



# katana

The manufacturer's  
definitive guide to  
**batch production**

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# Introduction

Everything you need to know about batch production

Product recalls are part and parcel of manufacturing, something businesses and customers understand all too well. According to one study, [91% of respondents believed that recalls are likely to happen](#) even at the most well-managed companies. But that doesn't necessarily mean customers will be forgiving if a business' reaction time is slow.

In a worst-case scenario, a defective product making it to the marketplace, there is still hope to save your reputation with the proper processes in place.

But only if you have the right processes in place.

We put together this ebook to help you and your managers better understand the world of batch production. We'll explore the different industries that use this manufacturing method and how you can apply it to optimize your production lines — including the best tools for the job.



87%

***of customers are more likely to continue doing business with a company that honorably and responsibly manages a product recall.***

- The Relational Capital Group, 2010

# 1. What is batch production?

Batch production or batch manufacturing is a method of grouping your raw materials and components to make finished goods in one go.

The most straightforward solution to production planning is to tackle your manufacturing orders one by one. However, this method might be time-consuming in some industries or for manufacturers working with [materials with short expiration dates](#) and need to consume those items sooner rather than later. Batch production, in this instance, gives them the freedom to work with unique configurations while keeping up with demand.

## Sounds great, but how do you keep track of your batches?

By using another important element of batch production — SKUs, serial numbers, and lot tracking numbers.

An [SKU \(stock keeping unit\)](#) is going to help you identify your items. A serial number will help you track the warranty and service issues of sold finished goods. And a lot tracking number is assigned to the whole batch of products.

### All these numbers are essential in batch production to help you:

- Track expiration dates of products
- Trace any defective items back to the original batch
- Easily enable product recalls

## 2. Batch vs. continuous production

Batch production isn't the only method out there, and it may not be for you. An easier-to-follow approach is making products one by one. It could be that it's the optimal way of manufacturing, depending on your production process.

But if your production output leaves much to be desired, perhaps the following explanations will help you determine which is best for your business.

### **Batch production**

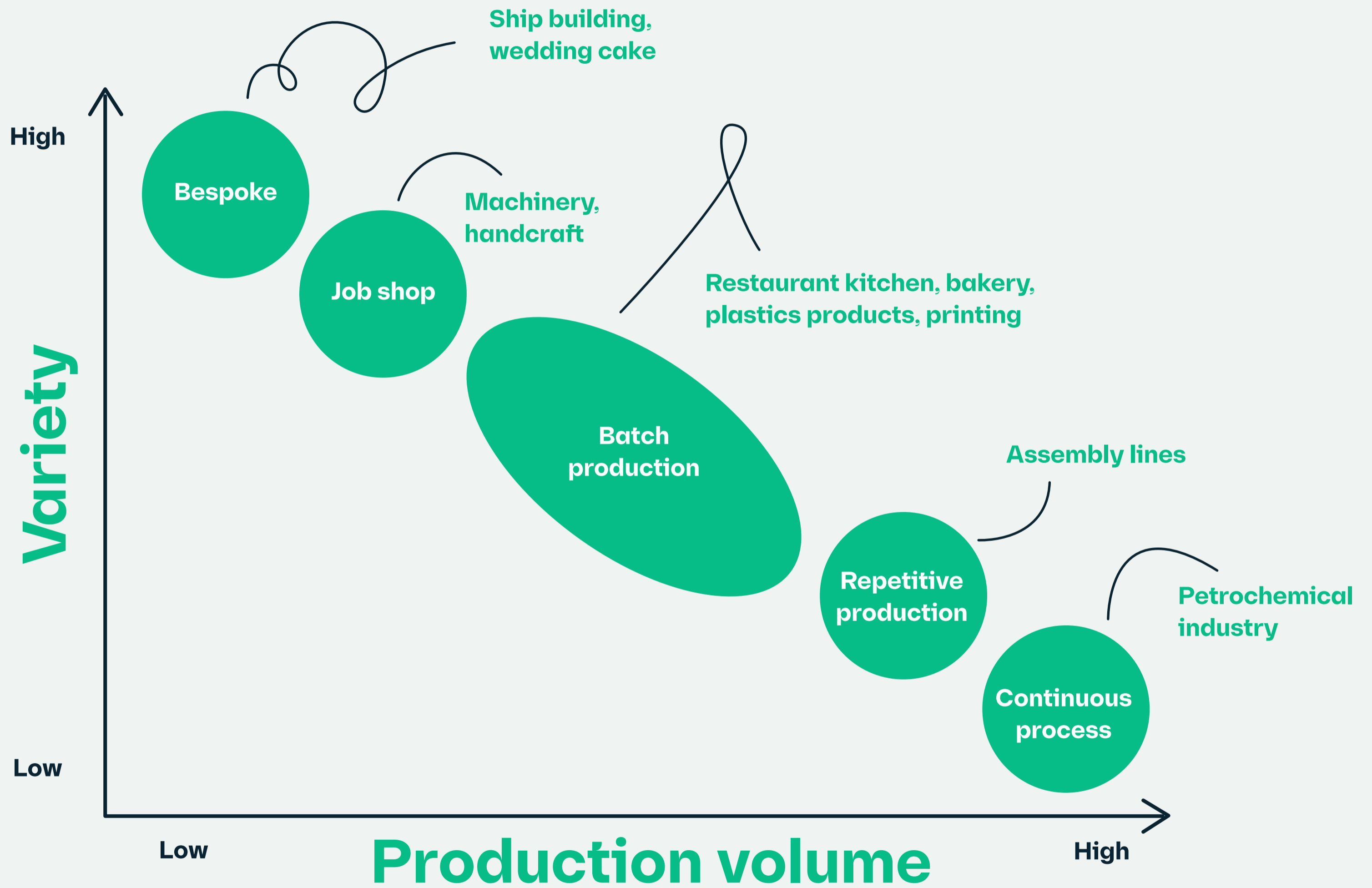
Batch production is ideal for manufacturers who offer multiple products and can group identical items for manufacturing in large or small batches.

