

## INDUSTRIAL MANUFACTURING 4.0

# DIGITAL SUPPLY MANAGEMENT: HOW TO SET THE RIGHT PRIORITIES FOR YOUR SMALL BATCH PRODUCTION LINE!

A reliable, efficient supply chain is a vital element for successful production. Supply chain disruptions are not only frustrating, but often expensive. The increasing complexity of the supply chain and the ongoing disruptions make it almost impossible to avoid a conflict-laden planning scenario. This is why it is important to attain a state of optimal compromise in order to ensure that you remain agile and operational.

Successful, future-oriented supply chain management has evolved to focus especially on transparency, analysis and foresight – aspects that can be made into a reality with the help of available data and intelligent algorithms in line with Industry 4.0.



## Numerous external parameters are driving complexity

The only thing that is certain is that nothing is certain. And even that isn't certain. The current world economic situation once again demonstrates how much truth there is behind this quote. Numerous parameters that lie beyond our control have led and continue to lead to increasingly complex – and thus unstable – supply chains.

### 1. Market dynamics: cost pressure, agility and pressure to innovate

Higher, faster, further – and at the lowest possible price. The battle for market leadership is becoming increasingly fierce. The winner is the one who succeeds in setting trends while constantly optimising things, while everyone else is left only to react.

### 2. Complex global supplier networks

While globalisation presents some advantages in terms of pricing, choosing a supplier network that crosses national borders introduces a huge increase in complexity. Longer delivery routes, increased vulnerability to country-specific events, and longer communication channels are just a few examples of how this structure, which has become the norm, is not making everything easier.

### 3. Raw material shortages

Be it chips, rubber or wood: a lack of raw materials currently has many industries holding their breath. And while this is certainly nothing new, it seems to always come as a surprise to manufacturing companies. This quickly renders good planning obsolete. Even though the negative impact cannot be prevented here, it can be reduced through rapid communication and decision-making.

### 4. Labour shortage

The lack of skilled workers affects manufacturing companies in various branches of the production industry. This is becoming an increasingly important issue due to the growing importance of supply chain management and the changing job profiles as a result of digitalisation. On top of that, process delays quickly lead to capacity bottlenecks downstream when orders have to be reworked.

### 5. Regulations

New and increasingly stringent regulations are putting additional pressure on already stressed supply chains. This is accompanied by a new level of requirements for transparency and documentation, such as the Supply Chain Act, which production companies are finding increasingly difficult to meet. This is not merely a matter of ensuring the seamless and error-free capture of process records, but also involves a higher workload, which ties up capacities.

### 6. Sustainability

Sustainability has long since ceased to be solely a matter of social responsibility. It has become a key issue for manufacturing companies to ensure a successful future. Large, complex production lines and supply chains can pose risks to the environment and human rights. The pressure placed on companies by policymakers is on the rise: Companies are set to be held to a higher level of accountability in future for damage they cause to people and the environment through their value chains. Furthermore, sustainability will play an increasingly important role in future sales revenue, since CO2 emissions, electricity consumption, waste disposal and the like represent cost drivers that need to be taken into account.

**Many of the parameters mentioned are interrelated or compound on each other. The result: Production companies are unable to eliminate stress factors. Instead, they have to find the best compromises for the situation. Those who can implement this will be able to act even in times of crisis.**

### **Transparency and the ability to simulate are the keys to success**

Unforeseeable events cannot be prevented. What can be changed, however, is the level of agility in planning: Communication skills and transparency improve responsiveness. Uncertainty leads to delays, and intelligent planning software is able to use a variety of information to show possibilities for cushioning fluctuations and bottlenecks. Only then can resilience be guaranteed in the supply chain during the operational period.

This doesn't change the chaotic market conditions, but it does at least create structure in the individual processes despite the chaos, whether in sales, material procurement, manufacturing or assembly. In times like these, the most important thing is to avoid acting mindlessly – and software-supported supply planning helps suppliers to maintain a clear overview. There are already software solutions available today that support supply chain management in planning with the help of intelligent algorithms. For the algorithm to be able to draw useful conclusions, however, a solid database is required.

