ency Go beyond CAD/CAM

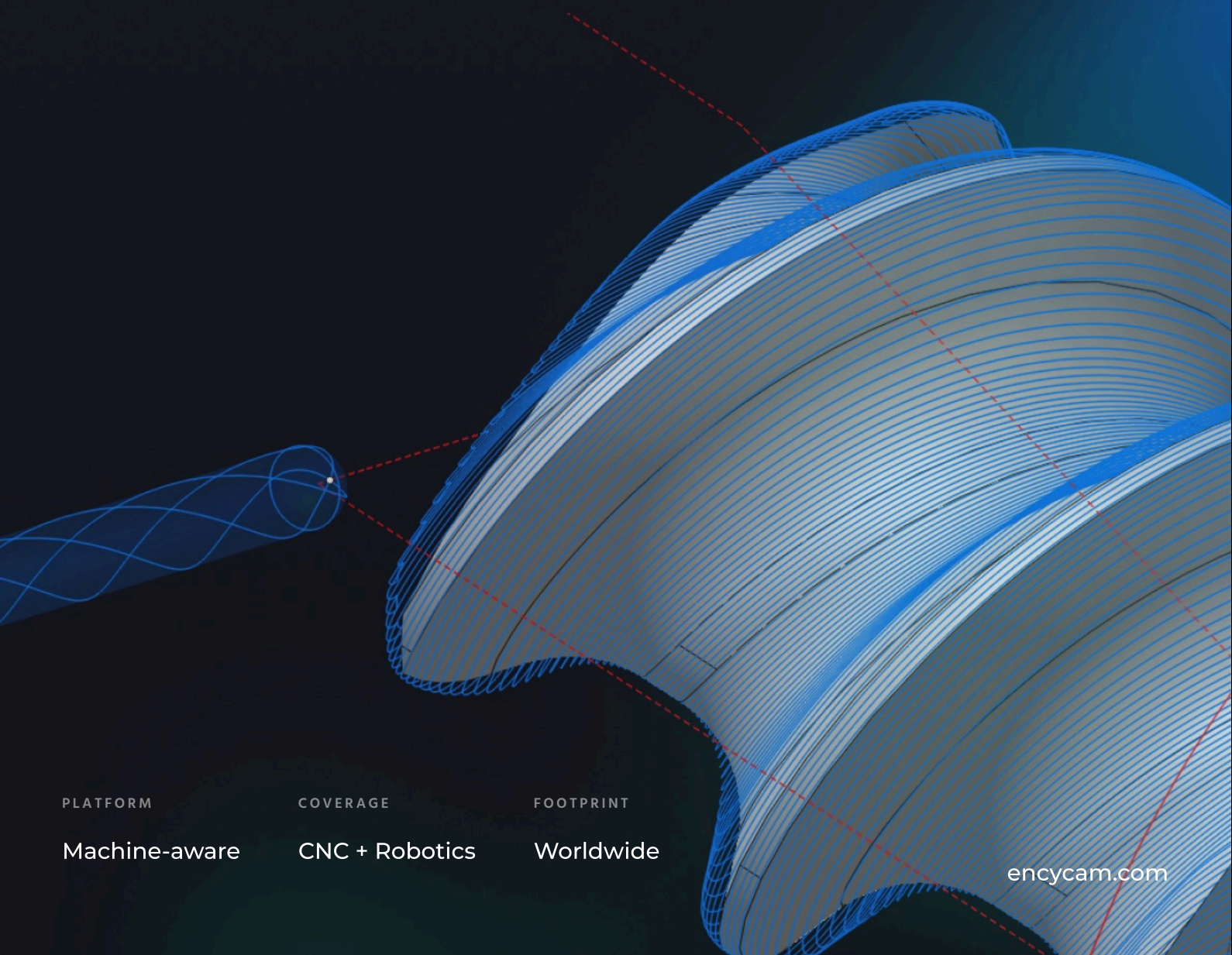
BLACK PAPER · 2026

STRATEGIC OVERVIEW

ENCY Software

Independent manufacturing software platform for CNC machines and industrial robots

Independent | Integrated | Intelligent Manufacturing



PLATFORM
Machine-aware

COVERAGE
CNC + Robotics

FOOTPRINT
Worldwide

encycam.com

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01 • OPENING STORY

Manufacturing is being rewritten

The question is whether your workflows are ready.

