MICROCAD
TRAINING & CONSULTING

Manufacturing Processes

Table of Contents

An introduction to Manufacturing Processes

A manufacturing or production process is the way a company builds or creates a product. It involves various machines, tools, and equipment with multiple levels of automation through computers, robots, and cloud-b technology.

A company creates its own production process to produce goods specifically for its customers. It decides which production method to choose based on factors such as consumer demand, sales forecasts, assembly techniques, materials used, and resources available. For example, you can mass produce a product if a certain ingredient is in stock or for sale, or in smaller quantities to fulfill customer orders without additional storage costs.

Many of today's manufacturing processes date back to the Industrial Revolution of the 1800s, which moved the industry from human activity to human machines, and as technology advances, the processes become easier to understand and follow. Each approach is unique and has certain advantages for a specific task, and industries have sub-sectors such as food, clothing, chemicals, or electronics.

Types of Manufacturing Processes

One manufacturing technique can be more effective than another, depending on the kind of business or product you have. Here are seven types of manufacturing procedures that are currently employed by businesses all around the world:

1. Shop Manufacturing

In Shop Manufacturing, specialized products are most frequently produced in shops rather than on assembly lines for clients or customers. These workstations allow for **simple customization of the finished product** and can concentrate on one or a few products, like a custom shoemaker or commercial printer. This kind of manufacture is also used by many machine shops to **create regional industrial machinery, ship parts, or unique aviation parts.**

As technology develops, some of these locations might control workflow and production using in-store manufacturing software. A corporation can gain from converting from shop floor production to repetitive manufacturing, which allows for automation and fewer workers, in order to enhance production levels.

2. Repetitive Production

When repetitive production is carried out at a set production rate, it is appropriate. Every day of the year, all day long, these production lines in this manufacturing process operate on the same product or component. **You can adjust the running speeds to the needs of the customer to create more or fewer goods** because there are so few adjustments and settings. Repetitive manufacturing is often used by businesses that produce electronics, cars, or durable goods like refrigerators and dryers.

3. Discrete Manufacturing

Discrete manufacturing is significantly more flexible than repetitive manufacturing and **allows for more frequent modifications and variations.** Discrete manufacturing still involves an assembly or production line. A corporation may have a variety of product sizes, shapes, or goods, yet this frequently results in production taking longer due to extra setups or deletions.

Many businesses that produce clothing, medical devices, toys, smartphones, and automobiles employ different production techniques.

4. Batch Production

Due to client demand or the availability of components and raw materials, batch production procedures are comparable to discrete and shop-plan production processes. **When one production run is sufficient to satisfy the needs of the customer, production is stopped, the machinery is cleaned, and production is restarted when you require another batch.**

The batch method is frequently used in the manufacturing of food, newspapers, books, and pharmaceuticals.

5. Continuous Process Manufacturing

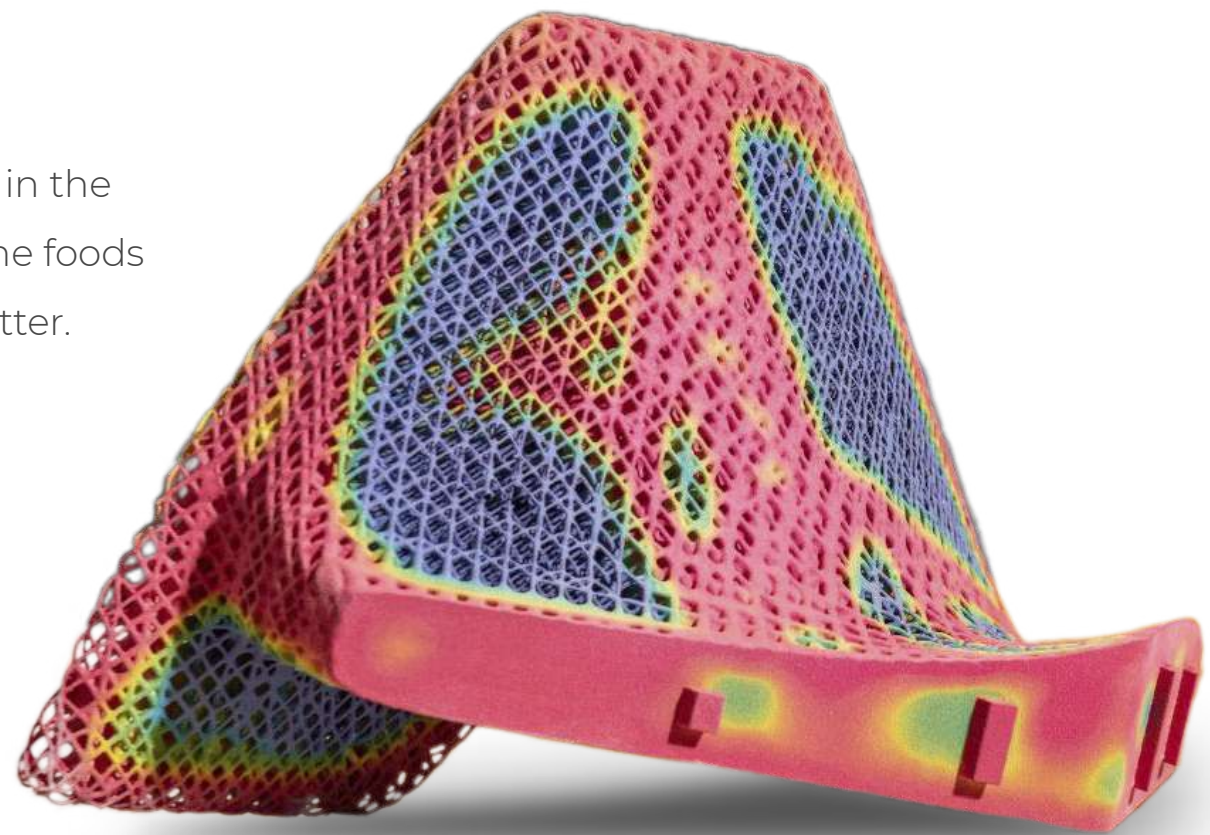
Continuous Process Production constantly functions like repetitive manufacturing. The distinction is that **this method concentrates on raw ingredients, which are frequently gases, powders, liquids, or slurries.**