### **Continuous production**

Continuous or mass production is ideal for manufacturers who have assembly lines or make only one product aiming to meet high demand.

### The different types of production processes

- Continuous
- Repetitive
- Batch process
- Job shop
- Discrete



# 3. How to use batch production in your business

## Batch production has traditionally followed this workflow:

- The manufacturer sets up the assembly lines
- The assembly lines begin producing a product
- After the demand is satisfied, the manufacturer rearranges the lines for the next product

This method is still the case for many larger manufacturers.

But, it's not representative of modern SME manufacturers.

Nowadays, manufacturers use batch production as a means of handling a workflow or item. For example, batch tracking simplifies the process of tracking the expiration dates of multiple products, helping you optimize your inventory levels, reduce spoilage and increase profitability.

Manufacturers of computer chips and other technological products use this technique to track products that will become outdated.

As you can see, batch production gives manufacturers the benefit of keeping their lines flexible.

This flexibility gives you the chance to separate your finished goods — allowing you to juggle make to order and make to stock workflows:

**Make to order** — MTO is the process of products manufactured upon a business receiving a customer's order.

**Make to stock** — MTS are products manufactured for inventory, based on sales forecasts and customer demand expectations.

# The benefits of having this flexibility

The most significant benefit of batch production is the ability to track and trace their items. Having these tools in place allows you to get more control over your inventory, quality assurance, and a means to monitor health and safety issues.

Here are some more takeaways from implementing batch production:

## Improved production planning and scheduling

You can distribute the workload to employees who're more experienced in a particular aspect of the manufacturing process, ensuring you always get the best person for the job.

## Identifying routing issues

Are you [experiencing bottlenecks](#), traveling back and forth between workstations, or seeing errors occur at a particular stage of production? Batch production allows you to follow your process workflow and analyze your production efficacy to identify problems and address them there and then.