Manufacturing is changing faster than traditional CAD/CAM workflows can adapt.
Three forces are changing production requirements: **market speed, robotic machining, and AI**.

The constraint is no longer the machine. **It is how fast the workflow adapts.**

Three forces changing manufacturing workflows



01 DEMAND

Market Speed

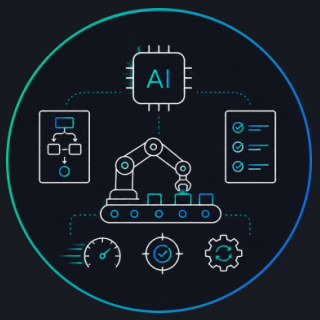
More variants. Shorter lead times. Faster NPI. Iterative programming becomes the bottleneck.



02 PRODUCTION

Robotic Machining

Robotic machining is becoming a standard part of production. But CNC and robot programming are still often handled in separate systems — creating parallel workflows and duplicated effort.



03 INTELLIGENCE

Artificial Intelligence

AI is entering manufacturing workflows as a practical tool for process planning and decision support. Expectations for speed, consistency, and automation are increasing across the entire workflow.

The forces behind the shift

Manufacturing is moving toward connected, adaptive workflows.

Agility

Manufacturers need to react faster to changing orders, materials and production priorities.

Speed

Teams are expected to move from design to production faster — often without adding engineering capacity.

Quality

AI is entering manufacturing as decision support, but engineering control remains essential.

INVESTMENT PRIORITY

Automation

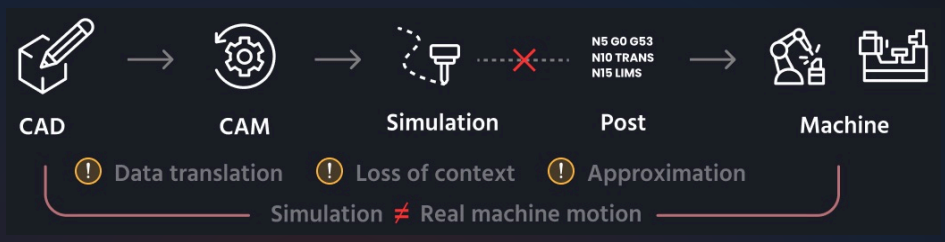
A growing priority for manufacturers looking to reduce manual work and stabilize production workflows.

Leading manufacturers are moving toward **connected, adaptive workflows** — where data, simulation and machine context stay aligned from programming to production.

Why fragmented workflows break down

The problem is not each tool. **It is the workflow between them.**

Most manufacturing workflows are built across separate systems. As complexity increases, every handoff becomes a source of delay, rework, or lost context.



Key limitations

01

CAD/CAM handoff

Moving geometry between systems introduces errors and repeated preparation.

→ more rework after each design change

02

Postprocessor dependency

Each machine requires a validated postprocessor, NC output and additional verification.

→ longer setup and machine onboarding cycles

03

Separate CNC and robot simulation workflows

CNC toolpaths and robot motion are simulated in different tools.

→ duplicated workflows and effort

04

No shared machine-aware model

Data must be transferred and synchronized manually between systems.

→ slower updates and reduced process visibility



The Platform Shift

Manufacturing software is moving from tool-based chains to connected manufacturing platforms — similar to what happened in CAD. ENCY X is the platform foundation behind this shift.

Evolution of manufacturing software

ERA 1

Toolchains

Separate tools connected through manual handoffs.

ERA 2

Integrated CAD platforms

Design, simulation and data in one environment.

ERA 3 · TODAY

Manufacturing platforms

ENCY X connects programming, simulation, machine behavior and production data in one workflow.

