategic parameters.



**TECHNOLOGY
EXPERT**

Understands how technology can benefit the plant and is able to explain technical concepts to others

Visionary High-Level Manager

Profile: Creates an opportunity for the initial deployment. Excellent understanding of shop floor reality and corporate strategic goals. Takes care of budget approval.

Key functions:

- Makes sure the potential of the technology is made clear to the people who will review the budget.
- Communicates with other managers to explain strategic benefits and avoid confusion over technical details.
- Enforces a reasonable timeline that allows the workers to try out the technology and adopt it, while avoiding delays from management approval processes.



**VISIONARY HIGH-
LEVEL MANAGER**

Supports deployment of first implementation. Communicates strategic benefits to other managers.



Global Streamliner

Profile: Understands global issues and knows what goes on in the other plants, both nationally and worldwide. Results-oriented. Knows which issues are most important at each plant.

Key functions:

- Facilitates implementation of collaborative robots, making the process easier for plant managers who believe the robots will help generate a high ROI.
- Raises and seeks to address concerns specific to each local implementation.
- Puts agreements in place with suppliers regarding worldwide ordering and support.



**GLOBAL
STREAMLINER**
Knows how
plants operate
worldwide.
Sensitive to
local
requirements

Communications Strategist

Profile: Experienced communicator who understands the needs of different audiences such as management, plant workers, and the community. Good at anticipating the questions people will ask, the information they will require, and the best means of communicating with them.

Key functions:

- Develops communication materials for upper management that show the main issues, costs, and benefits of the project, and in doing so helps set expectations at the right level.
- Communicates the plans for integrating the new robotic cell to the shop floor workers. Explains how the new technology will affect the employees.
- Works with the Technical Expert to document the first integration process and share the knowledge with other plants.



**COMMUNICATIONS
STRATEGIST**
Prepares and shares
information
throughout the
company

Often the integration process is led by the technical expert, which is great; you need expertise at that level. But to speed things up, you also need the rest of the team on board. Having these five key members working together increases the likelihood of successfully and rapidly adopting collaborative robots in a global company.

The essential catalyst is usually the Innovative Plant Leader. Once you have that first practical example, the internal buzz starts building at both the management and plant levels. Adding collaborative robots can improve productivity, ergonomics, and the bottom line. These benefits must be communicated in a way that all stakeholders understand. When it comes to a successful first implementation and subsequent global rollout, a strong team is the key to making it happen.



Strategies for Success

- ✓ Put together a power team dedicated to successfully implementing collaborative robots.
- ✓ Involve the plant managers in the earliest decision-making steps and get their input on the specifics of their operations. Aim to help make everyone at the plant feel like part of the process and a fully-supported part of the team.
- ✓ Give the technical expert leeway to implement the first project with support from other team members.

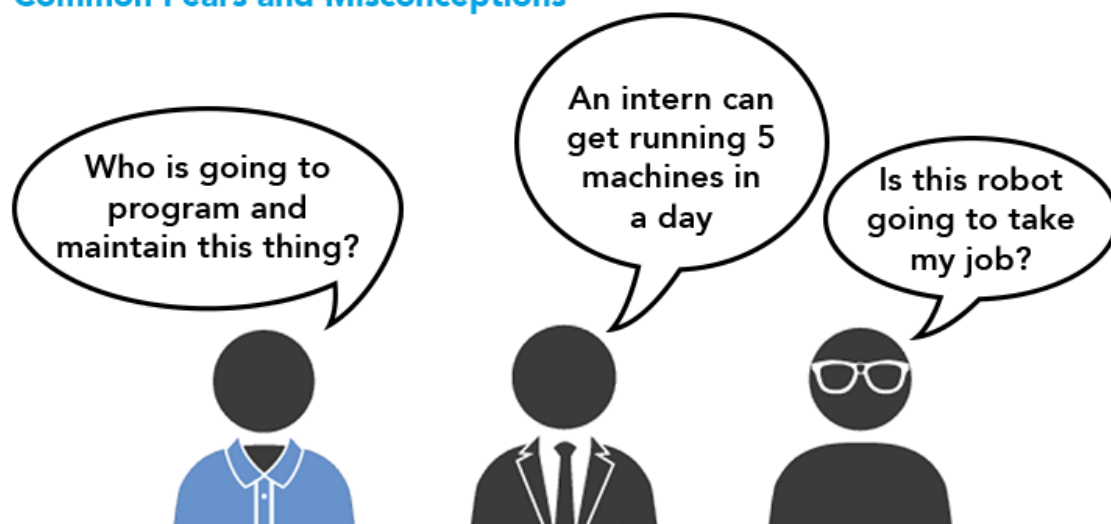
Missteps to Avoid

- ✗ Leaving everything to the technology expert without involving anyone else.
- ✗ Not taking advantage of existing manufacturing expertise at the plant level.



