

AI IN DIGITAL MANUFACTURING WITH DELMIA

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WITH DELMIA

THE PROBLEM IS NOT
LACK OF IDEAS

WHERE AI EARNS
ITS PLACE

MACHINING AS
AN EXAMPLE

FROM PLANT SCAN TO
USABLE FACTORY MODEL

BUILDING TRUST WITH
AI INSPECTION

PROMPT-BASED
ENGINEERING IS
ESSENTIAL, BUT ONLY IN
THE RIGHT SETTING

THE VIRTUAL TWIN
MAKES THIS WORTH IT

THIS IS ALSO ABOUT
ABSORBING CHANGE
BETTER

THE VALUE CASE IS
STRAIGHTFORWARD

WHAT DELMIA BRINGS TO
THE EQUATION



Most of the hype surrounding AI in manufacturing is largely isolated from the factory floor. They become entrenched in broad claims, buried in vague productivity language, or present as polished examples that skips real issue.

But the actual question at hand is: Can it help a manufacturing team get work done faster, with fewer mistakes and without adding another layer of complexity?

That is the only useful standard.

In this way, AI matters when it shows up inside the work manufacturers are already doing every day - Process planning, Robot programming, Factory layout, Quality checks, Commissioning, and Change management. If it helps manufacturers that way, it matters. If it remains a generic assistant floating above the process, it does not.

This is how DELMIA fits into that practical part of the story. The value of AI in DELMIA comes from being built into those workflows instead of sitting beside them.

Our solution is used to define, simulate and manage manufacturing operations in a shared virtual environment before changes hit in the real world. This includes process plans, work cells, robotic systems, plant layouts, production flow and execution.

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THE PROBLEM IS NOT LACK OF IDEAS

Manufacturing teams know best what they need to do. The problem lies in the amount of manual effort between the idea and the result.

When a design changes, the process plan has to catch up. Robot paths need rework. Tooling must be checked. The layout may need adjustment. Someone must validate reach, motion, safety and cycle time. Then the line still must be commissioned. Unfortunately, most of that work is still too dependent on specialist knowledge, too slow to absorb change and too fragmented across tools and teams.

This is where AI has a place.

The goal is not to make manufacturing sound futuristic. The goal is to remove the repetitive, high-effort work that keeps engineers buried in setup, search, correction and rework.

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WHERE AI EARN ITS PLACE



There are a few areas where AI in manufacturing becomes immediately credible.



Expert software that asks too much of the user

That is common in machining, robotics and simulation, where the system can do a lot but still expects the engineer to know exactly where to start.



Messy input

Factories are not clean digital models. They are made up of scans, legacy files, half-complete data, old layouts and workarounds layered over time.



Turning a rough requirement into something structured enough to test

That is where AI starts to become genuinely useful, especially when the output lands inside a virtual model that can be checked before anyone commits to it in production.

That is the important part. AI on its own is cheap. Validated manufacturing output is not.



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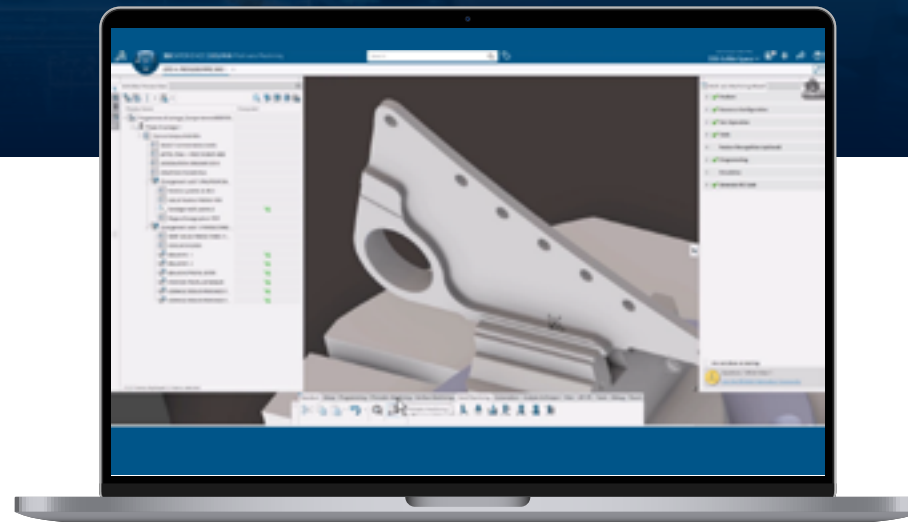
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MACHINING AS AN EXAMPLE

Machining is a good place to strip the hype away because the value is obvious. A programmer selects a surface. The software proposes the operations that fit that geometry and suggests a sensible starting point for parameters. That is it. No grand claim. Just less hunting, less guesswork and a shorter path to a usable result.