Two approaches

TODAY

Tool-based workflow

Multiple tools connected through exports, integrations and manual validation.

SHIFT

EMERGING

Platform workflow

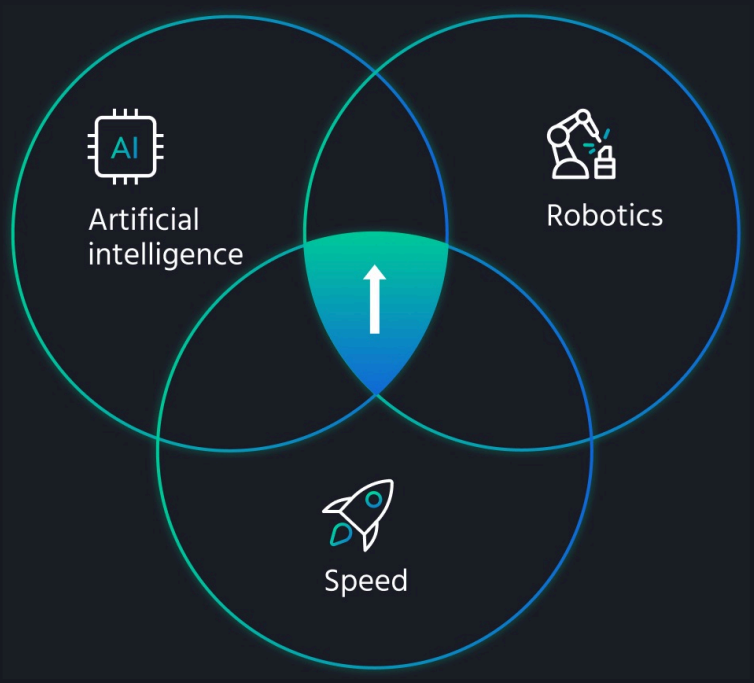
A connected environment with shared data and one integrated workflow.

A manufacturing software platform — not another CAM tool

ENCY IS BUILT ON A DIFFERENT PRINCIPLE

Machine behavior should be considered during programming — not after postprocessing.

Section Summary



01 Manufacturing complexity is increasing

02 Three forces — market speed, robotic machining, and AI — are pushing existing workflows beyond their limits

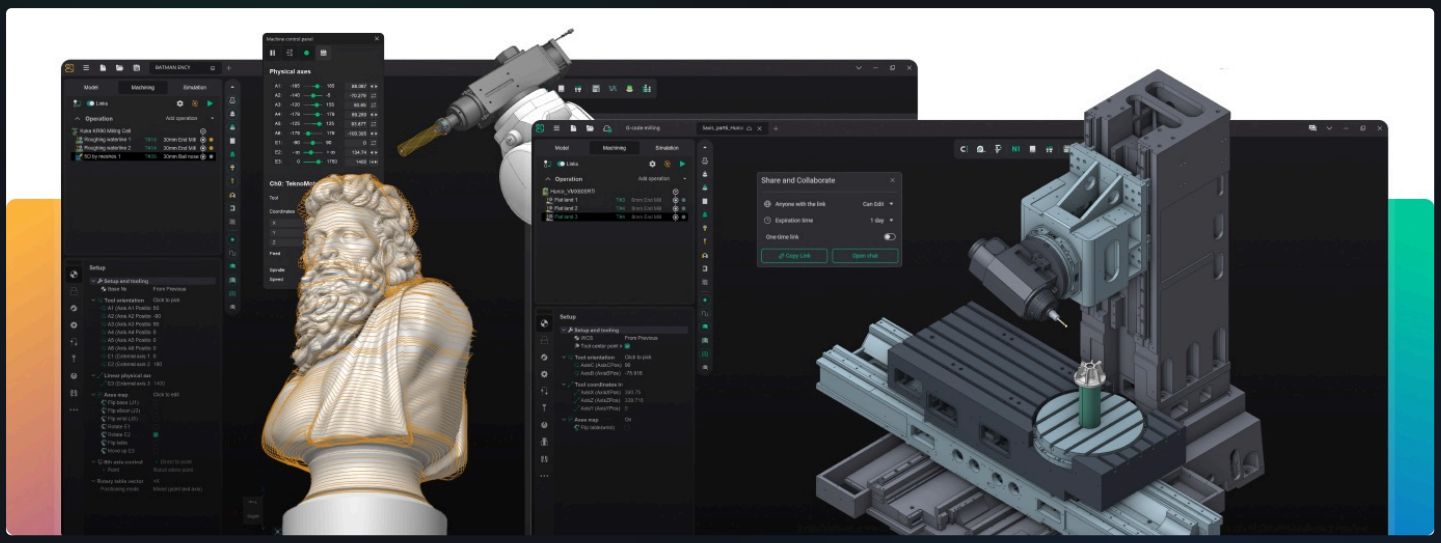
03 Fragmented workflows cannot scale with this complexity