3 — Clear up Misconceptions and Address Fears

Common Fears and Misconceptions



People fear change. It's human nature. But, fear and distrust of collaborative robots can be further intensified by misconceptions and misinformation.

And if you don't tell people what's going on, they'll tend to assume the worst. So the key to stopping the spread of false information is to communicate with everyone early and often.

It's also crucial to introduce the concept of collaborative robots in a non-threatening way.

As covered in section 1, it's important that everyone understand how a collaborative robot differs from a traditional industrial robot. And as covered in section 2, your integration team should include a plant manager with strong leadership skills.

Change Management Is Crucial

Introducing any kind of change to a process can be unsettling to the people involved. Typically, the most common fears are disruption of workflow, physical injury, and job loss. On the flip side, management may have over-inflated expectations of what the collaborative robot can do and how easy it is to get up and running.

It's important to share the reasons why you're introducing collaborative robots and to discuss people's concerns about them openly.



- **With plant management,** emphasize the enhanced safety features, smaller footprint, and easier deployment of collaborative robots.
- **With plant workers,** explain that people will not be replaced by robots. Share how people will be reassigned to other tasks when the collaborative robots are introduced.
- **With corporate management,** make sure they understand the possible speed, payload, and reach of collaborative robots, as well as the need for a complete risk and safety assessment and thorough integration process.

Communicate With and Involve All Teams

Open communication is key. With proper communication, attitudes can completely shift from fear and distrust to enthusiasm and the desire for even more cobots on the production line.

Target Attitudes

If you communicate properly, people will be

- eager to work with collaborative robots
- happy to give up less desirable tasks
- actively looking for new ways to increase efficiency by implementing collaborative robots



Use communication tools to highlight the positive aspects of the implementation, such as freeing humans from repetitive tasks, and show what the day-to-day job of an employee will look like once the technology is integrated. The idea is to show that the robot is just another new tool in their tool box, and that once integrated, employees will continue to work at their stations—only now on tasks that will add more value to the product.

Include the Shop Floor in the Early Stages

Often the idea to implement a collaborative robot will start at a plant that's forward-looking and interested in new technology. If this is the case, excellent. The attitudes at that plant are probably pro-automation, with people there already interested in taking advantage of new technology.

The goal is for every relevant person's attitude to be "look at the cool stuff I get to work with!" as opposed to "I'm afraid of what's happening."



It's important to know how the plant workers feel about automation and the idea of collaborative robots. Making decisions that exclude the plant level altogether, and trying to impose a collaborative robot solution on them "from above" can get your project off to a bad start.

If the plant manager and plant workers do not feel included or invested in the success of the project, the project is far less likely to succeed.

Success is dependent on the plant and the attitudes within each plant.

Strategize With Your Communications Team

Work with your communications strategist early on to maximize the use of existing channels throughout your company, and add new communication methods where necessary. The communications plan needs to support your strategy at every step of the process.

Remember to communicate the following project phases:

- 1. What's coming and what you believe it will do**

Educate people early on about what a collaborative robot can and cannot do. Share the features, benefits, and concerns or things to watch out for.

- 2. Going into production**

Make everyone feel like they're part of the process so they have a share in the successful outcome. Note: video can be a powerful way to show exactly what's going on.

- 3. Results**

Let the robot run for a while and show what happens when you need to re-program something on the floor. How did you handle any hiccups? This is the information people want to know.

Communication Strategies to Consider

Host a demo event

A demo event lets you to introduce the idea of collaborative robots in a non-threatening environment. Consider serving drinks or playing a game to make the idea seem more approachable. Encourage people to interact with the cobot or intentionally bump into it and show them how it slows down or stops if they get too close.

You could make the demo event an open house for the entire company plus friends and family, or even open it up to the wider community. Your internal public relations department can play a key role in spreading the positive message that you are introducing cobots with no job cuts.

The goal of a demo event or open house is to show people exactly what a collaborative robot is and help them feel safe and non-threatened. You might even convince some people of how cool it is to be working with cobot coworkers!