Continuous process production is used in the production of paper, oil, metal, and some foods like tomato sauce, juice, and peanut butter.

6. 3D printing

Many in the sector now rank 3D printing as the sixth most popular manufacturing technique. In place of physical work or mechanization, 3D printing was invented in the 1980s and **uses a variety of substances and materials, including plastics and metals, to build three-dimensional objects layer by layer from a digital model.** With dozens of device producers and hundreds of thousands of 3D-printed devices currently on the market, this industry has experienced enormous growth.

Even though 3D printing might be pricey, technology also provides the chance to save financial capital, raw resources, and waste while enabling businesses to design and test goods before producing them on a bigger scale.



Integrated CAD / CAM Solutions

A CAD/CAM system that combines computer-aided design and manufacturing capabilities on a single platform is known as an integrated system.

The advantages of performing all of your CAD/CAM programs in a single interface go far beyond the fact that it is half as much labor to study, select, and install one software system as it is to research, select, and install two. It is also typically far more cost-effective.

1. Information won't be lost when you export from CAD to CAM

When using an integrated system, the CAD and CAM components will speak the same "language", which simplifies exporting from one to the other.

A user will need to complete several steps after designing a part in a CAD system that is independent of a CAM system, such as converting the file to one that can be transferred to CAM, frequently using a third-party file converter, and checking the file in the CAM system to ensure that everything has transferred properly.

2. You can quickly swap between them

Programmers frequently encounter parts that need to be redesigned, look like outdated parts, or even have component files that were corrupted between CAD and CAM.

They must return the file to CAD because of this. However, going back and forth between CAD and CAM with an unintegrated system is even more cumbersome.

3. Your local Reseller can assist you with each programming stage

You know how aggravating a small coding error may be if you've ever taken a portion from design to programming to simulation just to discover that something is off someplace. Especially if you are unsure of exactly when the error occurred.

How Autodesk Fusion 360 helps your manufacturing processes

Compared to conventional, separate products, integrated CAD and CAM software like Autodesk Fusion 360 offers a good number of advantages. The following are some of these advantages:

1. Faster file transfers and computing in general

Industrial designers can spend less time downloading, transferring, and uploading massive data files thanks to integrated cloud CAD.

2. Operating Costs are lower

All-in-one CAD/CAM software that can be tailored to your needs is Autodesk Fusion 360. There are several different subscription options available, all of which are reasonably priced.

3. Streamlined Processes

The collaborative workplace of today is not conducive to linear, one-way procedures. The integration of cloud CAD/CAM software improves processes in both directions.

4. Distance Accessibility

In the past two years, working on a digital project in real-time from the comfort of your home has gained widespread industry acceptance. Engineers can access their CAD or CAM projects remotely at any time from a phone, laptop, or personal computer using Fusion 360.

Start automating your Manufacturing Processes with the PDM Collecton

BEGIN TODAY

Follow us:

MicroCAD Training & Consulting, Inc.

MicroCAD Training & Consulting

www.microcad3d.com

Contact us:

Toll Free
888-355-0081