Integrating supply chain solutions seamlessly into the ERP system helps to identify causes of conflict across departments and find solutions while also considerably streamlining communication.

### **The digital supply chain twin as the model of the future**

The digital supply chain twin receives information on the status in near real time based on the information from the ERP system. This makes it possible, for example, to make an algorithm-based statement in mere seconds about whether and when an order can be produced and delivered in the case of new customer enquiries.

The IT consulting firm Gartner sees hyperautomation as one of the most important technological trends of the next decade. A large number of human decisions are automated in the process, with consideration given to stock levels, capacities and material availability. This can greatly increase the speed with which customer queries can be answered, thereby allowing raw materials to be secured or prices to be adjusted.

It is, however, imperative to connect shop floor execution and supply planning. This is the only way for the systems to reveal which adjustments need to be made in order to change a result such as delivery time or number of units in a certain direction.



## Intelligent data management and software as a foundation for success

Everyday supply chain management in the industrial manufacturing industry is characterised by rapidly changing conditions in production logistics in the form of ongoing disruptions to the market and, in particular, increasingly frequent raw material shortages. This necessitates end-to-end supply chain planning.

The **ORSOFT Enterprise Workbench** helps companies to better forecast future sales volumes – even for different product variants – while simultaneously checking which raw material quantities, safety stocks and transports are needed throughout the supply chain in order to produce at optimal costs. Forecasting and demand planning with volatile demand curves are made significantly more accurate with the help of artificial intelligence and machine learning. The seamless transfer of the history of previous products is a benefit for customers when launching new products. Sales & operations planning makes it possible to tactically and operationally simulate which staff capacities will be needed in the long term for the forecast figures.

A long-term overview of the necessary raw materials also makes it possible to respond tactically to price fluctuations for raw materials and to avoid high stock levels.

The **ORSOFT Manufacturing Workbench** follows the principles of advanced planning and scheduling and offers interactive material and resource simultaneous planning with the possibility to create planning scenarios and collaboratively select the desired scenario based on key figures. Additional industry enhancements such as the ability to integrate maintenance orders into the plan, to plan production resources/tools as an additional dimension or to capacity reserves for contract manufacturers, allow the production process to be digitally mapped in accordance with the digital twin principle.

Based on SAP ERP or SAP S/4HANA data, the software provides an immediate overview of capacity utilization, material flows, delay situations and material key figures – even across different locations.





**ORSOFT LabScheduling** enables integrated laboratory planning on the basis of production planning in ERP up to the evaluations from the LIMS. At the process level, capacity analysis, capacity planning and detailed planning are supported. In conjunction with detailed planning, real-time data processing allows flexible reactions to changing business events and agile detailed planning of the laboratories. This leads to a high level of planning transparency.

In turn, quality inspectors and supply chain management can track the entire business process across the long, medium and short-term planning horizons.

### **Some of the advantages of our supply planning services at a glance:**

- Consideration across factories, including multi-stage supply chains, in order to be able to counteract delays/bottlenecks at an early stage
- Global single point of truth for the supply chain through certified integration in SAP ERP and SAP S/4HANA
- Simultaneous material and resource planning to balance available capacity and capacity requirements for the next 24 months
- Flexible planning solutions adapted to customer needs based on standard products
- Extension of the classic supply chain through the inclusion of simulated quality inspections
- Fast responses thanks to real-time data processing and complex simulation capabilities



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#### **ORSOFT is part of the Germanedge Group.**

Germanedge is a leading provider of Manufacturing Operation Management (MOM) software that brings Industry 4.0 into the perfect flow. Together with its four product providers (GEFASOFT, New Solutions, ORSOFT and QDA SOLUTIONS) the brand offers a complete solution portfolio for the manufacturing industry: international, cross-plant, maximum efficiency.