Depending on how you're handling the integration, you may want to work with your integrator or vendor or do this internally.

Create videos

In addition to the demo event, your communications team can coordinate filming the implementation for both technical and non-technical audiences. You can use the non-technical videos to share with a wider audience throughout the company, and use the technical videos to support implementations.

Here are some examples of videos about collaborative robots that are aimed at a general audience:

- [Scott Fetzer Electrical Group](#)
- [Trelleborg Sealing Solutions](#)
- [Tegra Medical](#)

Many other video examples are available online.

Share articles

Keep updating people about the progress of your implementation. Your communications strategist can write interesting articles showing the progress of the implementation and sharing results.

Tell the whole story from the initial idea to the rollout. Share your project's progress throughout the technical community of your company as well as among the plant and manufacturing communities so people can see what's out there and then reach out to get it.

Strategies for Success

- ✓ Understand that people fear change.
- ✓ Explain what you're doing and why.
- ✓ Host an open forum or demo event to show what a collaborative robot is, and allow people to ask questions in a non-threatening environment.

Missteps to Avoid

- ✗ Making all decisions remotely without communicating at the plant level.
- ✗ Dismissing people's fears as unfounded.
- ✗ Putting a robot on the floor with no explanation.



4 — Set the First Implementation Up for Success

Start With a Plant that Has Experience

We've said it before and we'll say it again: the attitude of the people at the plant matters. If possible, select a location for the first project where people have experience with robotics or automation. Or, if expertise isn't available in the plant, you can select a location that has access to your company's technical resources. After successful implementations at more technically experienced plants, you can roll out the proven strategy to plants with less experience.

Keep it Simple

Teams that have been through the implementation process all offer the same advice for a first project with collaborative robots: keep it simple. Do not let complexity creep in.

For a first project, you want to introduce a cobot as part of an existing process, not re-design an entire cell around new cobots. Start with a simple task so you can focus on introducing the cobot and getting people comfortable with it.

Although it may be tempting to do a complex implementation just to show how big an impact a collaborative robot can have, experienced implementers advise against tackling this as your first project. You might find the first implementations are so successful that you'll soon be able to start re-working entire cells.

The first implementation is about building internal knowledge, and developing an example that will serve to demonstrate the potential for even more future improvements. You want this cobot to be the first of many, so you absolutely must ensure that the initial implementation is a success.

The best way to ensure success is to start with a simple task to automate.

Target Results

If you want your results to set an example for the whole company, you should aim for your project to be three things:

- on time
- on budget
- meeting or exceeding expectations



By making your first project a success, you'll be in a better position drive massive adoption from all stakeholders.

Take Measures to be on Time

- Use a bottom-up approach that allows the first implementation to be managed at the plant level. Waiting for decisions from a central office can cause long delays.
- Give latitude to the mobilizer engineer on the shop floor to avoid long decision-making processes. Let the team install the first robot successfully.
- Beware of the temptation to over-promise. Give your team time to learn. Integration time and complexity is almost always underestimated.
- Choose a simple task to automate.

Limit the Complexity of Integration

Watch out for the signs of "cobot fever." There's a lot of hype about collaborative robots, and when people hear that hype they might think they can stick a robot on the floor, leave it unguarded, push the button, and have everything work perfectly. There's more to it than that. The best way to make the implementation run smoothly is to start simple and make sure it's safe.

Find a stand-alone application that does not need to be integrated with sensors or to communicate with other machines or conveyors. Although it's possible to integrate collaborative robots with sensors and other machines, it isn't advisable as a first project. Never underestimate the time and complexity of integrating machines together; it always takes longer than expected, especially the first time around.

At this point you may be thinking "But what about the 'simple programming'?"

Programming the collaborative robot is still one of the easiest parts of the integration. The hard part is thinking about the cell and ensuring that the mechanics are in place for safety and efficiency.

How to Choose the First Task to Automate

Keep it simple. Again, this advice cannot be over-stated.

Pick a task that no one wants to do. The sweet spot for collaborative robot implementation is a job that's dull, dirty, dangerous, or ergonomically unfriendly for humans. Remember that in addition to showing the potential ROI, you want your first project to create ambassadors for the technology. An excellent way to get the people in the plant singing the praises of collaborative robots is to have the robot do a task that no one likes.