47%

***of organizations intended to move their core ERP systems to the cloud within five years.***

- Adoption of Cloud ERP by Gartner, 2014



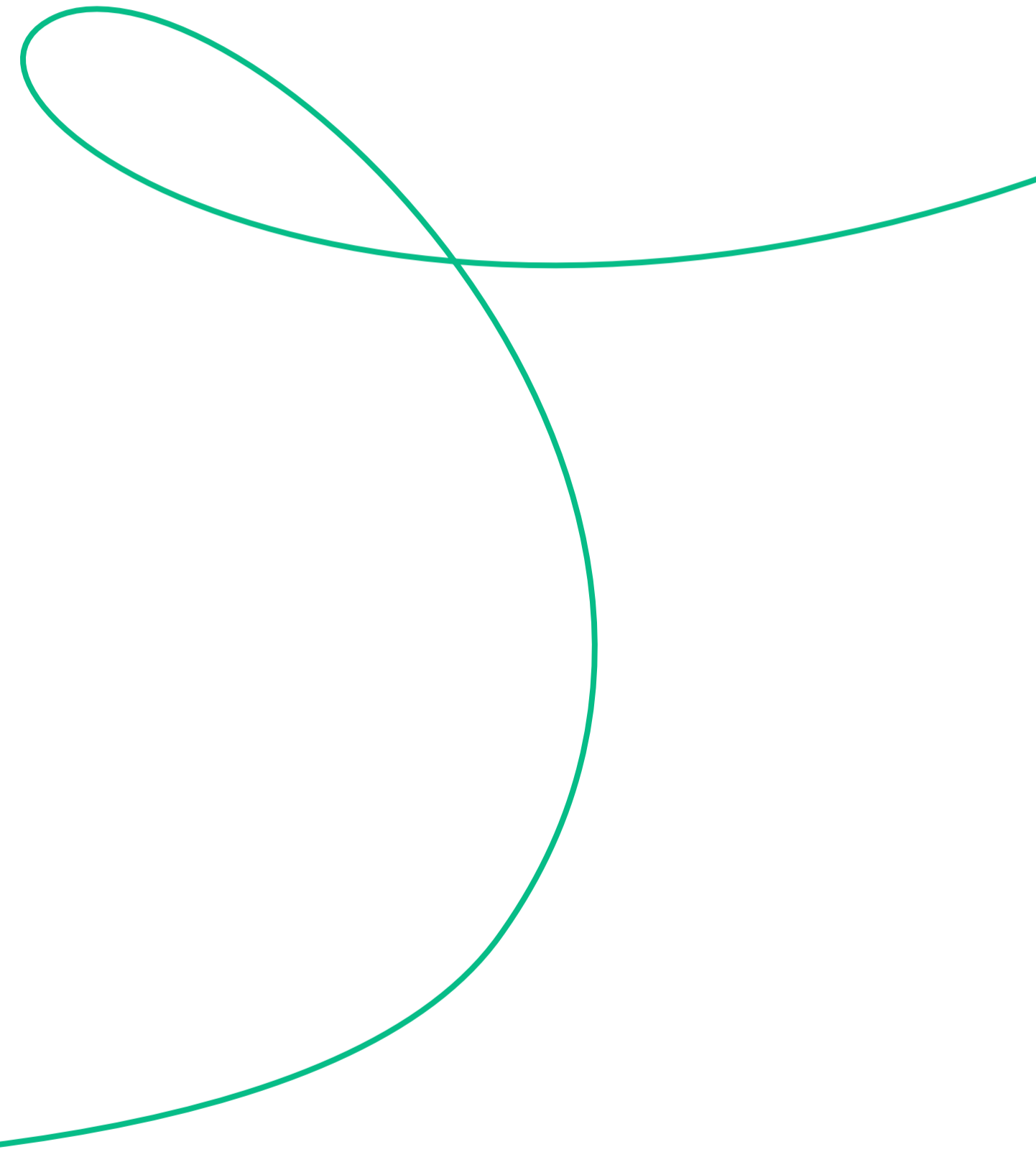
# 4. Batch production in practice

You can find batch production in many different industries, making it a very common production method. It is mainly associated with the pharmaceutical industry, given that it needs to have multiple quality checks. However, other sectors, from bakeries to t-shirt makers, can also take advantage of this workflow.

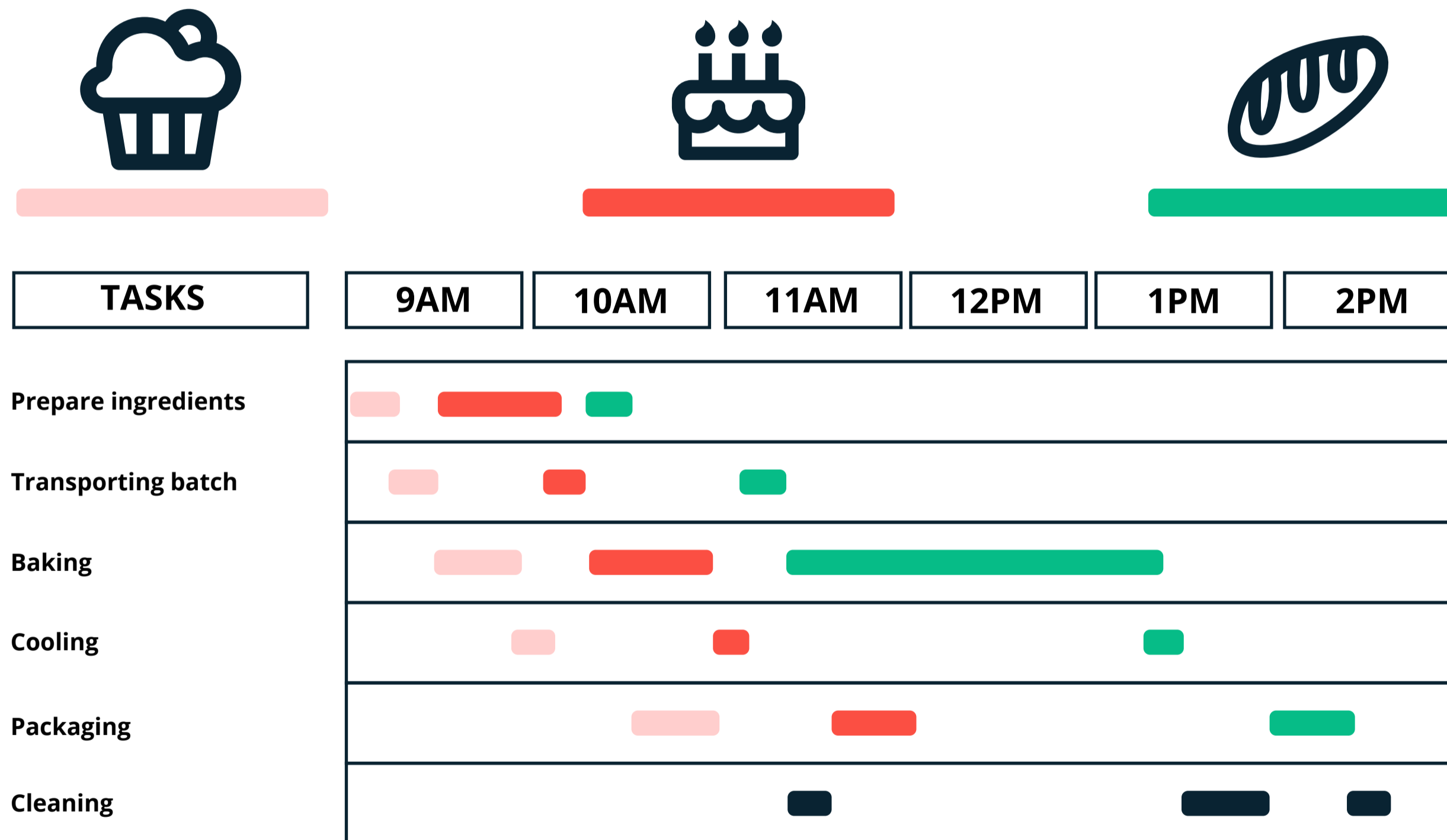
Here is an example of a micro-scale bakery with one worker — to keep things simple.

## **Baking goods in batches**

The lonely baker has done their market research, and surprisingly customers only want bread, muffins, and cookies. And to help them make these products, they have three workstations: a mixing station, an oven, and a cooling station.