04 A connected, machine-aware workflow is required

02 • WHAT ENCY IS

A unified environment for CNC and robotic machining

ENCY replaces fragmented workflows with **one connected CAD/CAM environment**. In traditional environments, programming, simulation, verification and postprocessing are handled by separate tools — linked through exports and manual adjustments. ENCY brings these stages together in one machine-aware workflow.



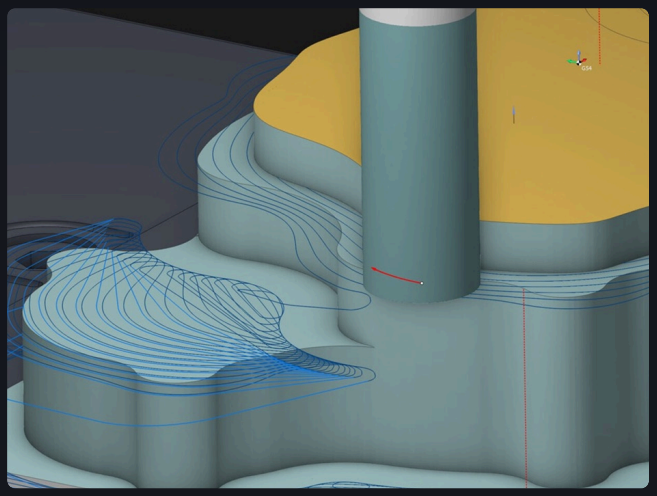
One environment instead of multiple tools

Engineers work in one connected workflow where geometry, toolpaths, simulation and machine behavior are handled in the same environment.

Geometry	Toolpaths	Simulation	Machine behavior

What this changes in practice

01	Toolpaths are calculated with machine-aware context during programming.
02	Simulation is part of the same workflow.
03	CNC toolpaths and robot motion are programmed in one environment.
04	Fewer manual adjustments between programming, simulation and postprocessing.



PRODUCTION IMPACT

Shop-floor outcomes

- ↓ fewer setup iterations
- ↓ fewer unexpected issues at the machine
- ↓ reduced dependency on manual correction
- → faster transition from programming to production

Built as one architecture — not assembled from separate tools

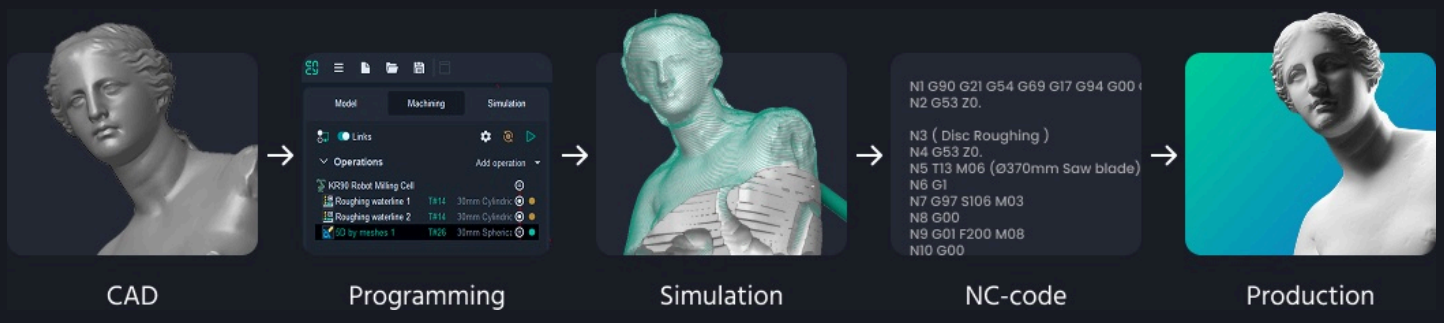
ENCY is built on a unified architecture. Core components work together in one environment, sharing a consistent data model across the entire workflow.