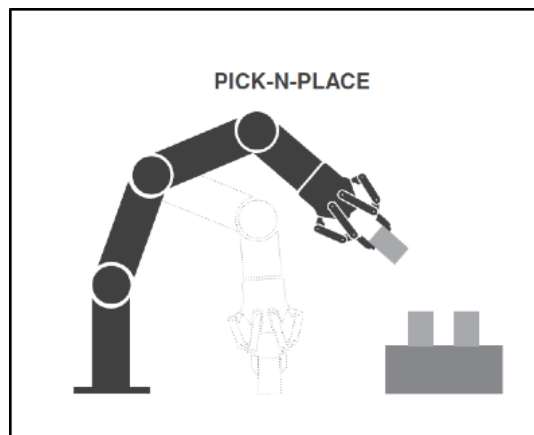
Let the machines do what they do best, and let humans do what they do best.

Look for a task with a high success rate.

Certain applications have a proven track record of successful automation with collaborative robots. The following are ideal candidates for a first implementation:

- pick and place
- machine tending
- dispensing
- packaging

Most of the time, these tasks involve simple motions and do not require too much programming, sensing, or force control. This is where you want to begin your collaborative robot process.



Make sure to document every step of the process you want to automate. How are the parts presented? What do they look like? What needs to be done with them? Take photos and videos of the current scenario. This can give you ideas now and come in handy later. With proper documentation, you'll be able to show a "before and after" of the task, and use it as a model for identifying other tasks to automate.

Understand collaborative robot capabilities and limitations

Ask yourself, "Could this job be done by a robot?" Even if you don't have a huge robotics or automation background, you can judge the feasibility of certain applications. Establish your needs first, and then explore the different collaborative robots. Look at the payloads, speed, repeatability, IP ratings, and safety features of different models to learn about the possibilities. Your needs and the specifications of different models will guide you in selecting your top choices.

Follow Best Practices to Ensure Safety

Once you've identified an application for a collaborative robot, you must ensure that it's safe enough to be performed in your plant. Even if the robot is considered "safe" or "collaborative," that doesn't mean that your application is automatically safe.

Perform a Risk Assessment

As part of a global company, you or your colleagues have probably already done risk assessments for other machines. Just like you would for any other machine that you install in your manufacturing workspace, you must do a risk assessment for a collaborative robot. Since a cobot can potentially be used without safety guarding, it's even more important that the risk be assessed to ensure that your workers are safe.



Even if the collaborative robot is safe for working alongside humans, if it will be carrying a sharp part or a toxic substance, then the situation can be dangerous and extra safety precautions are required. To start, you can do a pre-risk assessment or a typical risk assessment for the operations of a standard system to identify typical hazards, such as contact with the robot, contact with the end tool, etc. When that system is put into a plant, the risk assessment needs to be reviewed for each unique situation at each installation because other factors involved in those installations might create their own hazards.

Just because the robot is safe, that doesn't mean
the application is safe.

You must do a risk assessment for every
application you will be doing with the robot.

Strategies for Success

- ✓ Start with a plant that has experience.
- ✓ Keep it simple. Avoid allowing complexity to creep in.
- ✓ Avoid decision-making delays by giving the technical team the authorization to get the first project up and running quickly.
- ✓ Complete a risk assessment.

Missteps to Avoid

- ✗ Choosing an overly-complex application for the first project.
- ✗ Underestimating the complexity of integration.
- ✗ Neglecting to do a full risk assessment.

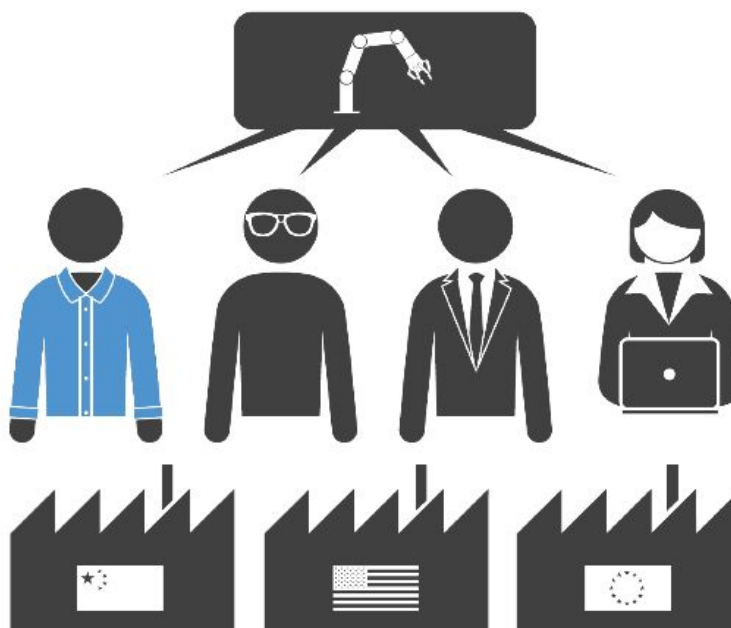


5 — Leverage the Success

The cell is built, and any issues have been worked out. You know what you did right and what you would do differently next time. This is where global companies can capitalize on their infrastructure.

