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Tool life monitoring and replacement

This workflow automatically monitors cutting tool wear and usage across CNC machines, predicting replacement needs and initiating procurement to minimize downtime. It optimizes tool inventory and prevents production delays through predictive maintenance scheduling.

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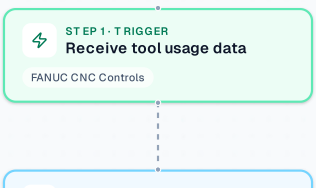
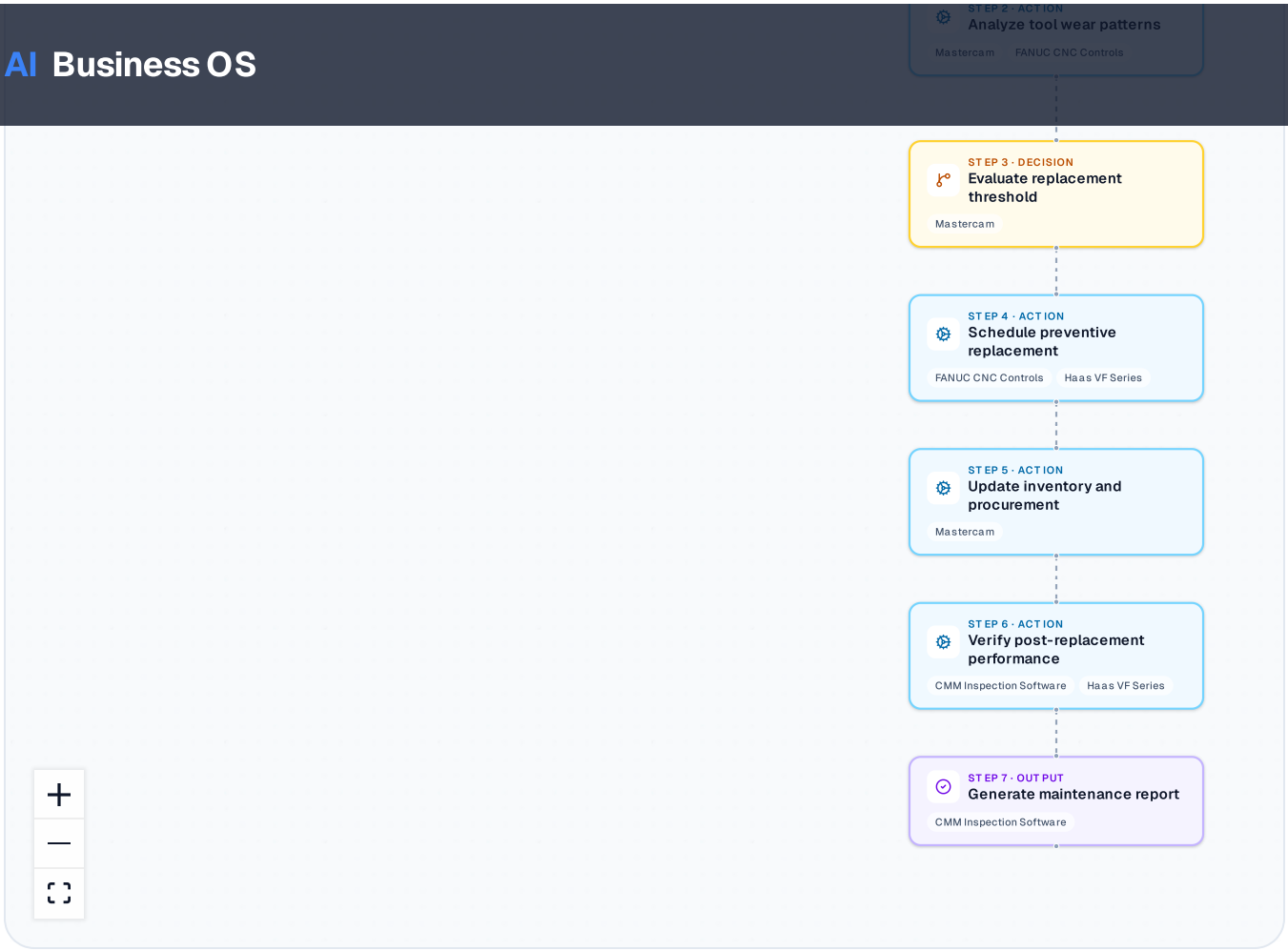
WORKFLOW TRIGGER
CNC machine reports tool usage data after completing a machining cycle

Visual Flow

Each node represents an automated step. Connections show how data and decisions move through the workflow.





Step-by-Step Breakdown

Detailed explanation of each automated stage in the workflow.

1

TRIGGER

Receive tool usage data

FANUC CNC Controls transmit real-time tool usage metrics including cycle count, cutting time, and spindle load data. Data is collected from active machining operations across multiple CNC stations.

2

ACTION

Analyze tool wear patterns

System processes usage data against historical wear patterns and manufacturer specifications to calculate remaining tool life. Advanced algorithms factor in material type, cutting parameters, and tool geometry.

Mastercam | FANUC CNC Controls

3

DECISION

Evaluate replacement threshold

Workflow determines if tool life remaining falls below predetermined safety threshold (typically 10-15% remaining). Critical tools and high-precision operations receive priority evaluation.

Mastercam

4

ACTION

Schedule preventive replacement

System automatically schedules tool changeover during planned maintenance windows or between production runs. Maintenance alerts are generated for machine operators with specific tool change instructions.

FANUC CNC Controls | Haas VF Series

5

ACTION

Update inventory and procurement

Tool replacement triggers automatic inventory deduction and generates purchase orders when stock levels reach reorder points. Vendor lead times and tool specifications are automatically referenced for procurement timing.

Mastercam

6

ACTION

Verify post-replacement performance

CMM inspection validates that new tools meet dimensional accuracy requirements through automated measurement cycles. Quality data is logged to establish baseline performance for the replacement tool.

CMM Inspection Software

Haas VF Series

7

OUTPUT

Generate maintenance report

Comprehensive report detailing tool replacement activities, performance metrics, and inventory status is automatically distributed to production managers. Cost analysis and efficiency gains are documented for continuous improvement.

CMM Inspection Software

Outputs

- Tool replacement schedule
- Automated purchase orders
- Performance validation report
- Updated tool inventory status

Key Metrics

- Tool utilization rate
- Unplanned downtime reduction
- Inventory carrying costs
- Tool life prediction accuracy

Tools & Integrations

- FANUC CNC Controls
- Mastercam
- Haas VF Series
- CMM Inspection Software

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