Less conversion. Less rework. Less verification overhead.

ENCY is unified at the computational level — not connected through external integration layers.

Unified Workflow

From CAD model to production — **without fragmentation, translation, or reinterpretation.**



ENCY is ~~not a collection of connected tools~~ — it is one unified platform.

› A single workflow that aligns programming, simulation and machine behavior.

› One model. One logic. One source of truth across the workflow.

03 • WHY IT MATTERS

From fragmented workflows to predictable production

The problem is not machining operations.
It is workflow structure.

Every handoff adds data transfer, verification and correction. ENCY reduces fragmentation across programming, simulation and postprocessing.

PROBLEM	ENCY APPROACH	IMPACT
01 Geometry-first toolpath programming	Machine-aware toolpaths	Eliminates late corrections
02 Simulation disconnected from machine behavior	Simulation in the same environment	Reduces mismatch between simulation and machine behavior
03 Separate CNC and robot programming tools	One environment for CNC toolpaths and robot motion	Reduces complexity
04 Manual data transfer between systems	Shared data model	Reduces transfer errors
05 Late verification	Earlier verification	Fewer iterations
06 Fragmented toolchains	Unified CAD/CAM architecture	Reduces dependency on manual troubleshooting

APPROACH

How ENCY addresses this

- early verification instead of late correction
- fewer handoffs between systems
- consistent process logic across programming, simulation and postprocessing

RESULT

How ENCY changes the outcome

- fewer iterations between programming and production
- reduced manual corrections
- more consistent results across machines and teams
- faster transition from programming to production

The limitation is not in individual tools — it is in the handoffs between them.

- Reducing these handoffs improves predictability, consistency and speed.
- ENCY addresses this by connecting programming, simulation and verification in one environment.

