

Time Management (Zeitwirtschaft): Standards and Times as the Basis for Planning, Cost Calculation and Procurement

Time management (Zeitwirtschaft) refers to the systematic part of work preparation that deals with the determination, administration and application of labour and machine times. It provides the time specifications on which production planning, capacity planning, cost calculation and performance accounting are based. For technical buyers, time management is relevant because manufacturing times feed directly into unit costs, delivery times and price analyses. Anyone who can comprehend a supplier's time logic negotiates more factually and identifies cost drivers earlier.

Key facts

- Time management comprises the determination, maintenance and application of standard and target times in production and services.
- Typical methods include time studies according to REFA, the MTM system as well as data series and standard time catalogues.
- Standard times form the basis for capacity planning, material disposition and the calculation of manufacturing costs.
- In procurement, manufacturing times assist with cost analysis, the evaluation of quoted prices and the review of performance records.
- Indicators such as process time, set-up time and expedite rate make weak points in the value chain visible.
- Unrealistic or outdated times lead to planning errors, additional costs and disputes in price negotiations.

Definition: Time Management (Zeitwirtschaft)

Time management is the corporate sub-discipline that systematically determines and provides labour, machine and process times. It belongs to work preparation and ensures that a reliable standard time exists for every recurring work task.

Terminological distinction

Time management is occasionally used synonymously with time recording, but means something more: the focus is not on the hours worked by employees, but on the target times for work processes. Time recording documents actual times, while time management defines target times and compares them with reality. Only from this target-actual comparison do statements about productivity, capacity requirements and costs emerge.

- Target time: planned, calculated time for a task
- Actual time: time actually measured or reported back

- Time allowances: compensations for hardship, machine-interference time, recovery

Types of time at a glance

Practice distinguishes several types of time which together make up the standard time. Main times describe the immediate value creation, while auxiliary and loss times capture set-up operations, waiting times and organisational interruptions. Waiting and transport times between workstations also belong to these, as they shape the throughput time and thus the delivery capability of a company.

- Set-up time (related to lot size)
- Processing and machine time
- Manual time, hand and machine-interference time
- Allowance time and recovery time
- Transport, waiting and inspection times for throughput time

Methods and approach of time management

The determination of reliable times follows a few proven methods in practice. The choice of method depends on repetition frequency, lot size and accuracy requirements.

Time studies and REFA

In a time study, a work operation is observed several times, the actual time is measured and normalised to the performance level. The REFA system structures this approach and supplements time-related allowances for hardships. Time studies are particularly suitable for repetitive processes with a high unit-volume share, for example in assembly or mechanical manufacturing.

MTM and standard time catalogues

The MTM method (Methods-Time Measurement) assembles work operations from standardised basic movements, making times plannable before production begins. For parts manufacturing, companies often use data series and standard time catalogues: from a few characteristics such as material, turning diameter and clamping length, the processing time is derived. This significantly reduces the effort compared with individual time studies and ensures consistent calculations across similar parts.

Maintenance and feedback

Times become outdated when processes, tools or materials change. Therefore, time management includes a regular reconciliation between standard times and reported times from order processing. In practice, periods of roughly one to two years have proven effective for revising critical work plans, while updates for new launches and special lots are carried out on a project-specific basis.

Importance of time management for procurement and the supply chain

For technical procurement, time management is not an end in itself, but the arithmetic basis for many areas of decision-making: from unit cost analysis to the assessment of delivery reliability.

Cost transparency in price negotiations

Whoever knows a supplier's manufacturing times and machine rates, or can estimate them on the basis of comparable data series, evaluates offers in a structured manner instead of relying solely on price

comparisons. Within the framework of Design-to-Cost and cost analyses, time management shows whether a component can be procured more cheaply through the design, the manufacturing process or the set-up strategy. Even in Best and Final Offer (BAFO) situations in tenders, a reliable time and cost evidence base helps to avoid "intuitive" discount demands.

- Comprehending quoted prices via manufacturing times and material costs
- Assessing the influence of lot sizes via set-up time
- Comparing manufacturing alternatives and vertical integration

Deadlines, capacity and disposition

Suppliers derive realistic lead times from standard times and available capacities. Buyers can use this data to check, already during requirements analysis, whether assumed delivery times are plausible, and to coordinate suitable lot sizes via Economic Order Quantity (EOQ) and demand bundling with the supplier's set-up requirements. Whoever knows their suppliers' order history and disposition times plans for bottlenecks earlier and can avoid short downtime periods through targeted expediting and a measurable expedite rate.

Performance evaluation and supplier management

In supplier management, time data serves as an objective basis for assessing on-time delivery and quantity reliability. Performance records based on contractually agreed times create clarity in invoicing, for example in contract manufacturing or temporary staffing services. Bonus arrangements for on-time delivery or throughput times can be formulated in a comprehensible way in this manner – provided the measurement method is contractually unambiguously regulated.

Key KPIs of time management

Time data only unfolds its effect through suitable indicators. The following values are common guide values in practice and must always be adapted to industry and production type.

Time-related indicators

Key figures are the standard time per unit, the set-up time per operation and the throughput time per order. The performance level results from the ratio of standard time to recorded actual time; a value significantly above 100 per cent may indicate times calculated too tightly, a value significantly below it may indicate organisational disruptions. OEE (Overall Equipment Effectiveness) links time losses with availability, quality and speed.