This matters because CAM environments are deep and skilled machining people are not easy to find. Anything that reduces avoidable friction inside that workflow has value. It helps newer users get started faster. It reduces the load on the small number of people who know everything. It makes the whole process less dependent on memory and habit.

That is a realistic role for AI in manufacturing. It does not replace experience. It makes the system easier to work with.



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Another useful case is factory reconstruction. A point cloud gives you a snapshot of the current state of a plant. While helpful, a scan is still just a scan. It does not behave like a manufacturing model. You cannot do much with it until it becomes something structured.

This is where AI helps bridge the gap. Instead of manually rebuilding every object, the system can identify what is in the scan, match it to the correct equipment and pull that into a simulation-ready environment. In robotics, that means replacing static visual data with actual robot models that include motion logic, working limits and process context.

Now the factory is usable again. Engineers can test changes, check movement, validate reach, review collisions and understand whether a planned adjustment will work before anything gets disturbed on the line.

Beyond point clouds, the same AI-assisted logic can help generate collision-free robot paths, identify efficient robot configurations, and accelerate task creation from engineering context such as seams, fasteners, or process geometry. The broader benefit is faster simulation, programming, and virtual commissioning with less manual setup.

That shortens a very painful stretch of work.



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Inspection is another place where the value becomes quickly obvious. By combining augmented reality with AI, operators can compare what is physically built against the digital definition, directly in context. The right information is presented at the right place, guiding the inspection step by step while keeping full alignment with the product definition.

AI enhances this experience in two key ways. First, it enables fast and reliable recognition of the part or assembly, ensuring that the correct inspection sequence is triggered automatically. Second, it leverages advanced vision algorithms to support checks such as brackets verification or installation validation, helping detect what is right and what is wrong in real time.

There is nothing theoretical about that. It's just a better way to run a quality check.

What is important is that the inspection logic stays tied to the manufacturing definition. When design intent, process intent and inspection logic live in the same environment, it becomes easier to keep quality checks aligned with product changes and line changes. That reduces drift, which is one of the quiet causes of poor execution.



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PROMPT-BASED ENGINEERING IS ESSENTIAL, BUT ONLY IN THE RIGHT SETTING

A lot of people talk about prompting as if it will replace engineering.

It will not.

What it can do is compress the front end of certain tasks.

An engineer describes a layout requirement in plain language. The system creates a first pass. A robot line is arranged. Spacing rules get applied. A tool is added. The result is still reviewed, corrected and simulated by someone who knows what they are doing. The point is that the engineer does not have to build the first version from nothing.

That is useful.

The same applies to factory layout generation from rough drawings or structured files. AI can help turn an early sketch into something usable much faster than a manual rebuild. That does not remove engineering judgment. It gives engineering a head start.

This is the version of generative AI that has a future in manufacturing. Not because it sounds impressive, but because it saves time at the beginning of work that still must be validated properly.

