



CRiQ
INNOVATION PARTNER

INDUSTRY 3.0
**COMPLEX
AUTOMATION**

WHAT IS

COMPLEX AUTOMATION

Complex automation is the use of a set of industrial processes to automatically perform complicated tasks without human intervention. Automation helps improve the productivity, quality, and growth of companies. It can be used to develop a competitive edge, fill a labour shortage, improve product quality, reduce the environmental footprint of industrial activities, or eliminate monotonous, messy, and dangerous tasks.

Advantages

- | | |
|--|--------------------------|
| ↑ Production capacity | ↑ Visibility and image |
| ↑ Pace | ↑ Flexibility |
| ↑ Quality consistency | ↑ Technology expertise |
| ↑ Process control | |
| ↓ Production costs | ↓ Rejects and waste |
| ↓ Workforce turnover | ↓ Accidents and absences |
| ↓ Monotonous, messy, and dangerous tasks | ↓ Inventories |

Possible applications

Food processing - Automotive - Storage
Packaging - Mining - Transportation - Welding, etc.



THE MOST PERSISTENT MYTHS



Despite increasing numbers of large companies adopting automation, a number of myths linger. Some are stubborn and persist due to fears that production costs will explode or that jobs will be lost as industrial technology advances. However, these myths are often ill founded. Here are a few examples.

MYTH

Robots are expensive.

My process is too complicated or must remain conventional.

The return on investment is too long.

Robots replace jobs.

It's a project best left to the next generation of workers.

It's too risky.

REALITY

Costs have dropped in recent years. Some equipment costs less than a car!

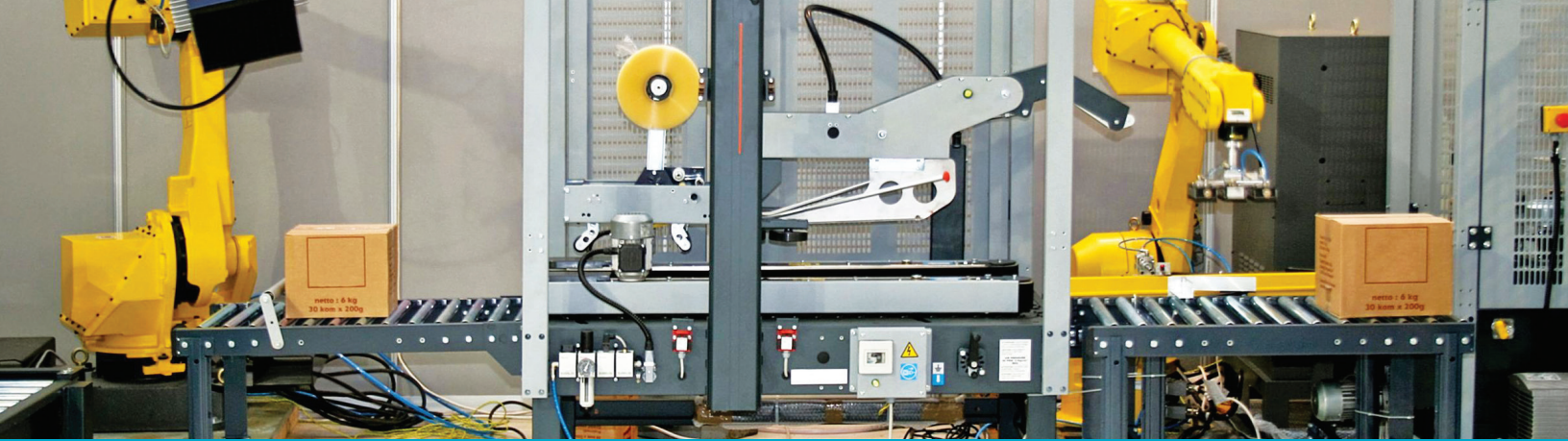
Robots are increasingly versatile and can reproduce conventional processes.

There's a rapid return on investment—usually less than two years.