Indicators from a buyer's perspective

Buyers evaluate time in economic terms: throughput time influences delivery capability, set-up time the cost structure for small lot sizes. Metrics derived from spend analysis and order processing, such as the invoice error rate in time-based invoicing or the weighting of articles by time intensity, help to identify critical items. In practice, it is frequently a strikingly small number of items that account for the largest share of the time volume – a Pareto analysis before every detailed analysis is advisable.

Risks and controls in time management

Time data is prone to distortion: through conflicts of objectives between planning and the shop floor, through outdated master data or through deliberate manipulation in calculation and invoicing. Controls

should therefore be designed systematically.

Typical sources of error

Frequently observed problems are outdated times in the ERP master data, inconsistent allowance rates, a missing distinction between machine and manual time as well as reported times that are confirmed as lump sums for convenience. For outsourced services, it is added that the buyer often cannot inspect the actual time structure – quotations then do not appear arithmetically comprehensible.

- Outdated planned times in work plans
- Missing separation of set-up and processing time in calculations
- Lump-sum allowances without substantiated justification

Control mechanisms and contractual rules

Effective controls are the regular target-actual comparison from feedback data, spot audits at suppliers as well as contractual provisions on time documentation and inspection rights in contract manufacturing. Performance accounting on an evidence basis, clear definitions within the framework of the procurement policy and defined escalation paths for deviations reduce the potential for dispute. For time-based services and pre-financing, safeguards such as bank guarantee/surety or, in individual cases, forfeiting or factoring in procurement can limit payment risks; legal details must always be examined on a case-by-case basis.

Current developments: digitalisation and AI in time management

Time management is increasingly shifting from the manual time study to automated systems. Machine data, digital feedback sheets and process data from control technology continuously provide actual times without observation effort.

Machine data and automatic feedback

Modern manufacturing operations obtain set-up and processing times automatically via connections to machine controls and MES systems. This increases data quality and relieves shop floor workers of reporting work. At the same time, the requirement to check time data for plausibility grows, since automated systems replicate errors consistently.

AI-supported time planning

Artificial intelligence methods are increasingly used in practice to derive planned times from historical order data and to automatically classify similar parts. This accelerates the calculation of enquiry-based manufacturing services and supports content enrichment in procurement platforms, for instance when time and cost characteristics are automatically added to article data. As a general rule, AI results remain estimates which should be professionally validated for critical items.

Impact on supplier relationships

Transparent time data enables closer collaboration: co-development projects use joint process analyses to reduce throughput times and costs. Supplier management and demand bundling also benefit, because capacity windows can be agreed earlier and more bindingly. A foundation of trust is a prerequisite, as time data contains economically sensitive information for both sides.

Typical metrics

Standard time per unit: department- and product-specific

Target time per work operation; basis for capacity and cost calculation

Performance level: typically 80–120 %

Ratio of standard time to actual time; check permanent deviations

Set-up time share: frequently 5–30 % of manufacturing time

Dependent on lot size; reducible through demand bundling

Throughput time: company-specific, declining trend

Shapes delivery capability; to be agreed with suppliers

On-time delivery (Expedite Rate): typically > 95 %

Share of expedited orders should be minimal

Practical example

A medium-sized machinery manufacturer orders sheet metal processing from a supplier. In the face of recurring price increases, the buyer analyses the time structure together with the supplier: the share of set-up time in total costs is disproportionately high for the small lot sizes, while the processing times match the plant capacity.

- Verification of the planned times using the supplier's feedback and machine data
- Demand bundling of similar parts to achieve larger lots and spread set-up times
- Design change of two components to reduce processing time (Design-to-Cost)
- Agreement of a bonus arrangement for reliable on-time delivery with a clearly defined measurement method

Conclusion

Time management is the arithmetic foundation on which production planning, cost calculation and performance accounting rest. For technical procurement, it provides the argumentation basis for cost analyses, lot size decisions and negotiations. Reliable time data does not arise once, but through continuous maintenance, target-actual comparisons and clear methodological agreements with suppliers. Companies that operate their time management systematically identify cost drivers and delivery constraints earlier than the competition. Time management thus becomes a strategic tool that connects procurement and production.

Frequently asked questions

What is time management (Zeitwirtschaft) in simple terms?

Time management (Zeitwirtschaft) is the part of work preparation that defines how long a work operation should take. Standard times are derived from this, which are used for capacity planning, cost calculation and performance accounting. In practice, these times were established through time studies, MTM analyses or data series.

What types of time exist in time management?

The customary distinction is between set-up time, main (processing) time, auxiliary times, allowance time and recovery time. In addition, transport, waiting and inspection times are recorded, which above

all shape throughput time. The sum of these components yields the standard time per work operation.

How are time management and REFA related?

REFA is the best-known German methodology for determining work and standard times. It describes in a standardised way how time studies are conducted, observed values are normalised and allowances are determined. Many companies use REFA as the foundation of their time management, supplemented by MTM for more detailed motion analyses.

Why is time management important for procurement?

Manufacturing times significantly determine a supplier's unit costs and lead times. Whoever understands the time structure can comprehend quoted prices, optimise lot sizes and identify bottlenecks earlier. Time data is therefore also the basis for supplier management and performance evaluation.

What is the difference between standard time and actual time?

The standard time is the planned target time for a task, while the actual time is captured from feedback or measurements. The performance level results from the ratio of the two. If they deviate permanently, either there is a miscalculation or a process problem – both should be analysed.

Which KPIs does time management measure?

Typical indicators are standard time per unit, set-up time, throughput time, performance level and OEE. From a buyer's perspective, the supplier's on-time delivery and quantity reliability are added, which can be traced back to time planning. All values are guide values and must be interpreted on an industry-specific basis.