

AI's impact on design and manufacturing innovation

AI technology is revolutionizing design and manufacturing (D&M) industries, enhancing creative exploration and problem-solving. By analyzing vast datasets, AI accelerates innovation cycles, facilitates more informed decision-making, and substantially reduces time spent on routine tasks.



Why use AI?

In the dynamic D&M landscape, the synergy between data and AI matters more than ever. As data input increases, AI's capacity to extract insights, automate tasks, and refine design iterations escalates significantly. This symbiotic relationship empowers executives to achieve greater outcomes with fewer resources, even amidst the challenges of an uncertain future.

There are challenges but also opportunities. The best opportunity is AI. We can do more, even better, with less. For example, using the same resources as before, we can create three or four proposals at the same time instead of only one.

Jinchun Hu,
General Manager, JAC Italy Design Center S.R.L.,
an automotive and commercial vehicle manufacturer



Types of design and manufacturing AI

Generative design



With user-specified parameters, AI-driven generative design can produce **hundreds of manufacturing-ready options**, empowering designers to:

- Assess design alternatives rapidly
- Make more informed decisions
- Optimize outcomes

Automated modeling



Automated modeling **quickly explores various design options** to ignite the design process and generates numerous diverse editable alternatives, fostering creativity and uncovering new possibilities, all with minimal input.

Automated toolpaths



CAM automation **significantly reduces the time needed** for strategy development and estimations—from hours or days down to seconds. Efficiency is boosted by:

- Automating repetitive CAM programming tasks
- Translating 3D models of 3-axis components into machining strategies

Automated drawings



Documentation creation no longer needs to be a tedious, low-value task consuming in-demand hours from skilled engineers. Now, **convert 3D models** into comprehensive, dimensioned representations **with just a single click.***

*Note: This feature is set to launch by the end of 2024

Top 3 skills of the future



1
Ability to implement/
work with AI



2
Software development/
programming



3
Digital project
management

We need versatile talent with different capabilities—for example, people who are good at not only designing equipment but also programming and using analytical tools.

Miro Lin
CEO of Machine Tool Business Group, Fair Friend Group,
one of the world's largest machine tool companies

Top 3 benefits of AI



Opportunity through automation

By automating processes that once required manual labor or administrative overhead, tedious and repetitive tasks are streamlined or eliminated, allowing businesses the freedom to allocate more time to create and innovate.



Profit through analysis

Businesses can utilize AI to extract actionable insights from extensive and complex datasets. With the ability to proficiently comprehend and navigate the fundamental realities of their operations, they can make more informed decisions and ultimately bolster their bottom line.



Understanding through augmentation

Teams can substantially enhance their problem-solving, creativity, and exploration through augmentation to accelerate, refine, and broaden thinking through expanded contextual comprehension.

How is Autodesk using AI?

Autodesk is no stranger to AI. Recognizing its profound potential impact on the design and manufacturing industry, we've invested substantially in AI research and development for over a decade with one central question in mind:

How can we more effectively harness AI to bridge the gap between imagination and reality?

Our goal is to equip your teams with the tools needed to streamline your product development process and realize your ideas more swiftly and efficiently.

Dig deeper

Explore further insights in the AI Spotlight report.

[Download the report](#)