These are often jobs not in great demand and with a high turnover (monotonous, messy, and dangerous tasks).

Why not get it done now! A detailed knowledge of the processes will make the transition to automation easier.

A good plan can help reduce and control risk factors.



MAIN STEPS IN THE AUTOMATION PROCESS

Step 1: Diagnose your productivity

Diagnosing your company's productivity sets you on the right path early in the automation process. First, a team of experts visits your plant and gathers production and productivity information. Next, they analyze the data collected, make a diagnosis, and recommend solutions to target the issues at hand.

Step 2: Define your objectives depending on your circumstances

There may be a variety of objectives associated with your plans to automate operations, and it is important they be well defined. For example, a company may wish to develop new products, boost productivity, or improve quality control or the safety of its operations.

At this step a value-added production (VAP) exercise can help you organize operations with regard to manufacturing methods, reductions in production-run times, production flow optimization, and waste minimization.

Step 3: Select and document the process to be automated, and determine the expected results.

With these objectives and the productivity diagnosis in hand, your organization is in a better position to identify which processes to automate. It can then draw up specifications and document what prompted the need for automation, as well as problems encountered, automation objectives, expected results, functional requirements, production characteristics and constraints, deliverables, and any implementation constraints.



Step 4: Identify and evaluate appropriate technical and technological solutions and assess the attendant risks.

After selecting which process to automate and drawing up the specifications, form a project team with access to both internal and external (equipment manufacturers, research centres, etc.) resources to identify and evaluate potential technical solutions. Next, analyze the social repercussions of the planned automation, especially with regard to the number and types of jobs. Some jobs will have to be relocated, some tasks enhanced, and workers will need to acquire new technical expertise. The risks inherent in each solution must also be examined. Preliminary testing can reduce these risks. At this stage the organization will be able to evaluate the project's cost.

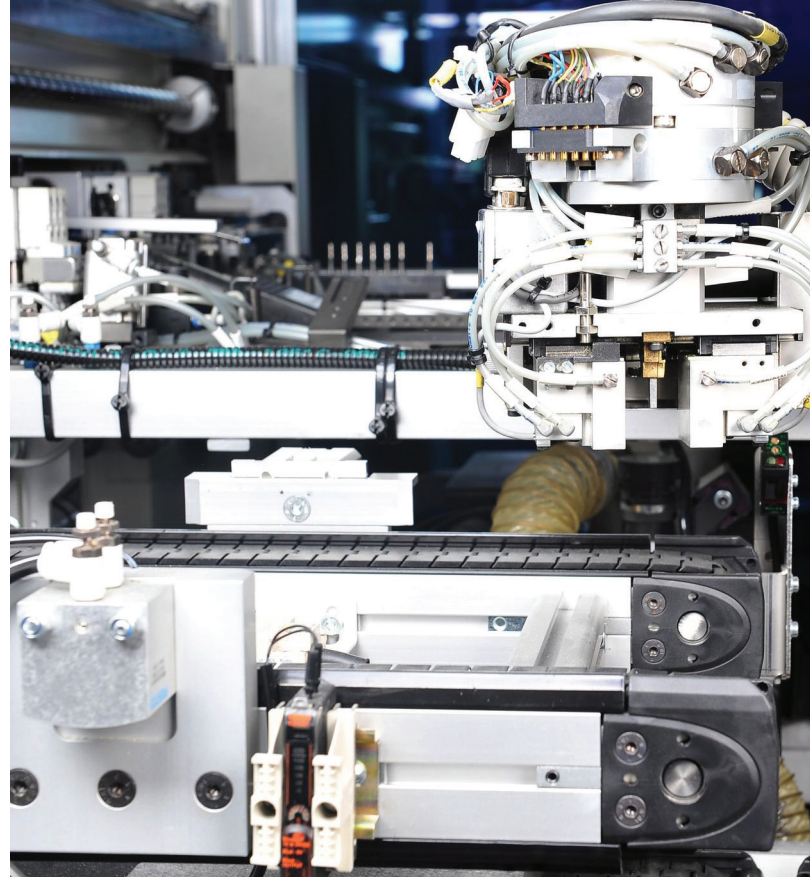
Step 5: Make a decision

With all the information in hand, it's now time to make an informed decision that takes into account the target objectives, the assessed risks, and the organization's resources.