Where workflows break — and time is lost

WORKFLOW BREAKDOWN

LEGACY

CAD ⚡ CAM ⚡ SIM ⚡ POST ⚡ MACHINE

Each handoff can add data transfer, re-verification and correction

ENCY

CAD — CAM — SIM — POST — MACHINE

Connected workflow · one data model from CAD to machine

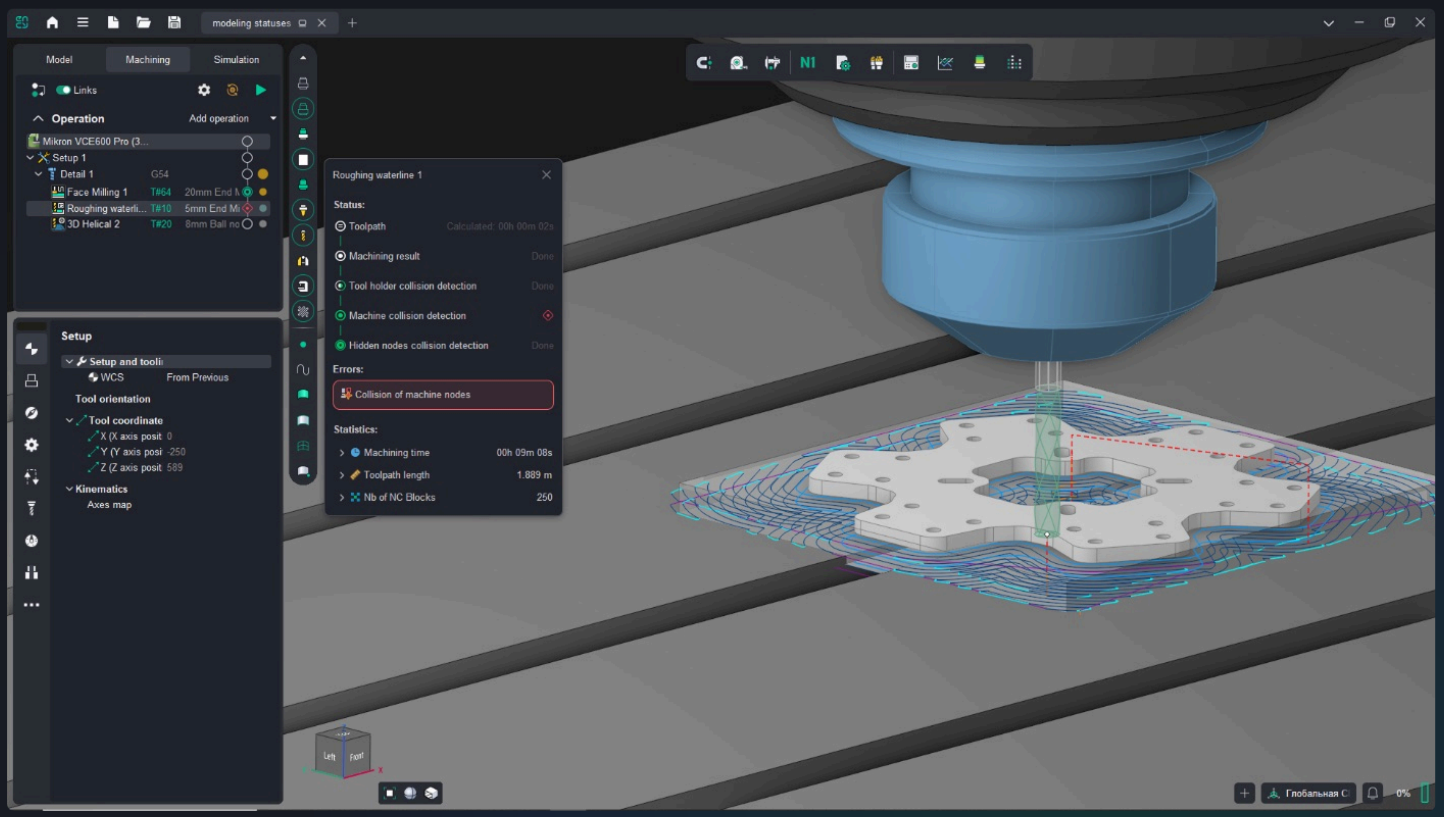
WHERE TIME GETS LOST

- Rework between disconnected stages
- Repeated verification across separate tools
- Data transfer between CAD, CAM, simulation and postprocessing
- Setup effort at the machine

IN A CONNECTED WORKFLOW

In a connected workflow, **handoffs, data transfer and re-verification can be reduced** by keeping CAD, CAM, simulation, postprocessing and machine context aligned.

