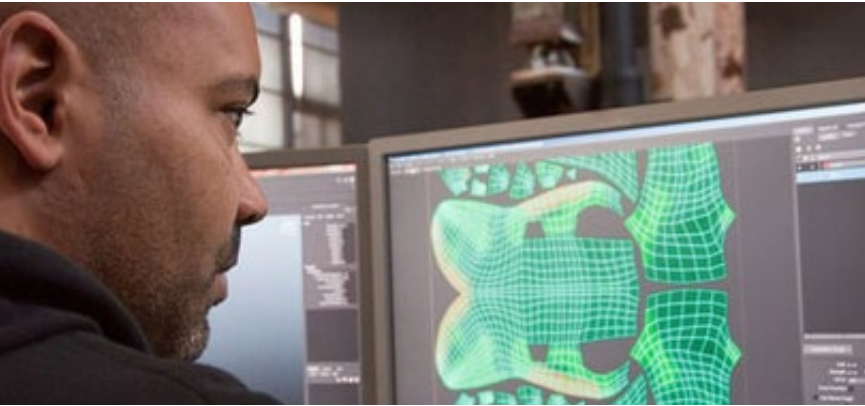


# An introduction to Autodesk CAM software for robotics



Robotic automation and Computer-Aided Manufacturing (CAM) are rapidly changing the way traditional manufacturing processes are carried out.

Traditionally, many manufacturing companies have been rather slow to embrace change, especially in certain industries, for a variety of reasons. One of the main objections is the cost of implementation.

Autodesk, with its powerful range of CAM and CAD (Computer-Aided Design)

software, that is both affordable and user-friendly, is seeking to open up the possibilities of smart-manufacturing to more and more businesses.

This article will give you an overview of Autodesk CAM software and how it links with robotic automation to create a more productive and smarter manufacturing environment.

## Autodesk CAM software – the key to smart manufacturing

One of the many advantages of using Autodesk software solutions is that they all integrate seamlessly, piecing together to create a complete end-to-end manufacturing solution. Here's a selection of the main CAD and CAM packages in the Autodesk manufacturing suite of software:

### **Fusion 360**

Fusion 360 is a fusion of CAD and CAM software, as well as being an overall management and organizational tool.

It's a powerful package for product development that allows the importing and manipulation of, or creation of 3D geometry. It features a generative-design tool which iteratively optimizes designs given certain constraints.

The CAM element of the software prepares the design for additive or subtractive manufacturing, automatically generating the required code. This means prototypes or finished products can be 3D printed or CNC (Computer Numerical Control) machined very quickly and efficiently.

Fusion 360 is entirely cloud-based and can be run in a browser, removing installation and compatibility issues. It is also very convenient for collaborative, remote working.

## PowerShape

PowerShape is CAM software which includes some elements of CAD to allow users to edit imported geometry, or to create shapes and surfaces. It is designed to be used with CNC machines to make molds, dies, tools, and complex parts.

## FeatureCAM

FeatureCAM is dedicated CNC machine control software that automatically detects the features of imported parts and corrects errors, before creating the numerical code to run the machine.

## PowerMill

PowerMill is CAM software that links with PowerShape, FeatureCAM or Fusion 360 to control 3D printers or CNC machines. It is a powerful piece of software that can work with 3 to 5-axis, high-speed machines.

## PowerMill Robot

This software is designed to program, control and simulate robotic operations. It links directly with the PowerMill CAM package and makes it easy to optimize robotic actions and simulate automated manufacturing systems.

With the increasing automation of production lines and the use of both robotics and 'cobotics'(robots that collaborate with humans), this software will prove invaluable for companies that are looking for integrated ways to control their systems.

## Applications of Autodesk CAM and robotic software

Autodesk CAM software and PowerMill Robot can be used for all sorts of manufacturing processes that assist with the increasing use of robotics in the manufacturing world:

### Sculpting

Creators of wood or stone sculptures and statues can use the tools to help create large and intricate designs. For instance, marble sculptors can use the software to generate complex robotic tool paths, quickly creating designs that would take months to finish by hand.

## Machining

Any type of machining can be carried out: milling, cutting, drilling, turning, routing, etc. Companies that machine plastic or foam can use the software to precisely carve designs with smooth finishes for example, therefore cutting down on the production time and cost of traditional methods.

## Finishing and trimming

PowerMill, with its 5-axis capabilities, is a great tool for trimming and deburring products. For example, Southern Spars, a yacht-manufacturing company, uses the software to make high-quality, smooth-finish masts and rigs for racing vessels.

## Other applications

There are lots of other robotic applications including laser cutting, wire EDM (electrical discharge machining), laser cladding, sanding, grinding, etc.

## Manufacturing over the next few years

There is no doubt that CAM software is playing a big part in the direction of manufacturing. As the use of robotics grows continues to increase, Autodesk software can make fully integrated workflows possible, reducing cost and increasing productivity.

Expect Autodesk to release further updates and additions to its range, allowing for even more automation and innovation in the coming months and years.