# Here is an example of a micro-scale bakery with one worker – to keep things simple.

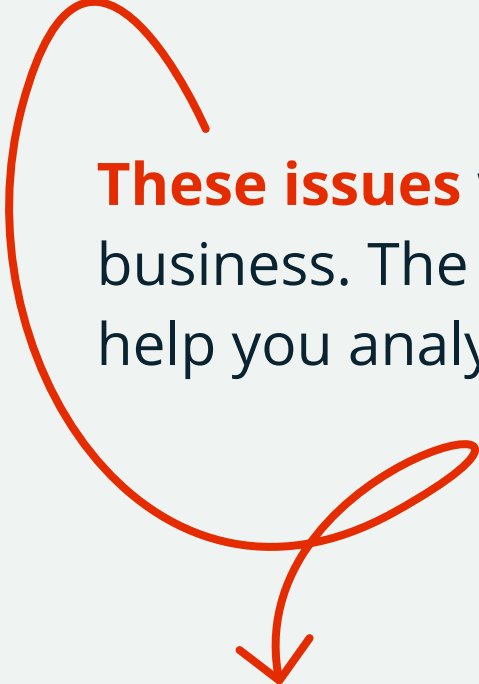


**Note:** The author isn't a baker. The cooking times, temperatures, and recipes may be exaggerated.

# Other examples of industries using batch production

Batch production in this example may seem more complicated than you'd expect it to be. But this workflow was pieced together with the idea that the owner is multitasking.

While something is in the oven, they're working on another task. Either way, you can clearly see the movement of batches going from process to process. This highlights the benefits of using batch production since making one product at a time — a loaf of bread, a muffin, a cookie — isn't nearly as efficient.



**These issues** will always be present in a scaling manufacturing business. The key to overcoming them is to have the tools to help you analyze your production and stay agile.

## **You can also see some of the negatives and risks for batch production in this example:**

- We have around 100 minutes of downtime
- All resources and equipment are running at 100% capacity
- Having only one oven creates a clear bottleneck to production
- Transferring batches between stations takes time
- There could be external factors like fluctuating demand

# Other examples of industries using batch production

If you feel like your business doesn't belong in these categories and aren't sure if batch production is for you, here are some industries where batch production is a valuable workflow to adopt.

Besides the overview of the different industries where you may find batch production in use, we'll go through a few case studies to learn more about batch production in practice.



# 5. Industries

that benefit from batch production

## Cosmetics and beauty

The cosmetic industry is heavily reliant on batch production because the materials and final products they handle usually have an expiry date. Take Essence One, which uses this method of working and software for end-to-end traceability, to centralize their entire business, from sales to production.

[Read the full case study >](#)

## Electronics and high-tech

Electronics eventually become outdated, which is why manufacturers use batch tracking for their products. Power device manufacturer CT LAB Designs use batch production and batch tracking software to improve their daily operations by 30%. It allows them to better track stock, plan purchases, and control resources.

[Read the full case study >](#)

## Food and beverage

Batch production is extremely important with the food and beverage industry as it allows manufacturers to easily track products, attach expiry dates and be compliant with industry regulations. Hornby Organic has improved its inventory efficiency and control by an impressive 100% with a batch production workflow and software to integrate their Shopify store and accounting software.

[Read the full case study >](#)

## Paper and packaging

Newspaper and magazine manufacturers are great examples of businesses that use batch production because they produce items daily, and the configuration will be different each time. But batch production doesn't only benefit them or industries with perishable inventory. Paper Republic improved production planning by 60% and differentiated their batch-produced items from their bespoke products with manufacturing ERP software.

[Read the full case study >](#)

# The importance of batch production in these industries

A deadly outbreak of fungal meningitis in 2012 resulted in many recalls in the pharmaceutical industry — and the death of over 60 people.

Following this catastrophe, the FDA (*Food and Drugs Administration*) came down heavily on pharmaceutical companies with new regulations on batch production.

Note that other, less precarious industries use batch production, too — but why?

Batch production gives manufacturers **more flexibility**. They can produce several finished goods while being able to provide some degree of product customization. This is perfect for growing businesses that want to keep manufacturing and carrying costs low while reducing leftover waste.

*From 2004 to 2015, the total number of drug recalls rose by over*

**1200%**

*– The US Food and Drug Administration, 2014*

## Why batch production is essential

- Industry compliance
- End-to-end traceability
- Shelf-life management
- Being proactive

## Industry compliance

Batch production, especially when accompanied by a capable tracking system, allows you, your managers, and your entire business to comply with industry regulations. Having the proper processes in place helps you see product movement history, monitor its route throughout your business, and the current location of your products.

## End-to-end traceability

Batch production will help you implement end-to-end traceability to track different aspects of production, such as your components and raw materials, manufacturing processes, supply chain movements, delivery, and service phases.

## Shelf-life management

Using batch production can help you better implement shelf-life management that will help you handle perishable inventory safely. Shelf-life management will also reduce the number of expired products you throw away from not accurately tracking your products too.

### Here are some shelf-life management methods to get you started:

- FEFO (first-expired-first-out)
- Info-packed barcodes
- Managing your suppliers
- Selling short-dated products
- Analyzing inventory movements adjusting your purchasing habits
- Using ERP software

[Read more about shelf-life management here >](#)

## Being proactive and not reactive

Batch production allows you to address problems in real time with quality checks at each stage of production. This is made significantly easier with product traceability systems that give you a live overview of your business. Ultimately, recalls are commonplace in the industry and are sometimes inevitable. But to avoid them occurring and protect your business's reputation, you need to be vigilant.

