

# Inventory Management: Systematically Recording, Controlling and Monitoring Stock Levels

Inventory management refers to the systematic recording, administration and control of all stock levels of a company – from raw materials via semi-finished and finished goods to spare parts and operating supplies. It forms the data-technical foundation for materials management, production planning and procurement, and ensures that stock levels are traceable at any time in terms of quantity, value and location. Without reliable inventory management, materials planning, purchasing and stocktaking run into the void. In industrial practice it is therefore a core component of every ERP or inventory management system.

## Key facts

- Inventory management records the quantity, value, location and movement of every stocked item in real time or at periodic intervals.
- It is the data basis for materials planning/disposition, demand planning and procurement, for example under blanket order agreements.
- Typical stock types are minimum stock, safety stock, reorder point stock and maximum stock.
- Core processes are goods receipt, stock movement, consumption posting, stocktaking and stock valuation.
- Frequent sources of error are missing postings, duplicate material masters and incomplete batch tracking.
- KPIs such as inventory coverage, inventory accuracy and fill rate make the quality of inventory management measurable.

## Definition: Inventory Management

Inventory management is the continuous recording and administration of all stock levels by quantity, value, storage location and movement. It covers both the accounting dimension (stock valuation) and the operational dimension (physical availability).

### Distinction from warehouse management and stocktaking

Warehouse management deals with the physical organisation of storage space, picking and transport. Inventory management, by contrast, is the data-side representation: what quantity of which item is where, in what condition and at what value. Stocktaking is a sub-process of inventory management that periodically or spot-checks book stock against physical stock and documents discrepancies. Only the interplay of both levels produces reliable data for planning and financial accounting.

### Stock types and categories

In practice, a distinction is made between several stock categories: raw materials, auxiliary materials

and operating supplies, work in progress (WIP), finished goods, traded goods, spare parts as well as samples and scrap. In addition, there are special stock types recorded by quantity, such as blocked stock, quality inspection stock or consignment stock, which are stored at the supplier but managed in the company's own system. Which stocks to manage follows from the procurement strategy and the manufacturing principles: a series manufacturer manages differently from a one-off order manufacturer in plant engineering.

### **Legal and accounting classification**

Stocks are balance-sheet-recognisable assets; their valuation follows the customary commercial and tax law provisions in the German context, such as valuation simplifications like the average price method. Specific accounting questions should be addressed to the auditor or tax advisor on a case-by-case basis. What matters most for buyers: inventory management provides the quantitative and monetary basis for working capital analyses and for negotiations, for example on receivables and inventory financing.

## **Methods and approach of inventory management**

The choice of method depends on item selection, process dynamics and the system landscape. A combination of continuous real-time management and spot checks has proven effective.

### **Perpetual inventory and cycle counting**

In cycle counting, storage bins or item groups are counted in rolling cycles – typically ABC-oriented: A-items more frequently, C-items less frequently. This perpetual inventory replaces or supplements the annual stocktake and detects discrepancies at an early stage. Prerequisites are clean movement data, unambiguous storage locations and disciplined posting rules in goods receipt. In practice, inventory accuracy typically improves significantly within the first year of cycle counting.

### **Planning control: reorder point, safety stock, ABC/XYZ**

Classical inventory management works with minimum and reorder point stocks as well as safety stocks against demand and supply fluctuations. The ABC/XYZ analysis combines value shares (ABC) with consumption regularity (XYZ) and derives planning procedures from it: deterministic planning for smooth consumption, reorder point control or forecast-based procedures for irregular demand. The forecast error flows directly into the sizing of the safety stock – the more volatile the forecast, the larger the buffer or the more frequent the reordering.

### **Batch, serial and multiple stock management**

In regulated sectors such as mechanical engineering for food technology, pharmaceutical supply or toolmaking procurement, batch and serial number tracking is mandatory. Inventory management must then be able to answer at any time from which batch a delivered quantity originates and where remaining quantities are located. In multi-site operations, multiple and mixed stock managements are added, which show stock separately per plant, transit stock or consignment stock. Without clean data quality – for example from a well-maintained data catalogue – this granularity fails in day-to-day business.

## **Key KPIs of inventory management**

Only measured stock can be controlled. The relevant procurement KPIs link stock quantity, supply

capability and capital tied up.

### **Inventory accuracy and stocktaking discrepancies**

Inventory accuracy sets matching book and physical stock in relation to the total number of items checked. World-class values in practice are frequently above 98 percent; below 95 percent materials planning suffers noticeably. In addition, the inventory discrepancy rate and the number of subsequent-posting corrections are reported. Both metrics are early indicators of process errors in goods receipt, picking or returns.

### **Inventory coverage, stock turnover, capital tied up**

Average inventory coverage indicates how many days the stock covers demand; stock turnover sets consumption in relation to average stock. For the procurement context, the value of inventory assets and their development count: falling stock with a stable fill rate indicates learned disposition, rising stock with declining supply capability indicates forecast problems or unnecessary safety surcharges.

### **Fill rate, service level and obsolescence**

The fill rate measures the share of demands fulfilled from stock in line with requirements – it is the customer benefit of inventory management. In return, there are the obsolescence rate and the value of slow-moving stock (slow movers): items that remain without movement over defined periods tie up capital and may become relevant for write-downs. Balancing service level and capital tied up is the central control task; both sides belong in regular procurement KPI reports.

## **Risks and controls in inventory management**

Inventory management rarely fails because of systems, but because of process discipline. Typical risks can be controlled systematically.

### **Data and process risks**

The most frequent sources of error are unposted withdrawals, incorrect units of measure, duplicate material masters and late goods receipt postings. Uncoordinated engineering changes also have an effect: if, after an engineering change notice (ECN), obsolete material remains unflagged in stock, it becomes outdated unnoticed. Controls start at defined interfaces: goods receipt labelling, four-eyes principle for manual postings, blocked stock for items under inspection and clear responsibilities per warehouse area.

