# Clever Manufacturing Plus

Clever Manufacturing Plus complements and fills functional gaps in the standard Microsoft Dynamics 365 Business Central Manufacturing module

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### Benefits

- Improves compliance, traceability, and change management efficiency with a full audit trail.
- Enhances tool management efficiency, reducing downtime and supporting precise tool maintenance scheduling.
- Reduces waste, adds potential revenue, and improves traceability of by-products.
- Enhances resource allocation, visibility of production orders, and prevents bottlenecks.
- Quickly highlights potential issues, component shortages, and capacity bottlenecks.
- Ensures accuracy in production processes, component usage, and costs through comprehensive manufacturing analysis.

### Requirements

Dynamics 365 Business Central

## Do you struggle with managing engineering changes, tracking tools, reducing waste, optimising resources, and ensuring efficient production processes?

Clever Manufacturing Plus complements the standard Dynamics 365 Business Central Manufacturing module by offering additional functionalities such as Engineering Change Control, Tooling, By-Product Management, Enhanced Visualizations, Enquiries, and Enhanced Analysis. These features improve compliance, traceability, change management efficiency, tool management, resource allocation, and overall production accuracy. This helps businesses mitigate potential problems, enhance efficiency, and maintain smoother operational workflows.

## Engineering Change Requests (ECRs):

Streamline manufacturing changes with a comprehensive audit trail. ECRs can be initiated from various sources including production orders (for instance, due to part shortages or machine breakdowns), production BOMs and versions, routings and versions, by-products and versions, items, and stockkeeping units. The system allows users to quickly view cost implications of the changes and visually track modifications to the bill of materials and routing. Users can also record free-form notes to justify changes. There is an approval process for completed ECRs to ensure all modifications are properly vetted.

## Engineering Change Orders (ECOs):

ECOs re generated when an Engineering Change Request (ECR) is actioned, updating the initiating master record with changes and recording approved modifications, creating a permanent audit trail. ECOs enhance compliance, traceability, and change management efficiency with their full audit trail. They also ensure a structured approval process for all manufacturing adjustments, promoting thorough and organised change implementation.
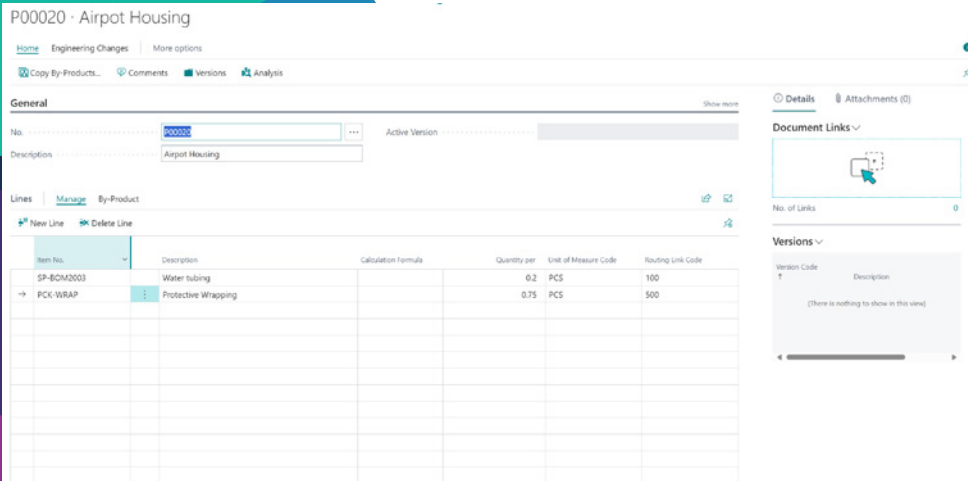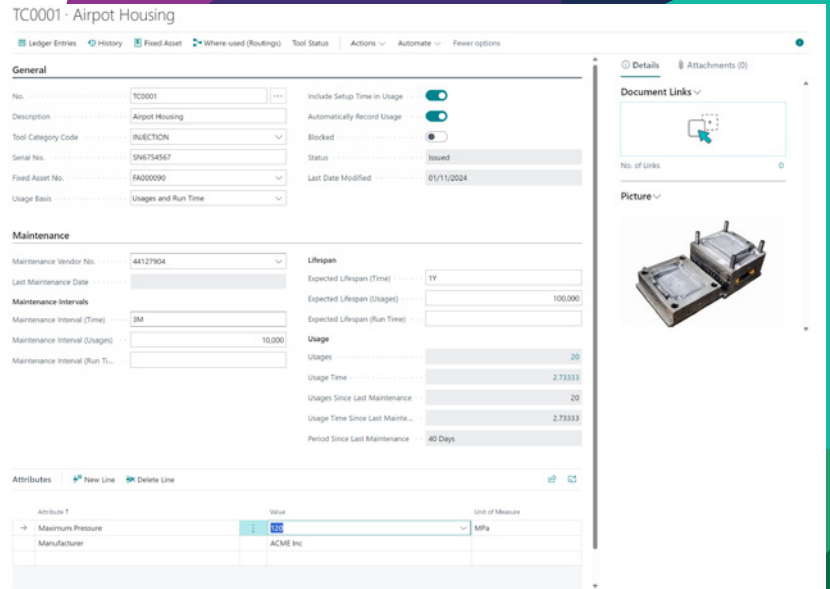
## Tool Tracking and Maintenance