Fragmented → Connected



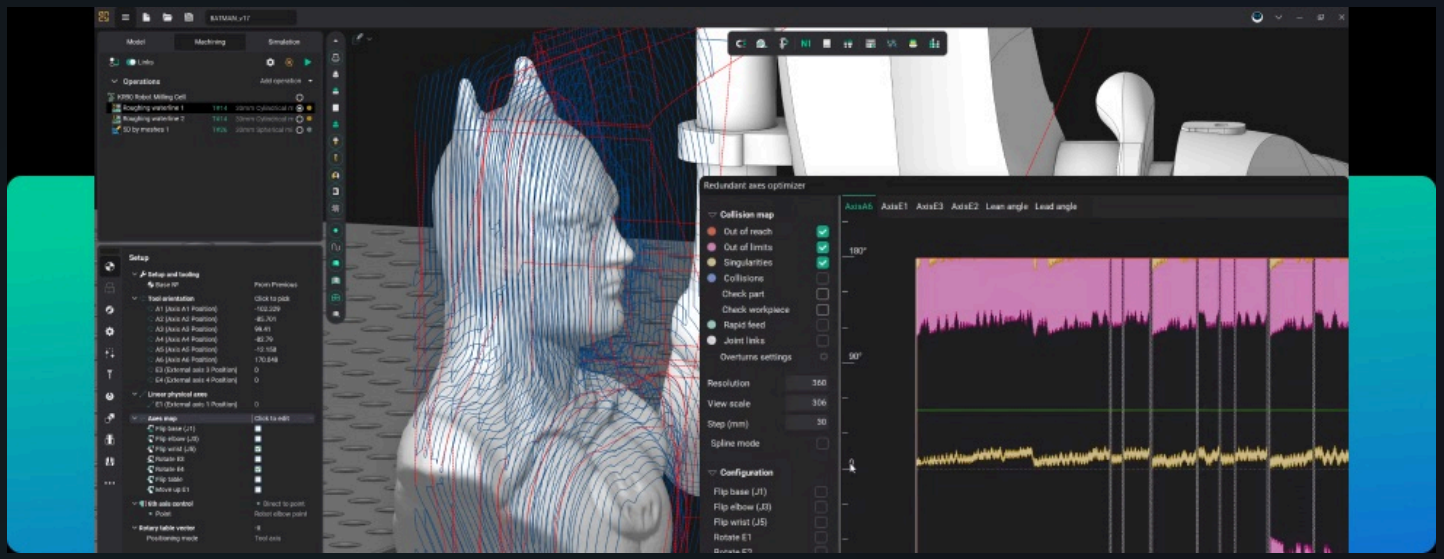
04 • ARCHITECTURE

Built differently — by design

ENCY is built at the architectural level — not assembled from separate modules or external components. Its core capabilities are designed to work together within one unified architecture.

Architecture defines behavior

How core capabilities are connected determines how the system performs in production. ENCY treats architecture as the primary design decision — not a deployment detail.



Machine-aware programming

TRADITIONAL

Toolpaths are generated from geometry first and adapted to the machine later.

ENCY

Toolpaths are calculated with the machine's digital twin in context during programming.

- Kinematics
- Axis limits
- Tooling constraints

Machine constraints move upstream. Late corrections are reduced.

Integrated simulation

TRADITIONAL

Simulation is performed as a separate step, often using a different machine model.

ENCY

Simulation is part of programming and uses the same machine-aware model.

- Earlier detection of issues
- Continuous verification during programming
- Improved consistency between simulation and machine behavior

Unified environment for CNC and robotics

TRADITIONAL

CNC toolpaths and robot motion are handled in separate systems.

ENCY

CNC toolpaths and robot motion are supported within one environment.

- Shared programming logic
- Reuse of geometry, tools and setups
- Consistent programming logic

Connected workflow

TRADITIONAL

Programming, simulation and postprocessing are divided into stages with manual handoffs.

ENCY

Stages are connected in one sequence.

