



**JUCAT**

**Concept design for  
production lines**



## **THOROUGH DESIGN ENABLES EFFICIENT IMPLEMENTATION**

Every workstation, machine and device on a production line must work together seamlessly in order to generate the line's optimal value for production. Even a small deviation or delay at a workstation can have a radical impact on the next step. This means that engineers need to take lots of things into consideration. How much time can be spent in each area? What are the material flows to the workstations? Which workstations should be automated?

Many companies still carry out their own concept design for their production lines, but this often turns out to be inadequate. Directly procuring the equipment and machinery (potentially from several manufacturers) for a design like this will cause problems. You may save in construction costs, but the problems and issues will occur by implementation at the latest, because the components will not work together seamlessly. Thorough concept design ensures that the production line can be implemented in a straightforward way so that you can get the full benefit out of your investment now and in the future.



## TURN TO A PROFESSIONAL FOR HELP

It's well worth having concept design for a production line carried out by a manufacturer who has plenty of experience with concept and process design. In this guide, we'll explain what concept design includes and the things you'll need to take into consideration.

You can also ask us about concept design directly. We will carefully examine your needs and any production data that has been collected, and keep you continuously updated during the design process. We guarantee that the production lines we design will meet their production targets if we are chosen as your partner right from the start all the way to implementation.

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## **THIS GUIDE OUTLINES THE FOLLOWING:**

- How should you prepare for concept design?
- Should you choose a manual, automated, or staged production line?
- How concept design progresses at Jucat
- Jucat's automated and manual production lines
- Maintenance, spare parts, and support at Jucat



# 1

## Prepare for concept design by gathering data

Concept design preparation begins with data collection and by specifying targets. Gather all possible technical data about the production process, such as welding times and quantities, turnaround times, and whether welding and assembly is carried out manually or robotically. If the company has data collected via a work study at its disposal, the entire study will be required. If such data is not available, Jucat can map your manufacturing times using a MOST analysis. This allows us to ascertain how much time is spent on work to an accuracy of up to 5%.

Targets must also be specified for the new production line so that it is possible to monitor the profitability of the investment and for the line to improve production. Management should specify a takt time for the production of products. It is also important to consider material flows to the workstations, because the line must always have material to work with. Efficient workstations and production lines are of no use if the material is not in the right place at the right time.



# 2

## **What kind of production line should i choose: a manual, automated, or staged production line?**

Depending on the current technical level of the production, a new production line can be implemented as a manual production line, an automated production line, or a combination of the two. If your company is still welding manually and moving products with lifting tools, it's worth first considering a manual or low-automation production line. Full automation is a suitable option for companies who are very familiar with using robots as part of the production process.

Many of our customers implement upgrades to their production line in stages. If production optimization and efficiency targets are significantly higher than the situation at the point of depar-

ture, but the processes still include lots of manual work, it is a good idea to upgrade the production line one piece at a time towards full automation. Upgrades can be divided into two or three phases, for example. Once one phase has been fully implemented and staff have internalized and understood all the new information, the next phase can begin.

Jucat's concept and process design can take staged upgrade needs into consideration right from the very first phase. This significantly saves resources and time, as the next phase is already known, and preparations can be made for it.







A black and white photograph of an industrial facility, likely a warehouse or factory, with high ceilings, steel beams, and various mechanical components. The image is used as a background for the top section of the page.

# 3

## How concept design progresses at jucat

We implement full production lines that improve competitive ability and productivity in accordance with the customer's targets. We professionally manage implementation from start to finish with our extensive experience, and ensure that our solution is completed on time to generate true value for our customer. We guarantee that the production lines we design will meet their production targets if we are chosen as your partner from concept design all the way to implementation.

### 1. Analysis

We analyse the current state of production and need for development, and map alternative processes.

### 2. Determining the ideal process

We create phasing, manufacturing sequences, balancing and capacity specifications for the new process.

### 3. Realization

We develop the ideal process into an investment project that is ready for implementation.

### 4. Investment proposal

We provide a turnkey quote for production line implementation and technical specifications.





## 1 Analysis

During the analysis phase, we investigate the current state of the customer's production and the need for development. We learn more about the existing production line, and map and brainstorm alternative production processes that could be used to improve production. Finally, we select a production line that will best achieve the targets. To support the analysis phase, we require plenty of data concerning the company's current production process, as well as data about the desired production efficiency.

## 2 Ideal process

The analysis phase is followed by preliminarily mapping the ideal process and specifying a target for the new production line. The ideal process is a model for the production line that meets the customer's needs optimally.

### **During specification:**

- We divide the production process into many smaller phases and design an efficient line model to present the phases of the process.
- We design an efficient manufacturing sequence that considers all of the production line's interdependencies in detail.
- We calculate an optimal takt time, balance the different stages of the line, and determine the production line's capacity and productivity at full power.



### 3 Realization

We develop the ideal process into an investment project ready for implementation. To begin with, we investigate the potential and limitations of the customer's production facilities with regard to the production line. We pay particular attention to work ergonomics and occupational safety factors. Based on our investigation, we draw up a concept and process plan that we then use to specify the most suitable and efficient manufacturing methods, machinery, and equipment to meet the requirements for the production line. Through our partners, we're also able to offer material management and steering solutions to support production line efficiency.

### 4 Investment proposal

Thanks to our design process, we are able to specify the efficiency of the production line and calculate profitability and repayment to a high degree of accuracy. To support their decision-making, our customers receive a clear turnkey quote for the implementation of the production line, plus detailed technical specifications.