This is also the time to implement a change management strategy. The organization must apprise the employees affected and work to lessen resistance to the change, in particular by acknowledging the employees' technical aptitude and positioning the automation as a source of pride for the company. An employee-training plan is a good way to manage the transition.

Step 6: Implement and manage the project

The planning phase is over and project implementation begins. This involves fine-tuning and testing the technical solutions, then delivering and installing the new automated production system.



Step 7: Start using the automated system

Once everything is in place and ready to go, workers who will be using the new equipment must be trained. Over the first few months the new equipment will require regular maintenance.

Step 8: Assess the system's efficiency and the productivity gains

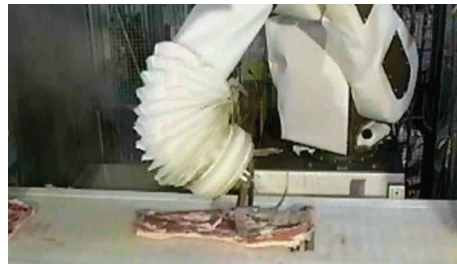
In the weeks and months that follow, it's essential to evaluate the system's efficiency and calculate the return on investment. This means determining the appropriate indicators and implementing effective methods for measuring and analyzing them.

A FEW OF OUR ACHIEVEMENTS

The automation of industrial operations leads to timesavings in product manufacturing through the faithful, efficient, and safe replication of human tasks. The productivity gains brought about by automation projects boost company profitability while ensuring a rapid return on investment.

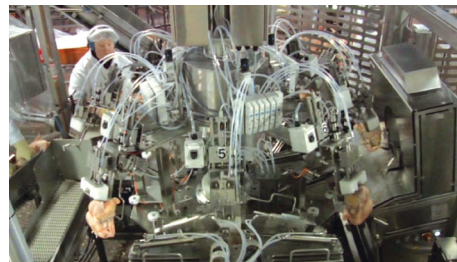
Pork side cutter

A machine vision system allows companies to standardize meat-cutting lines, increasing the market value of agri-food products while lowering the risk of injuries.



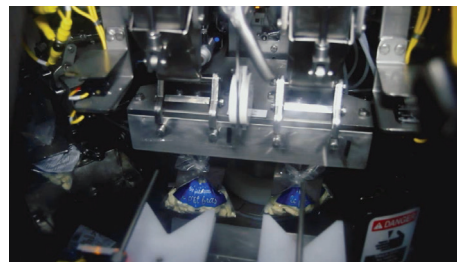
Chicken-tying machine

This automated poultry-tying technology can tie one chicken every three seconds without compromising the company's quality standards.



Automated bagger

This automated system slashes food bagging time, while keeping the look of traditional packaging.



A man wearing a blue hard hat and a grey business suit with a blue shirt and tie is looking upwards with a smile. The background shows a complex industrial structure with blue and yellow metal beams and a bright light source.

SOME OF OUR SERVICES

Quick brainstorming sessions

Brainstorming sessions provide Québec companies with access to the unique expertise of CRIQ's multidisciplinary specialists. This service opens the door to new innovations that help companies boost productivity and enhance their market position.

Productivity analysis

Using precise tools and proven methodologies, our CRIQ professionals help you target, prioritize, and enhance your company's key productivity drivers. We provide a comprehensive report recommending concrete actions, and provide all the information and contacts you need to ensure your project's success.

Complex automation projects

Whether you are looking to implement a complex automation project or develop specialized equipment for specific production challenges, our team of experts is ready to assist at every step of the way.

Ready to move from automation to digital?

Inquire about our diagnostic services for smart factories, automating operations management, and artificial intelligence forecasting.

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