By sharing your knowledge and experience, you will be paving the way for successful implementations in plants around the world.

Whether your team travels from place to place, or you invite people from other plants to your location for training, you now have the hands-on knowledge to successfully implement a collaborative robot solution in a way that supports your company's objectives.



By learning from your first project, teams at other plants can speed through the learning curve and quickly deploy cobots themselves.

Document Everything

As soon as possible after the first implementation, take the time to create a comprehensive knowledge transfer tool kit. This tool kit will increase the speed of integration for the next collaborative robot cell. It should include the following:

- standard procedures
- standard training
- standard risk assessment templates
- integration tips

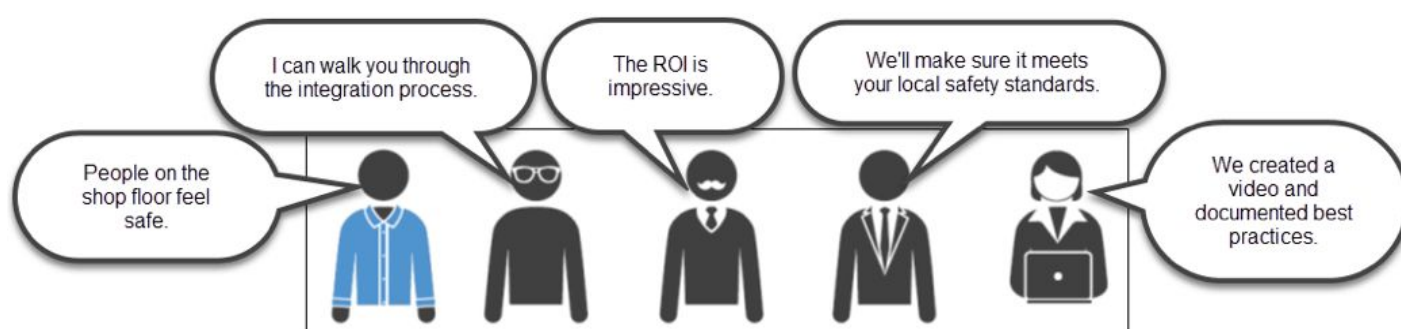
Share what went well and include any “lessons learned” so others won’t need to repeat your mistakes to benefit from the knowledge you gained.



Organize a Showcase Demo Event

Seeing is believing. Now that you have a successful implementation running, you can use it to show other more skeptical teams exactly what collaborative robots can do. Using your first implementation as a model, it should be easier to overcome people's fears and misconceptions. For your demo event, you could do the following:

- Invite people from various plants so they can see the collaborative robot in action.
- Have the plant leader who implemented it available to answer questions.
- Have your technical expert available to answer questions about the technology, safety requirements, and other integration information.



Share Your Success Story Widely Throughout the Company

Even if the personnel in other plants in your organization accept the theory that collaborative robots could improve efficiency, they will still be interested in seeing how their peers succeeded in practice. People relate to real-world examples of what has been done.

Document your integration with before and after pictures, as well as videos, Q&As, and quantifiable metrics like quality improvements and decreased production time. Explain how this first experience will lead to other implementations in your factory.

Follow Local Safety Standards

Safety standards are regional. Different countries have their own versions of OSHA (Occupational Safety and Health Administration). It is critical that you follow the regulations in each region.

Assess Risk at Each Location

You can start with the same risk assessment template that was used in the first implementation, but you must assess the specifics of each installation. What is the physical environment like? How much space is there? What material will the collaborative robot be handling?



Even if the basic task is the same, each plant will have its own particularities that can make a big difference if they aren't identified and planned for in the implementation. Evaluate what is the same and what is different about each application. If a specific site has a different approach to maintenance procedures or operations, you will have to look at their procedures as part of your risk assessment. Even if it's 90% the same, that remaining 10% must be addressed.

As the deployment rolls out into other plants, you can continue to share the types of differences that each plant encounters. Sharing additional deployment knowledge will continue to help other locations benefit from company-wide expertise.