# 6. How to improve traceability on your production lines

1

## Tracking and record-keeping

Tracking is essential in batch production management but, realistically, is an excellent practice to follow regardless of your workflow. You can implement great tracking and record-keeping practices with software or develop your record-keeping system using spreadsheets. However, [these are known to have inefficiencies](#).

**Either way, what will help you keep inventory movements up to date and enable product tracking are:**

- Batch numbers and production dates
- Product order numbers
- Expiration dates
- Production timestamps

Katana's manufacturing ERP software allows you to use batch numbers, set expiration dates, and see open and completed manufacturing orders for an accurate overview of your manufacturing business operations.

You will always have a real-time stock status available in Katana that is easy to manage as you do not need to record any stock-related entries in accounting. Just record sales and expenses when they occur.



**katana** SELL MAKE BUY STOCK ITEMS CONTACTS SETTINGS +

Katana Liam Green

Purchase order PO-3 Wood S

Supplier Wood Supplier

Received date 2021-09-16

Click here or press cmd+B to start scanning

<input checked="" type="checkbox"/> Item	To receive	Batch #	Expiration date	Quantity left
<b>Total</b>	1 pcs			0 pcs
<input checked="" type="checkbox"/> [DK] Drawer knobs	1 pcs	#0245		0 pcs

Subtotal to receive (tax excluded): 2.10 USD

New Barcodes Cancel Receive all

## 2

## Supply chain visibility

Using product traceability while doing your batch production gives you better insights into your supply chain. End-to-end traceability helps you track items from your supplier to your inventory, across your shop floor, and out the front door with the customer.

This production overview will give you the information you need to reduce waiting times — meaning items spend less time on shelves, and you can fulfill orders quicker. **Benefits of better supply chain management include:**

- Improved efficiency rates
- Reduced costs with better inventory management
- Increased profit margins
- Efficient production planning
- Decreased delays from stockouts

Using batch numbers (otherwise known as lot numbers) with Katana, you can track batches for products and materials in your stock, giving you visibility of an item from purchasing to manufacturing to sales.

You also have the option to assign expiry dates to batches, giving you more control when monitoring the shelf-life of your items. Batch tracking also works on an item level, meaning you can separately decide to track or not each product and material in your inventory.

**Receive items from PO-5**

Click here or press cmd+B to start scanning

Received date: 2021-09-10

<input checked="" type="checkbox"/> Item	To receive	Supplier item code	Internal barcode	Quantity left
<b>Total</b>	1 pcs			0 pcs
<input checked="" type="checkbox"/> [DK] Drawer knobs	1 pcs	105,E12	E12	0 pcs



# 3

## Proactive monitoring

Batch production allows you to keep a close eye on your workflows to detect defective products to avoid compromising your batches. Proactive monitoring helps you quickly address problems and prevent them from becoming a bigger issue further down the line for your business. To achieve proactive monitoring, you'll need a tool that'll help get real-time overviews of your production progress.

**Here are a few techniques that are going to help you identify issues within your business:**

- Root cause analysis
- Documenting workarounds
- Prioritizing problems
- Evaluating processes

Katana helps you monitor and better plan production with real-time master planning features. **Here's how it works:**

- **Step 1:** Create a manufacturing order
- **Step 2:** Based on the information saved in your bill of materials, Katana will automatically allocate raw materials for production
- **Step 3:** If you rearrange your production schedule, Katana will automatically reallocate assigned materials to focus resources based on new priorities

**katana** SELL MAKE BUY STOCK ITEMS CONTACTS SETTINGS Katana Liam Green

Quotes Sales orders

Shipping from: All locations Export

Open Done

10 orders Bulk actions

Rank	Order #	Customer	Total amount	Delivery deadline	Sales items	Ingredients	Production	Delivery
<b>Total:</b>			<b>8298.64 USD</b>	All dates				
1	<a href="#">SO-1</a>	Chase Stevenson	720.60 USD	2021-06-15	Picked	Processed	Done	Not shipped
2	<a href="#">SO-2</a>	Leah Martin	820.60 USD	2021-06-15	Picked	Processed	Done	Packed
3	<a href="#">SO-7</a>	Ronnie Soto	1448.40 USD	2021-06-24	Picked	Processed	Done	Delivered
4	<a href="#">SO-4</a>	Ellen Sparks	798.00 USD	2021-06-17	Expected 2021-06-03	Expected 2021-06-17	Make...	Packed
5	<a href="#">SO-5</a>	Eric Ross	720.60 USD	2021-06-17	Expected 2021-06-03	Expected 2021-06-17	Work in progress	Not shipped
6	<a href="#">SO-6</a>	Dave Carpenter	582.24 USD	2021-06-17	Not available	Expected 2021-06-17	Make...	Not shipped
7	<a href="#">SO-8</a>	Terry Jensen	798.20 USD	2021-06-17	Not available	Not available	Make...	Not shipped
8	<a href="#">SO-9</a>	Abigail Woods	804.00 USD	2021-06-17	Not available	Expected 2021-06-17	Make...	Not shipped
9	<a href="#">SO-10</a>	Sarah Robinson	1030.00 USD	2021-06-17	Not available	Expected 2021-06-17	Make...	Not shipped
10	<a href="#">SO-11</a>	Tony Smith	576.00 USD	2021-06-17	Not available	Not available	Make...	Not shipped

# 4

## Barcode scanning

Barcoding is a stock management technique that visually represents data with machine-readable codes to help quickly identify items and track inventory.

