
Takt Time Calculation For Assembly Line

1.0 Policy Objective & Scope

The objective of this policy is to establish a standardized workflow for calculating takt time on the assembly line. Takt time is the rate at which a finished product needs to be completed to meet customer demand. This policy ensures that all assembly line supervisors, production planners, and engineering personnel use a consistent method to determine takt time, enabling balanced workflow, reduced bottlenecks, and on-time delivery.

This policy applies to all assembly lines within the cabinet and millwork manufacturing facility, including but not limited to cabinet assembly, drawer assembly, door assembly, and final millwork assembly. It covers all production shifts and product families. Personnel in Production Planning, Assembly Supervision, Continuous Improvement, and Engineering must adhere to this procedure.

2.0 Roles & Responsibilities

- **Production Planner:** Responsible for gathering accurate customer demand data (units per shift or per day) and providing it to the assembly supervisor. Reviews takt time calculations weekly.
- **Assembly Supervisor:** Responsible for performing the initial takt time calculation using the standard formula. Posts the calculated takt time on the line communication board and adjusts staffing or line balance as needed.
- **Continuous Improvement Lead:** Responsible for auditing takt time calculations monthly, coaching supervisors on correct methodology, and leading kaizen events to reduce cycle time when takt time is not met.
- **Engineering Manager:** Responsible for approving any changes to the standard takt time calculation formula or data sources. Ensures that product routing and standard work documentation align with takt time targets.
- **Operations Director:** Responsible for reviewing quarterly takt time adherence reports and approving resource allocation decisions based on takt time analysis.

3.0 Core Rules & Guidelines

- Takt time must be calculated using the formula: $\text{Available Production Time per Shift} / \text{Customer Demand per Shift}$. Available production time excludes planned breaks, scheduled maintenance, and shift changeover time.
- Customer demand must be based on the most recent 30-day rolling average of confirmed orders, not forecasted or speculative numbers. Any exception requires written approval from the Operations Director.
- Takt time must be recalculated at the start of each month and whenever there is a change in customer demand of 10% or more. The new takt time must be communicated to all assembly line team members within 24 hours.
- Takt time must be displayed on a visual board at the head of each assembly line, updated in real-time if possible. The board must show the current takt time, actual cycle time, and the variance (gap).
- If actual cycle time exceeds takt time by more than 5% for three consecutive days, a formal problem-solving process (A3 or PDCA) must be initiated by the Assembly Supervisor with support from Continuous Improvement.

- Takt time calculations must be documented in the standard digital log (ShopDocs) and retained for a minimum of 12 months for audit purposes.

4.0 Step-by-Step Workflow

1. Production Planner retrieves the confirmed customer order backlog from the ERP system for the upcoming 30 days. Calculates the average daily demand per product family or assembly line. Enters this data into the Takt Time Calculation template in ShopDocs.
2. Assembly Supervisor determines the total available production time per shift. Subtract all planned downtime (breaks, shift change, scheduled maintenance) from the total shift duration. Record the net available time in minutes per shift.
3. Assembly Supervisor applies the takt time formula: $\text{Takt Time} = \text{Net Available Production Time per Shift} / \text{Customer Demand per Shift}$. The result is expressed in minutes per unit (e.g., 12.5 minutes per cabinet). Round to one decimal place.
4. Assembly Supervisor posts the calculated takt time on the line communication board. Updates the visual management display with the new takt time, current actual cycle time (from time studies or ERP), and the variance. Notifies all team members during the next shift start-up meeting.
5. Assembly Supervisor compares the actual cycle time (measured via time studies or production data) to the takt time. If actual cycle time is less than or equal to takt time, no immediate action is required. If actual cycle time exceeds takt time, proceed to Step 6.
6. If actual cycle time exceeds takt time, Assembly Supervisor conducts a root cause analysis using the standard problem-solving template. Identifies bottlenecks, waste, or imbalance in the line. Documents findings in ShopDocs.
7. Assembly Supervisor implements countermeasures such as rebalancing workstations, adding temporary support, reducing changeover time, or adjusting staffing levels. Updates the standard work documentation to reflect any permanent changes.
8. Continuous Improvement Lead conducts a weekly audit of takt time adherence for each assembly line. Reviews the variance data and problem-solving records. Provides coaching to supervisors as needed and escalates persistent issues to the Engineering Manager.
9. Engineering Manager reviews any proposed changes to product routing or standard work that result from takt time analysis. Approves or rejects changes within 48 hours. Ensures that CAD and BOM updates are reflected in the ERP system.
10. Operations Director reviews a quarterly takt time adherence report generated from ShopDocs. Uses the report to make strategic decisions about line capacity, capital investments, or shift scheduling. Signs off on the report and files it in the management review folder.

5.0 Documentation & Compliance

- All takt time calculations must be recorded in the Takt Time Calculation Log within ShopDocs. The log must include the date, product family, net available time, customer demand, calculated takt time, and the name of the person who performed the calculation.
- Visual management boards must be photographed weekly and the photos uploaded to the corresponding ShopDocs folder for that assembly line. This provides evidence of communication and adherence.
- Any problem-solving records (A3s, PDCA sheets) related to takt time gaps must be stored in the Continuous Improvement folder in ShopDocs, tagged with the relevant assembly line and date range.

- Compliance is audited quarterly by the Continuous Improvement Lead. The audit checks that: (1) takt time is calculated and posted, (2) actual cycle time is measured, (3) variance is tracked, and (4) any gaps exceeding 5% for three days have a documented problem-solving record. Audit results are reported to the Operations Director.
- Non-compliance with this policy (e.g., failure to recalculate takt time after a demand change, failure to post takt time) will result in a written warning from the Engineering Manager for the first offense, and escalation to the Operations Director for repeated offenses.

Regulatory Disclaimer: This document is a generic policy and workflow template. The end-user assumes all liability for validating all procedures, roles, and administrative guidelines against actual organizational structures before formal implementation.