

PRECISION TOOL MANUFACTURING

CNC Monitoring in Precision Tool Manufacturing: Case Study

Making hidden production losses visible across **25 machines**.



Retrofit in practice: an external AVA sensor on an existing machine.

25

Machines · 3 shifts

1990–2025

Machine years

AVA + WatchMen

Sensors and platform

THE CHALLENGE

Where was productive time being lost?

Order records showed when jobs started and finished. Between those points, waiting time, short interruptions and recurring stops were difficult to separate from productive machining.

THE SOLUTION

A shared view of the existing machine fleet

Novo AI fitted external AVA sensors and connected the machines to WatchMen. Machine states, ERP/BDE data and production context gave the team a clearer basis for improvement.

The team used the findings to prepare jobs earlier, improve shift handovers and assign responsibility for recurring alarms.

THE CUSTOMER Anonymized precision tool manufacturer

THE PROCESSES Turning, milling and grinding

RESULTS AT A GLANCE**+4,083 h**

Additional productive time
Annualized across the fleet

–36.83%

Less idle time

–21.73%

Fewer microstops

Comparison and measurement notes on page 4.

IMPLEMENTATION

From machine signals to practical improvements

External sensing made losses visible. The production team used that evidence to change the routines behind them.



INSTALLATION

16.8 min

Average installation
per machine

No PLC access

External sensor mounting.

No additional shutdown

Fitted during planned changeovers.

Connected context

LAN and ERP/BDE. Energy sensors included.

PROJECT MILESTONES

Weeks 2–3

Baseline monitoring

Weeks 4–6

Operational improvements

Weeks 12–13

Results evaluation

01

Prepare the next job earlier

Long idle periods appeared when the next job, material or release was not ready.

Idle alerts helped the team react sooner and prepare the next job before the current order ended.

02

Improve readiness at shift changes

Repeated microstops accumulated around shift changes and material replenishment.

Shift-start readiness checks and alerts for repeated stops helped address these recurring interruptions.

03

Give recurring alarms an owner

Repeated alarms and delayed responses extended machine downtime.

Clear alarm ownership and maintenance triggers gave the team a more consistent response to repeated problems.

Machine states show when. Context helps explain why.

ERP/BDE records, operator input and reason labels supported the investigation of each loss. Monitoring provided the evidence; operational changes addressed the process.

FINDINGS AND ACTIONS

Making recurring losses actionable

The machine timeline helped the production team identify where capacity was lost, investigate the causes and introduce specific process changes.

Long idle periods

01

Machines waited after an order or setup step because the next job, material or release was not ready.

Action: Introduce idle alerts and prepare the next production job before the current order ends.

REPORTED CHANGE

-36.83%

less idle time

Recurring microstops

02

Short interruptions accumulated around shift changes and material replenishment.

Action: Introduce a shift-start readiness check and alerts for repeated stops.

REPORTED CHANGE

-21.73%

fewer microstops

Extended downtime

03

Recurring alarms and delayed responses prolonged machine stops.

Action: Assign alarm categories to responsible owners and use repeated patterns to trigger maintenance.

REPORTED CHANGE

-17.62%

less downtime

Short interruptions add up

The source reports an average of **15.92 microstops** and **19.43 minutes** of interruption per machine per shift. Across 25 machines, three shifts and 61 working days, this corresponds to approximately **1,481.5 machine-hours** of interrupted time.

Shift comparisons pointed to where to investigate

Reported average	Shift 1	Shift 2	Shift 3
Productive time	4.41 h	4.08 h	3.76 h
Idle time	1.24 h	1.48 h	1.81 h
Downtime	0.33 h	0.44 h	0.58 h
Microstops	14.73	15.86	17.17

Shift 3 showed the most idle time and interruptions. The comparison guided investigation of production conditions, material readiness and handovers.

Machine states need production context. WatchMen identifies when a machine changes state. ERP/BDE records, operator input and configured reason labels help establish why it happened.

RESULTS

More productive time from the existing CNC fleet

+4,083 h

Annualized productive-time increase

Productive machine time rose from **80,365 to 84,448 hours** on an annualized basis after the team introduced the improvement measures.

The comparison below shows the reported changes across the monitored fleet.

Measure	Before	After	Change
Productive time ¹	80,365 h	84,448 h	+4,083 h
Idle time ¹	11,086 h	7,003 h	-36.83%
Downtime ¹	4,137 h	3,408 h	-17.62%
Microstops ¹	298,417	233,571	-21.73%
Cycle / process time	41.73 min	39.68 min	-4.91%
Machine utilization	66.42%	69.79%	+3.37 pp
OEE	21.53%	54.87%	+33.34 pp

¹ Annualized values, not a full year of observed production. pp = percentage points.

What the results mean

More productive machine time became available after the team addressed recurring losses. The monitoring system supported detection and verification; the operational measures changed the process.

How to read the figures

OEE, utilization and output measure different things. The source also reports a 5.08% output increase, but does not provide a consistent final part count. That count is not reconstructed here.

A repeatable improvement cycle

1 Measure	2 Investigate	3 Act	4 Verify
Record machine states	Review events and causes.	Change the relevant process.	Compare the same metrics.

DAILY USE

Using machine data in daily production

WatchMen brings machine behavior into the same discussion as orders, shift conditions and production priorities.



WatchMen interface example from the website: recurring idle alerts. Illustration of the product, not the case-study measurement dataset.

For production management

Review productive, idle and downtime periods by machine and shift. Use recurring events to prioritize investigation and check whether changes have reduced the same losses.

For production planning

Compare the ERP plan with actual machine behavior. Review elapsed order time, recurring waiting periods and processing assumptions before updating future plans.

Explore the potential in your machine fleet

Discuss your machines, recurring losses and a suitable pilot with Novo AI.

[Request a WatchMen demo →](#)

MEASUREMENT AND SOURCE

Results are reproduced from Novo AI's CNC case study and supplied project PDF. Evaluation is reported in weeks 12–13. Exact baseline dates, the annualization formula and OEE component inputs were not supplied; results are specific to this deployment.

[Read the online case study](#)