Tooling enables users to set up and monitor the usage and history of tools in production. The new tool card allows detailed setup including descriptions, maintenance intervals, and categories. Users can record tool attributes to find suitable tools for routing operations and associate tools with fixed assets. Tools can be checked out to production orders and their usage tracked, scheduling maintenance based on this usage. Integration with Clever MES allows viewing required tools for routing operations and managing check-outs directly from the MES screen. Benefits include improved tool management efficiency, reduced downtime, precise tool maintenance scheduling, accurate tool location tracking, and the ability to identify tools used in specific production orders if issues arise.
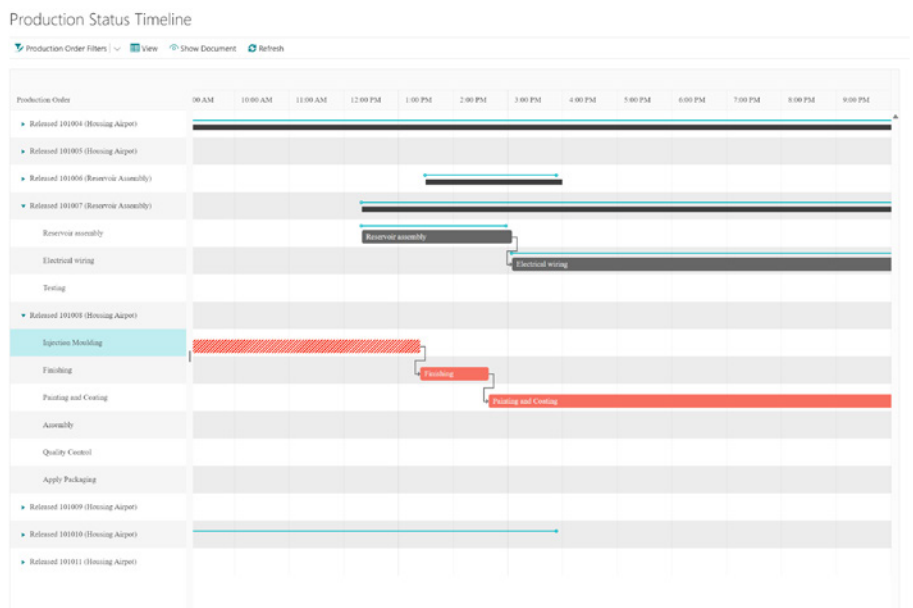


## By-Products

By-Products are used when there are usable by-products, like off-cuts, that can be reused in other processes or for disassembly scenarios. Similar to a production bill of materials, a by-products list can be defined and applied to an item or stockkeeping unit, with version control. By-products are integrated into production orders and can be amended, recorded as additional output. Benefits include reduced waste, potential revenue from by-products, and improved traceability of products generated from manufacturing other items.



## Screen Enquiries

The additional screen enquiries offer valuable insights into the shop floor's current status. Production Status displays the current status of all production orders, grouped by production order, due date, family, item, or customer. Production Shortages identify which orders cannot be executed due to component shortages, also groupable by various criteria. Production Load provides an overview of work and machine centre loads by date. These tools help quickly highlight potential issues, component shortages, and capacity bottlenecks that could impact production processes.

## Enhanced Visualization Tools

Enhanced Visualization Tools offer clear visual representations of BOM structures and routing processes for better decision-making. The production status timeline graphically displays operations for production orders, showing scheduled versus actual production times when used with Clever MES, highlighting delays and their impacts. Load view charts provide insights into machine and work centre loads, aiding in capacity planning. These tools enhance resource allocation, improve visibility of production order status, and prevent bottlenecks.



## Manufacturing Analysis

Manufacturing Analysis provides detailed insights into production processes by tracking material usage against expected amounts (Production BOM Analysis), comparing planned versus actual times for setup and runtime (Routing Analysis), and analyzing by-product output versus expectations (By-Product Analysis). These analyses enable users to ensure that shop floor processes align with defined production BOMs, routings, and by-products, thereby ensuring accuracy in timings, component usage, and costs.

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