Just because the implementation was safe in one instance, that doesn't mean it will automatically be safe everywhere. Depending on the circumstances, special safety precautions might be needed in one location that aren't needed in another.

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Encourage Expansion Within the Same Plant

Once people on the shop floor have worked with collaborative robots for a while, they'll have a better understanding of the benefits cobots can bring, and they'll start thinking of other ways cobots could be used. They'll uncover opportunities to let cobots do more of the dull, dirty, dangerous, or unpleasant jobs.

Ask the shop floor workers where they would choose to introduce the next collaborative robot. Provide innovation/suggestion cards so they can submit their ideas. As you test these new ideas, remember to reward people for their suggestions, and keep before and after pictures, videos, and notes of all applications so you can share them globally.

Continuous Improvement

Just because it works well, doesn't mean it can't work better. Build on your success to keep expanding your comfort zone. Be a resource for new applications and new ideas that can help your co-workers and eventually help the whole company. The more applications you try out, the more information you gather, and the more knowledge you gain, the greater the benefits you'll receive.

BE PREPARED FOR A NEW PROBLEM

Old problem: Fear of robots

New problem: More demand for cobots than
You can support right away



Strategies for Success

- ✓ Share best practices and lessons learned from the first implementation.
- ✓ Roll out subsequent implementations following the advice and lessons learned from earlier projects.
- ✓ Complete a risk assessment for each individual scenario.

Missteps to Avoid

- ✗ Skipping steps like a risk assessment.
- ✗ Assuming that the cell is exactly the same everywhere.



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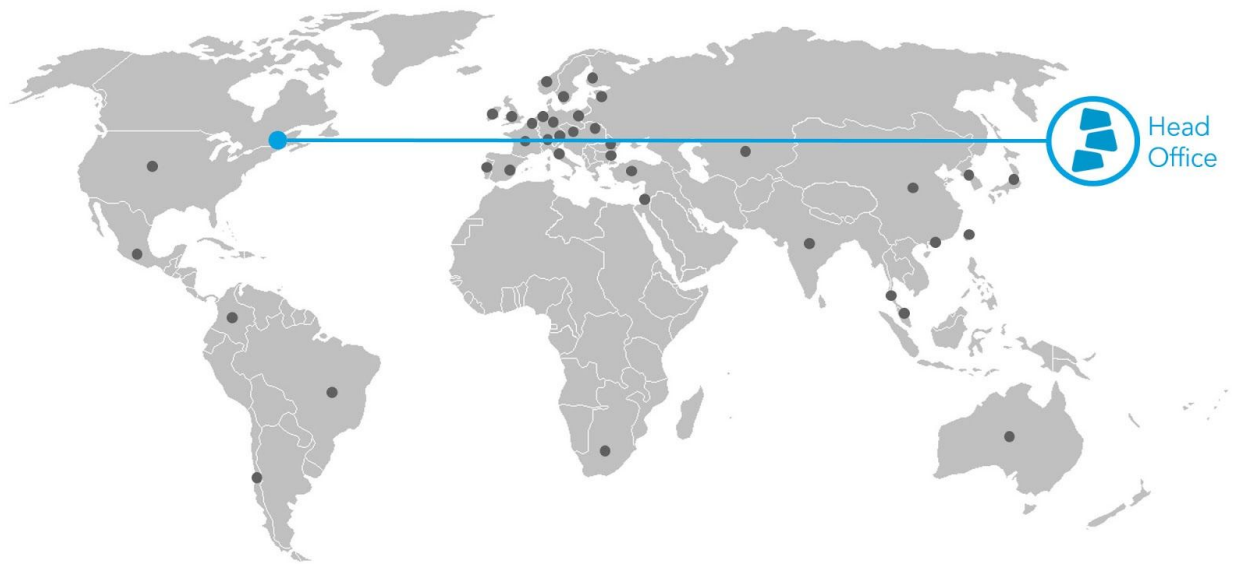


About Robotiq

At Robotiq, we free human hands from repetitive tasks.

We help manufacturers overcome their workforce challenges by enabling them to install robots on their own. They succeed with our robotic plug + play tools and the support of our automation experts community.

Robotiq is the humans behind the robots: an employee-owned business with a passionate team and an international partner network.



Let's Keep in Touch

For any questions concerning robotic and automated handling or if you want to learn more about the advantages of using flexible electric handling tools, contact us.

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