### **Capital tied up and procurement risks**

Excessive stock ties up liquidity and masks supply problems; too little stock endangers production. Consolidation levers from the procurement strategy – such as larger batch sizes against volume discounts – must be weighed against the additional warehousing costs. For longer-term blanket order agreements with call-off character, inventory management must track call-offs and remaining quantities without gaps, otherwise verify and follow-up claim discussions arise. A commodity index can also legitimise the stock level for raw material items: price volatility can justify targeted stock build-ups.

### **Internal controls and compliance**

For capital-market-oriented companies, inventory management is subject to internal control requirements; mid-sized companies also benefit from documented processes, access rights and audit-ready movement histories. Anyone pooling volumes with bidder consortia or purchasing

cooperations also needs clear stock demarcations between partners in order to avoid valuation and liability issues. Export goods are additionally subject to stock documentation requirements in the context of export processing.

## Current developments in inventory management

Digitalisation, supply chain data and sustainability requirements are significantly changing inventory management.

### Automatic capture: barcode, RFID, IoT

Barcode and RFID capture reduce posting errors and create real-time transparency; sensors in high-bay warehouses and on transport containers supplement location and condition data. The benefit depends less on the technology than on data quality: a well-maintained data catalogue with unambiguous item identifiers, units of measure and weights is a prerequisite for any automated stock calculation and for reliable data quality reports.

### AI-supported planning and value stream thinking

Modern systems use demand forecasts based on historical consumption values and multiple influencing factors and factor the forecast error into safety stocks. In parallel, lean-oriented approaches are gaining importance: value stream analysis shows where stock arises along the supply chain and which buffers are genuinely needed. The goal is less stock with better supply capability – not reducing stock at any price.

### Sustainability, reporting obligations and platform economies

Inventory data increasingly flows into sustainability and supply chain reporting, for example on questions of storage times, scrap or blocked stock from quality defects – here the measurability of Cpk/process capability data in connection with scrap and blocked stock also comes into focus. For buyers working with contract manufacturers under the OEM/ODM model, stock responsibility shifts contractually: consignment and transfer-of-title rules must be mapped consistently in the inventory management of both parties. Timely and congruent definitions matter here more than any software function.

## Typical metrics

### Inventory accuracy: > 98%

Match between counted quantities and book stock; below 95% materials planning suffers noticeably

### Inventory coverage: 30–90 days

Industry-dependent; the trend matters more than the absolute value

### Fill rate: > 95%

Share of demands fulfilled from stock, depending on the service strategy

### Stock turnover: 6–12x per year

Sector-dependent; series production higher than one-off production

### Slow-mover share: < 10% of stock value

Value of stock with no movement in 12 months

## Practical example

A mid-sized mechanical engineering company with around 15,000 active material master numbers suffered repeated production stoppages even though total stock was steadily rising. The analysis showed: inventory accuracy was well below 95 percent, safety stocks had grown historically, and a material changed following an ECN caused obsolete stock in value terms.

- Introduction of ABC/XYZ-oriented cycle counting with weekly samples of A-items
- Reduction and automation of reorder points based on determined forecast errors
- Blocked stock and ECN process that systematically flags obsolete material with every engineering change
- Monthly procurement KPI report with inventory accuracy, fill rate and slow-mover value presented to the head of procurement

## Conclusion

Inventory management is more than warehouse bookkeeping: it is the data motorway between consumption, procurement and manufacturing, and determines whether planning is based on facts or on gut feeling. Its benefit depends primarily on data quality and process discipline, not on the software in the background. Buyers benefit twice – through a reliable quantity basis for negotiations and through measurable levers on working capital and supply capability. Anyone who systematically anchors inventory management with cycle counting, ABC/XYZ planning and clear ECN processes reduces both stock and supply failures in practice. The best way to start is with an assessment of data quality and a focused KPI report.

## Frequently asked questions

### What does inventory management mean?

Inventory management is the systematic recording and administration of all stock levels by quantity, value, location and movement. It forms the data foundation for materials planning/disposition, procurement, production and accounting. It covers both the ongoing posting of goods receipts and issues as well as periodic or perpetual stocktaking.

### What is the difference between inventory management and warehouse management?

Warehouse management organises the physical operation: storage space, picking, transport. Inventory management is the data-side representation of stock levels in the system, for example in the ERP. The two levels interlock but are organisationally and functionally separate.

### How does cycle counting work?

In cycle counting, stock levels are counted in rolling samples rather than fully counted once a year. Typically an ABC-oriented count frequency is used: A-items more frequently, C-items less frequently. This method detects discrepancies early and sustainably improves inventory accuracy.

### Which KPIs are important in inventory management?

Key metrics are inventory accuracy, inventory coverage (days of supply), stock turnover, fill rate, and the value and share of slow-moving stock. In practice, inventory accuracy above 98 percent is regarded as the target value. In addition, the inventory discrepancy rate and capital tied up provide indications of process or planning problems.

### **How do you reduce stock levels without supply failures?**

The path leads via clean data, ABC/XYZ analysis and calibrated safety stocks based on forecast error. A value stream analysis shows which buffers along the supply chain are genuinely needed. Blocked stock and obsolete material from engineering changes are cleaned up separately. The main danger arises when stock levels are cut across the board without monitoring supply capability.

### **What is inventory management in the ERP system?**

In the ERP system, inventory management covers the material master, storage locations, movement postings, batch and serial number tracking, and stock valuation. It makes stock levels available in real time or near real time for materials planning, production planning and accounting. Its quality depends decisively on posting discipline and master data maintenance.