

# The Pitfalls of Applying AI in Industrial Automation

AI IS THE BUZZWORD OF OUR TIME, AND COMPANIES ACROSS INDUSTRIES ARE SCRAMBLING TO INTEGRATE ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING INTO THEIR OFFERINGS. INDUSTRIAL AUTOMATION IS NO EXCEPTION, WITH AI PROMISING BENEFITS SUCH AS PREDICTIVE MAINTENANCE AND REDUCED MATERIAL WASTE. BUT WHILE AI HAS A LOT TO OFFER THE INDUSTRIAL AUTOMATION SECTOR, IT ISN'T WITHOUT RISKS AND CHALLENGES.

WITH OVER 55 YEARS OF AUTOMATION EXPERIENCE, MELTON MACHINE & CONTROL COMPANY HAS WITNESSED MANY ADVANCEMENTS AND CHANGES IN TECHNOLOGY. THIS GIVES US THE PERSPECTIVE NEEDED TO EVALUATE THE IMPACT OF NEW TECHNOLOGIES SUCH AS AI, INCLUDING POTENTIAL PROBLEMS. BELOW, WE DISCUSS SOME OF THE PITFALLS TO WATCH OUT FOR WHEN APPLYING AI IN INDUSTRIAL AUTOMATION SOLUTIONS.

## CYBERSECURITY RISKS

Processing the vast amounts of data that AI needs to make decisions requires technologies like cloud computing. To implement an AI system in your facility, therefore, you'll need to connect at least

some of your equipment to the internet. For every device with internet connectivity, your vulnerability to cyberattacks increases. More connectivity means a greater attack surface, which refers to all the ways hackers could access your system without permission. And in an industrial facility, a cyberattack could have devastating consequences for both safety and productivity.

Smart AI implementation thus requires you to balance the benefits of industrial AI systems against the risks of cyber intrusions. You'll need to have a plan in place for mitigating digital threats, including how you'll respond if a bad actor gains unauthorized access.

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## **OPERATOR TRUST AND ADOPTION**

The smartest, most accurate AI system in the world can still fail if operators don't trust it or refuse to use it. Humans are already wary of change, especially if that change is driven by a technology they don't understand. And many workers are understandably concerned about AI-powered automation replacing them.

In some cases, this lack of trust can lead to low adoption rates of AI technology in your day-to-day processes. And in the worst cases, operators may outright reject automation driven by AI, reducing productivity in your facility.

To address this pitfall, you'll need to properly train and educate your operators about any AI system you plan to implement. Aim to involve human workers from the start so that the automation isn't a surprise. With this proactive approach, you can increase operator buy-in and reap the full benefits of industrial automation, including systems that use AI.

## **SAFETY RISKS**

When an AI system fails in an office setting, the damage is usually confined to embarrassing typos or miscommunication. But in industrial applications, the stakes are much higher.

Without proper training and safeguards, AI systems can make catastrophic mistakes that injure human operators or damage equipment. These mistakes can result from faulty data or failure to plan for edge cases. What works safely in

a tightly controlled lab setting might fail in the real world due to variables like temperature, humidity, or vibration.

AI is still an emerging technology, particularly in the industrial automation field. Therefore, any automated system that uses AI will need to be thoughtfully designed to protect both workers and equipment.

## **HIGH MAINTENANCE COSTS**

AI-powered automation solutions like predictive maintenance promise to reduce costs in industrial facilities. But at the same time, AI models bring their own unique challenges that can cause costs to balloon.

To function properly, AI models require training on large datasets. No matter how vast and comprehensive your input data, all AI models will degrade over time. This is called "model drift", and it happens due to factors like process changes or new product variations.

You can combat model drift by retraining the AI on updated datasets. But this continuous retraining process can get very expensive, as it may require you to take AI-connected equipment offline or hire specialized consultants. Often, these increased costs make AI-powered systems more expensive to maintain compared to traditional industrial automation solutions.

## REGULATORY AND COMPLIANCE CHALLENGES

Highly regulated industries such as food, pharmaceuticals, and aerospace may struggle with AI adoption due to mandatory transparency and traceability in industrial processes.

As powerful as AI can be, we don't always understand how AI models arrive at their decisions. In some sectors, this doesn't matter all that much as long as the results are good. But if an AI is making decisions about how a drug is manufactured, for instance, then this lack of an audit trail is a serious hurdle.

Further advances in AI may address these issues and increase the adoption of AI in highly regulated industrial processes. But in the meantime, the "black box" nature of AI models remains a barrier to their use in many industries.

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AI has the potential to transform industrial automation, and our intent isn't to discourage you from using it. Rather, we want you to be aware that AI isn't perfect and encourage you to take a thoughtful approach to applying it in your facility.

For all its benefits, AI is just one aspect of modern industrial automation. That's why it's important to choose a trusted automation partner like Melton Machine & Control Company. With our guidance, you can design and implement automated industrial systems that boost safety, efficiency, and productivity.

**To learn more about automation solutions for your business, contact Melton today.**

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