There are many different forms of barcodes, and which ones you need in your business depends on what information you need to store. The great thing about [implementing barcode scanning](#) into your business is that you can use them for almost any type of tracking. You can print them onto raw materials, components, finished goods, company assets, shelving, and many more places.

### Barcode scanning can help you:

- Reduce the chance for human error
- Quickly access readily available data
- Improve your inventory control
- Make better business decisions

Katana comes with several barcode scanning features to help you take your batch production processes to the next level.

### Improve the way you handle raw materials and batches by:

- Assigning barcode numbers to inventory items
- Viewing barcode numbers within the Katana platform
- Identifying inventory items using barcodes
- Scanning barcodes using a barcode scanner or smart device in Katana's Shop Floor App

Barcode scanning optimizes your inventory management by finding and identifying your item variant and batch number more efficiently and with fewer errors than manual stock checks.

### Katana supports the following barcodes:

- Supplier item codes
- Internal barcodes
- Batch barcodes
- Registered barcodes (i.e., GS1)

### Receive items from PO-3

Click here or press cmd+B to start scanning

Received date  
2021-09-10

<input checked="" type="checkbox"/> Item ⓘ	To receive ⓘ	Supplier item code ⓘ	Internal barcode ⓘ	Quantity left ⓘ
<b>Total</b>	<b>60 l</b>			<b>60 l</b>
<input checked="" type="checkbox"/> [P-BL] Paint / black	<b>25 l</b>	102	2191217393772	25 l
<input checked="" type="checkbox"/> [P-BR] Paint / brown	<b>10 l</b>	101	0321383219821	10 l
<input checked="" type="checkbox"/> [P-CO] Paint / cognac	<b>15 l</b>	104	9328744726122	15 l
<input checked="" type="checkbox"/> [P-BE] Paint / beige	<b>10 l</b>	103	2819327333902	10 l

Subtotal to receive (tax excluded): **432.50 USD**

Export barcodes [Cancel](#) [Receive](#)

# 5

## Mock recalls

Practice makes perfect — and the only way you're going to be ready for a product recall is if you're prepared for it.

Performing periodic mock recalls allows you to evaluate how long it takes your business to track defective products. By staging these events, not only can you put your processes to the test, but you can also see if your tools are capable of giving you the end-to-end traceability you need.

### To start planning and executing your mock recall, you'll need to:

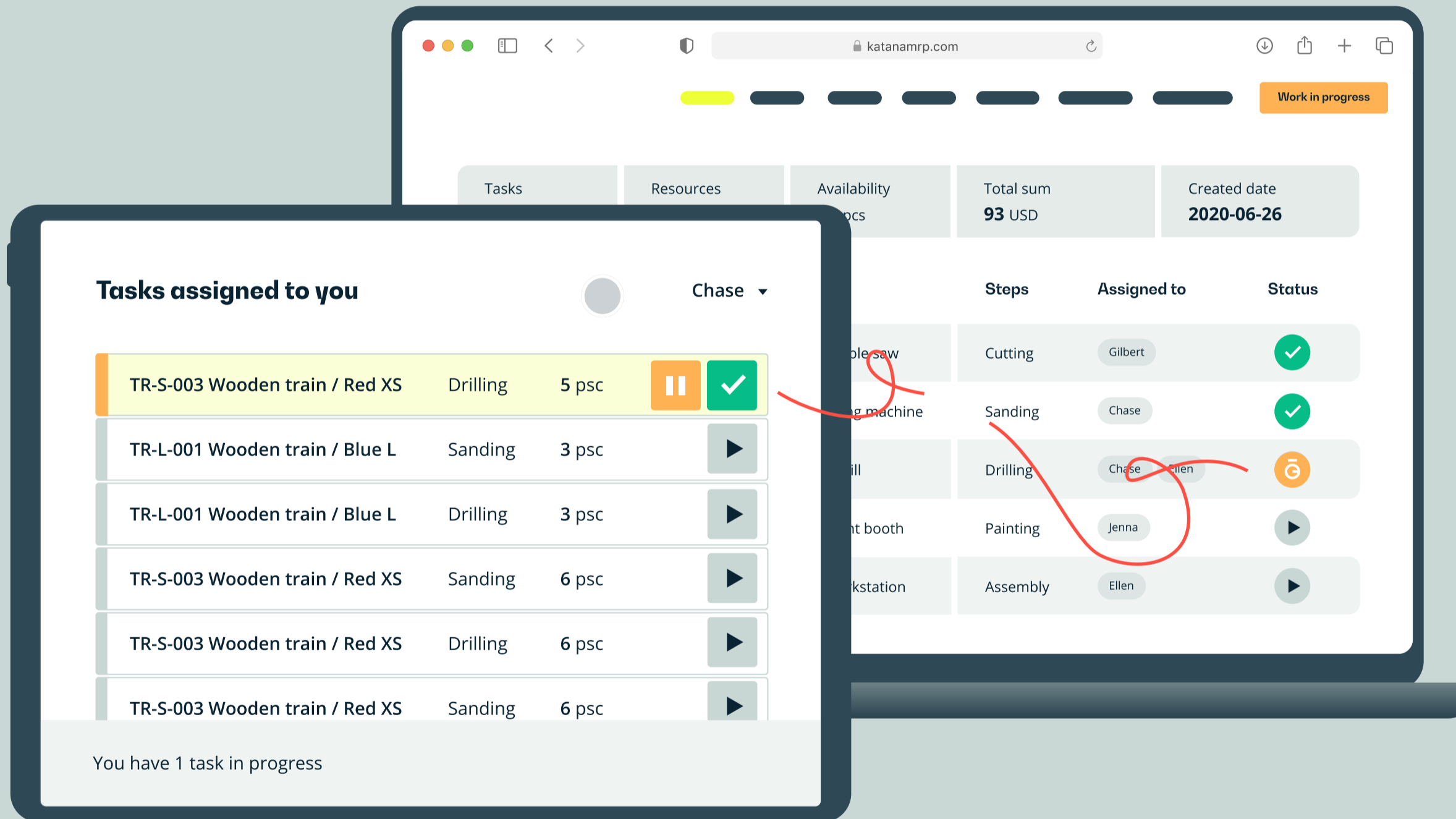
- Be realistic and try to imitate a scenario that'll likely happen in your business
- Record the mock to evaluate the effectiveness afterward
- Review the information gathered and your product traceability systems
- Assess your managers' and employees' effectiveness during the recall