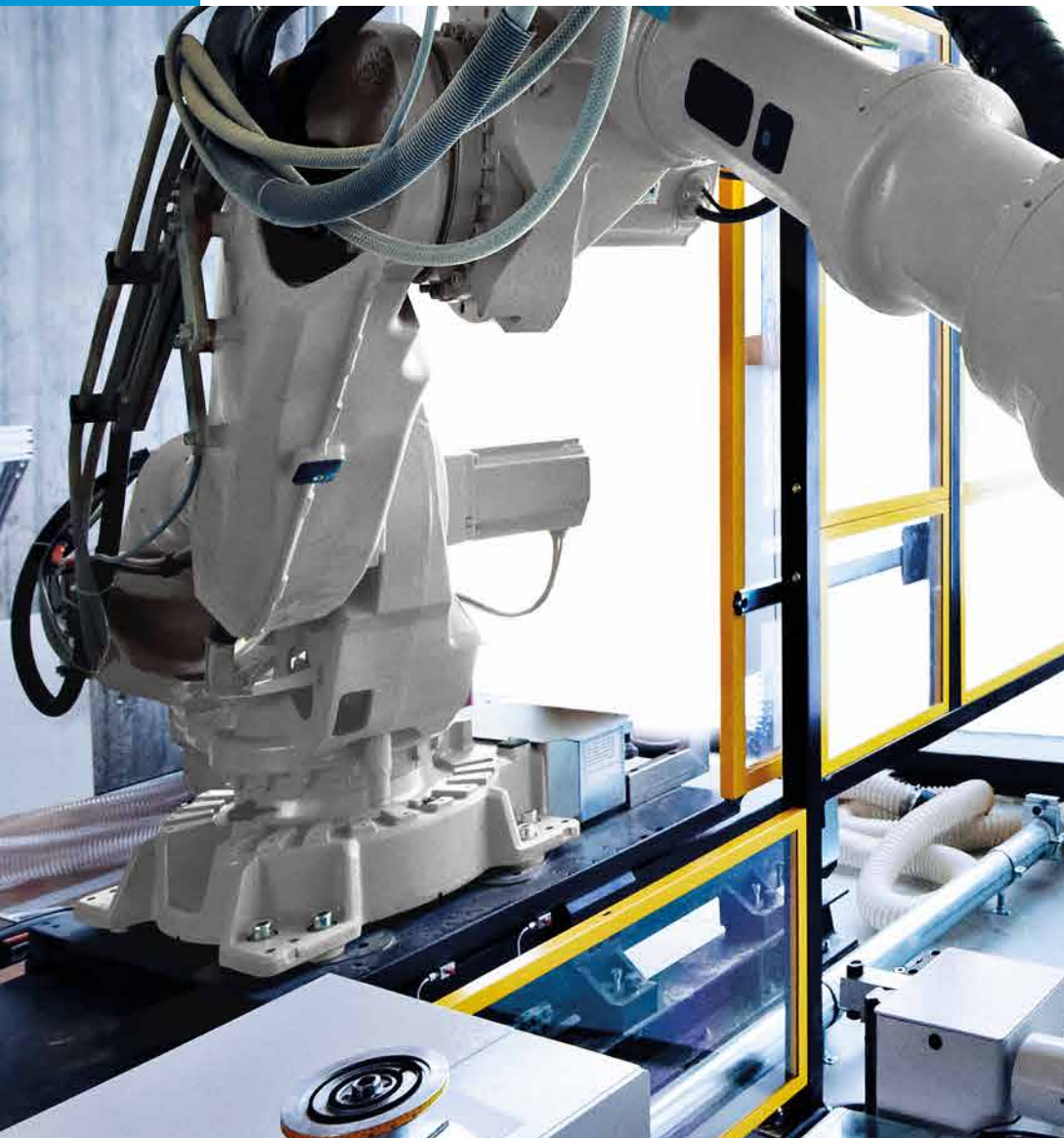
We are 100% certain that the production lines we design will achieve the target speed – that's why we also provide a manufacturing guarantee for our concept design if we were responsible for all phases of the project from design to implementation





# 4

## **Automated production lines utilize robotics**



Our project design for production lines utilizes robotics and our own innovative positioners, which enables us to design a seamless automated production line and to guarantee consistent quality. Work phases and material flows can be combined into a single efficient process with the help of various conveyors and transport systems. We design and implement other production equipment to order.

### **INDIVIDUAL PRODUCTS FOR AUTOMATED PRODUCTION LINES**

- JCP and JCL workpiece positioners
- JC-Robo workpiece positioners
- ABB's industrial robots and systems
- Automation and control
- Conveyors and transport systems
- Logistics racking systems
- Lifting and hoisting equipment
- Fasteners
- Welding and assembly jigs

# 5

## **Manual production lines are more suitable for traditional processes**

When designing a manual production line, particular attention is paid to improving work ergonomics and occupational safety. We aim to automate as many functions as possible, for example by using our innovative workpiece positioners to make work tasks easier. This means that even large objects can be handled safely and easily. Productivity, competitive ability, and wellbeing at work all improve while occupational accidents and injuries decrease. Various work phases and material flows can be combined into a single efficient process with the help of various logistics racking systems, lifting tools, and conveyors and transport systems.

### **INDIVIDUAL PRODUCTS FOR MANUAL PRODUCTION LINES**

- Welding and assembly jigs
- Lifting and hoisting equipment
- Fasteners
- Logistics racking systems and carts
- JCP and JCL workpiece positioners





# 6

## Maintenance, spare parts and support

If you choose Jucat as your partner for implementing a production line, you can be sure that support will be available in the future. Jucat's maintenance agreement and spare parts packages provide regular maintenance and the required spare parts for your production line. This will keep your production line in working order, avoiding unexpected and lengthy delays to production.

**For maintenance matters, please contact:**

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