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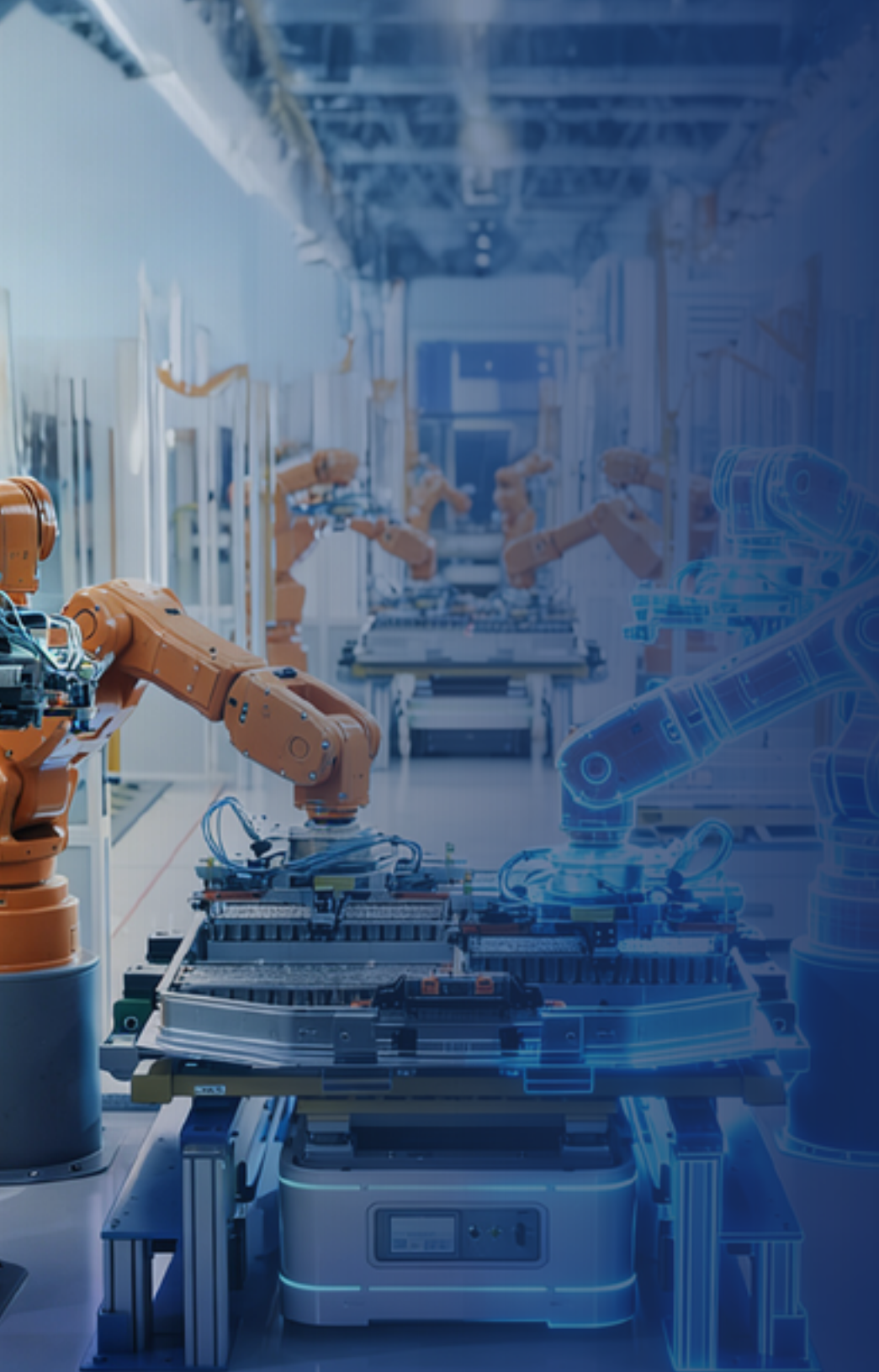
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This is the part that gets missed too often.

If AI produces an answer outside the manufacturing model, someone still must translate it, rebuild it and prove it. That burns time and introduces risk. If the AI output appears directly inside a virtual twin of the product, process and production system, then it can be tested where it matters.

That changes everything.

A robot path can be checked for collisions and reach. A layout can be checked against space constraints and process flow. A process plan can be checked against the actual product structure. Commissioning logic can be tested before physical deployment. The digital model becomes the place where ideas are filtered against production reality.

Without that, AI stays shallow.

With that, it starts to become useful in a serious manufacturing environment.

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THIS IS ALSO ABOUT ABSORBING CHANGE BETTER

A lot of manufacturing pain surfaces when engineering changes late.

The problem is rarely the change itself. The problem is what follows. Manufacturing teams must trace the impact, update process plans, rework robot programs, adjust tooling logic, recheck sequence and safety, then push the whole thing back through validation. If those links are weak, every change becomes expensive.

That is why digital continuity matters so much here.



When the product definition, manufacturing process and robotic execution all sit in one connected environment, the system is much better at carrying change through without making every downstream team start from scratch. AI strengthens that by speeding up the updates and reducing manual effort around them.

This is not glamorous work. It is still where a lot of the value sits.

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Manufacturers do not need abstract claims about intelligence. They need fewer delays and less wasted engineering time.

The value tends to show up in the same places repeatedly:

- ✓ Less manual robot programming
- ✓ Fewer late-stage layout problems
- ✓ Faster preparation of machining operations
- ✓ Quicker validation before physical changes
- ✓ Less rework when designs shift
- ✓ Better inspection consistency
- ✓ Lower dependence on a small pool of specialists

None of these are dramatic. It is still the reason they matter.

Good manufacturing software earns its place by reducing avoidable work. AI earns its place when it sharpens that effect.



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DELMIA is useful here because it already sits in the manufacturing layer where these problems live.

It covers process engineering, robotics, machining, plant layout, simulation, virtual commissioning and operations execution in a connected environment. That means AI is not bolted on from the outside. It works inside a system that already understands products, resources, motions, constraints and production logic.

That makes a big difference.

It means an AI-assisted action can lead directly into simulation. A change in product definition can flow into manufacturing work without turning into a disconnected clean-up exercise. A line concept can move toward validation faster. A quality check can stay tied to the digital model it came from.

That is the practical case for AI in manufacturing with DELMIA.

It is not about making factories sound futuristic. It is about cutting down the manual effort between engineering intent and production reality.

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