### Katana gives you a complete overview of your manufacturing operations and comes with the Katana Shop Floor App that gives you:

- A clear and easy-to-understand task list for employees
- Real-time production status updates from your shop floor
- A clear channel of communication between employees or contract manufacturers

The Katana Shop Floor App gives manufacturers the tools they need to track production progress, easily assign tasks to employees, and keep access restricted to the more sensitive information stored within Katana.





# Batch production with a contract manufacturer

Contract manufacturing is always an option if your resources are running at 100% or you simply lack the means to organize in-house batch production.

Contract manufacturing allows business owners with limited internal bandwidth or resources, an overwhelming supply chain, and fluctuating demand to keep getting products out onto the marketplace.

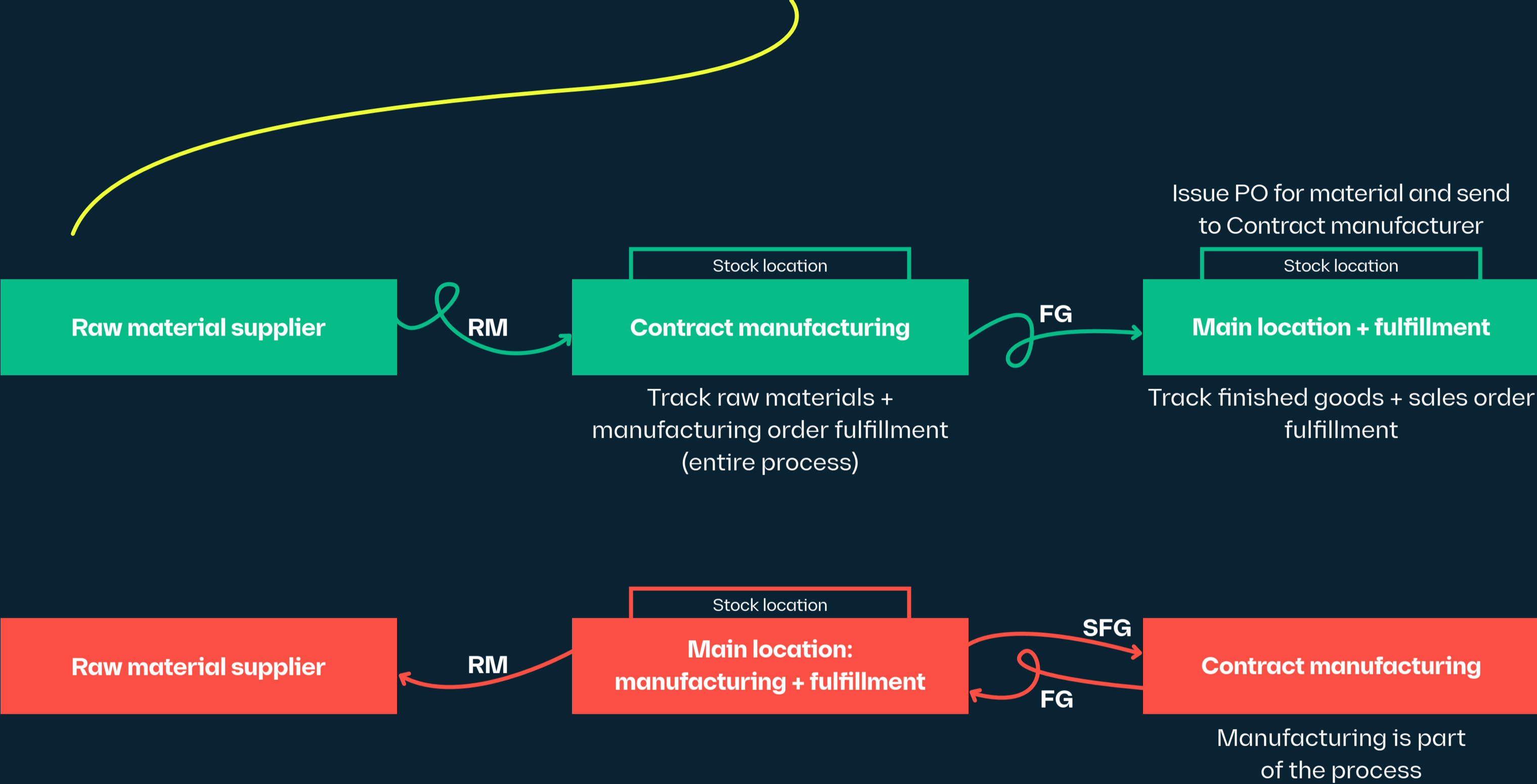
Best of all, if you do it correctly, contract manufacturers are going to be highly specialized in their field, meaning your items are in safe hands.

## **But beware:**

Don't go outsourcing your manufacturing to the first factory you find. For example, provinces in China have different export tax rates on certain goods and services. And then there's the issue of your intellectual property potentially being stolen.

The best way to select a contract manufacturer is through thorough research, in-person meetings with the manufacturer, and a clear communication channel via manufacturing ERP software like Katana.

# Contract manufacturing



# Using a manufacturing ERP for batch inventory management

Using a manufacturing ERP for batch inventory management

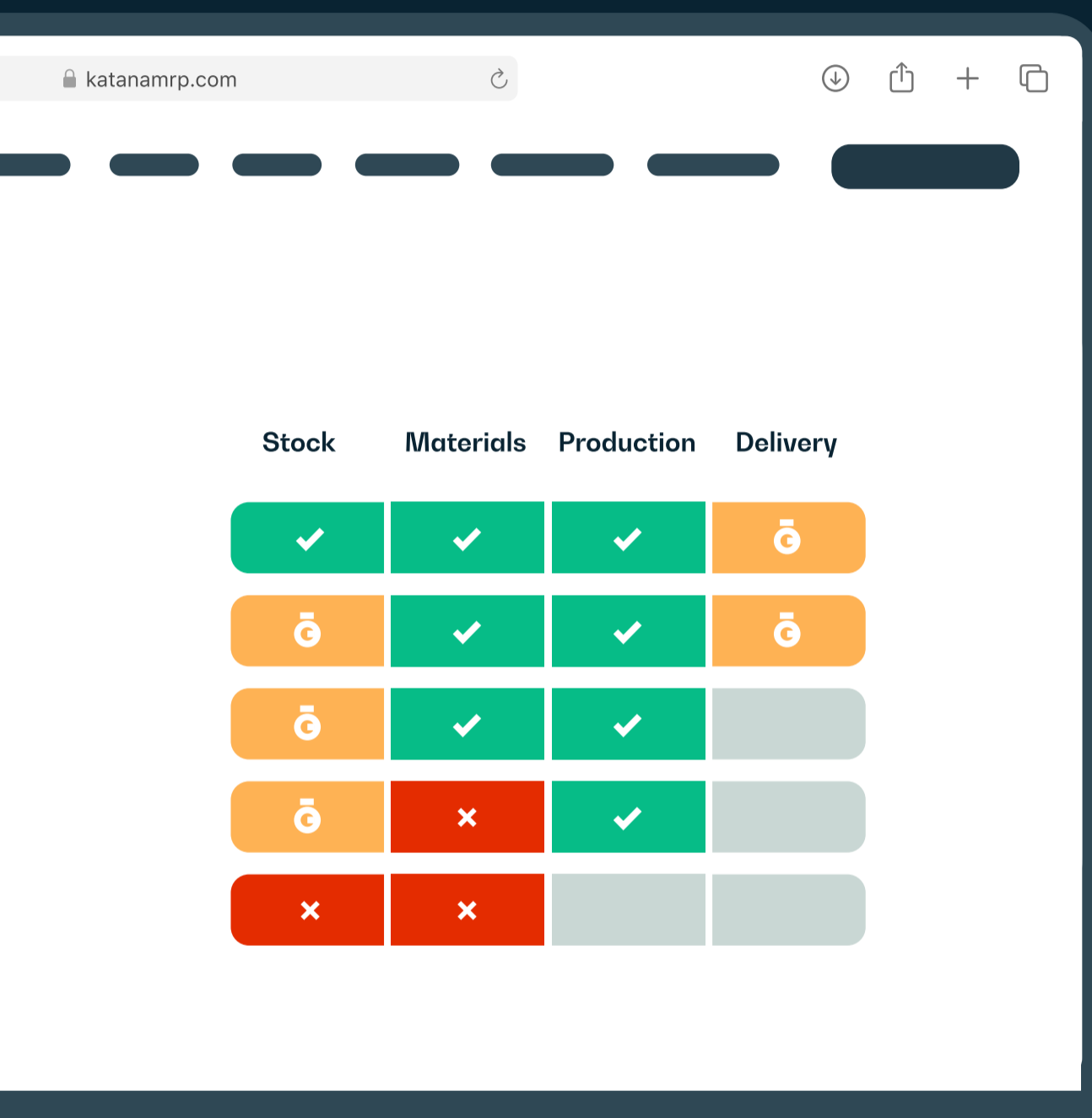
Managing batch or any production with a manual system like spreadsheets is fine when you're starting. But, once you begin to scale and want to track KPIs, it's going to be difficult to make sense of and maintain all your key business data.

Without the proper systems to gather data, you won't have the live overview of your business progress you need to make decisions and keep your products moving.

Great manufacturing ERP software comes with built-in batch inventory management features to help you keep track of your workflows and processes. They also allow you to track sales and manufacturing orders, inventory, production, and more in one place.

## Manufacturing ERP features for batch manufacturers

- End-to-end traceability
- Production planning and scheduling
- Real-time master planning
- Barcode scanning
- Shop floor management



# Switch to or improve your batch production with software manufacturers love

Even if you're no stranger to batch production, improving batch manufacturing efficiency is a continuous job. A job you'll need the right tools to do well.

Katana helps thousands of manufacturers across many industries get a live look at their business. Features like real-time inventory management, production planning, and scheduling, and end-to-end traceability for materials and products give batch manufacturers all the info they need — when they need it.