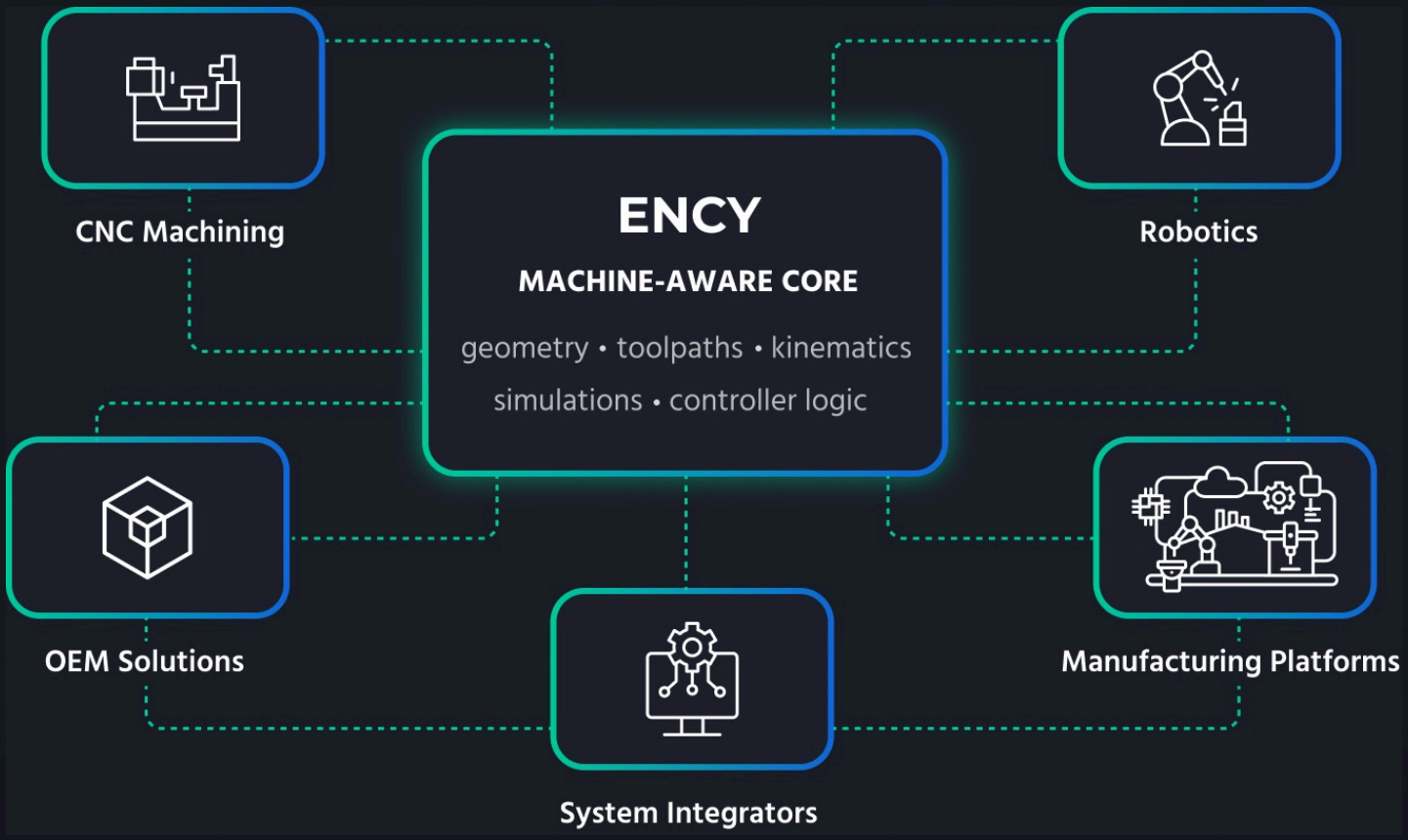
Geometry → Toolpaths → Simulation → NC output → Machine

Data remains consistent throughout — fewer transfers, less re-verification.

Architecture as a product property

These are not isolated features. They are outcomes of a product designed as a whole — together, they define production behavior.

- Machine-aware programming
- Integrated simulation
- Unified CNC and robotic machining environment
- Connected workflow



ENCY is built as one architecture — not a collection of tools.

Its architecture connects programming, simulation and machine behavior in one workflow.

05 • STRATEGIC CHOICE

Why ENCY — is a strategic choice

Software is no longer just a tool decision. It is a **production strategy** decision.

THE COST OF FRAGMENTED WORKFLOWS

In traditional environments, inefficiencies are not isolated — they are built into the process.

- Repeated setup cycles
- Manual corrections between programming and production
- Dependency on individual expertise
- Separate workflows for CNC and robotic machining
- Increasing complexity with every new machine, robot or process

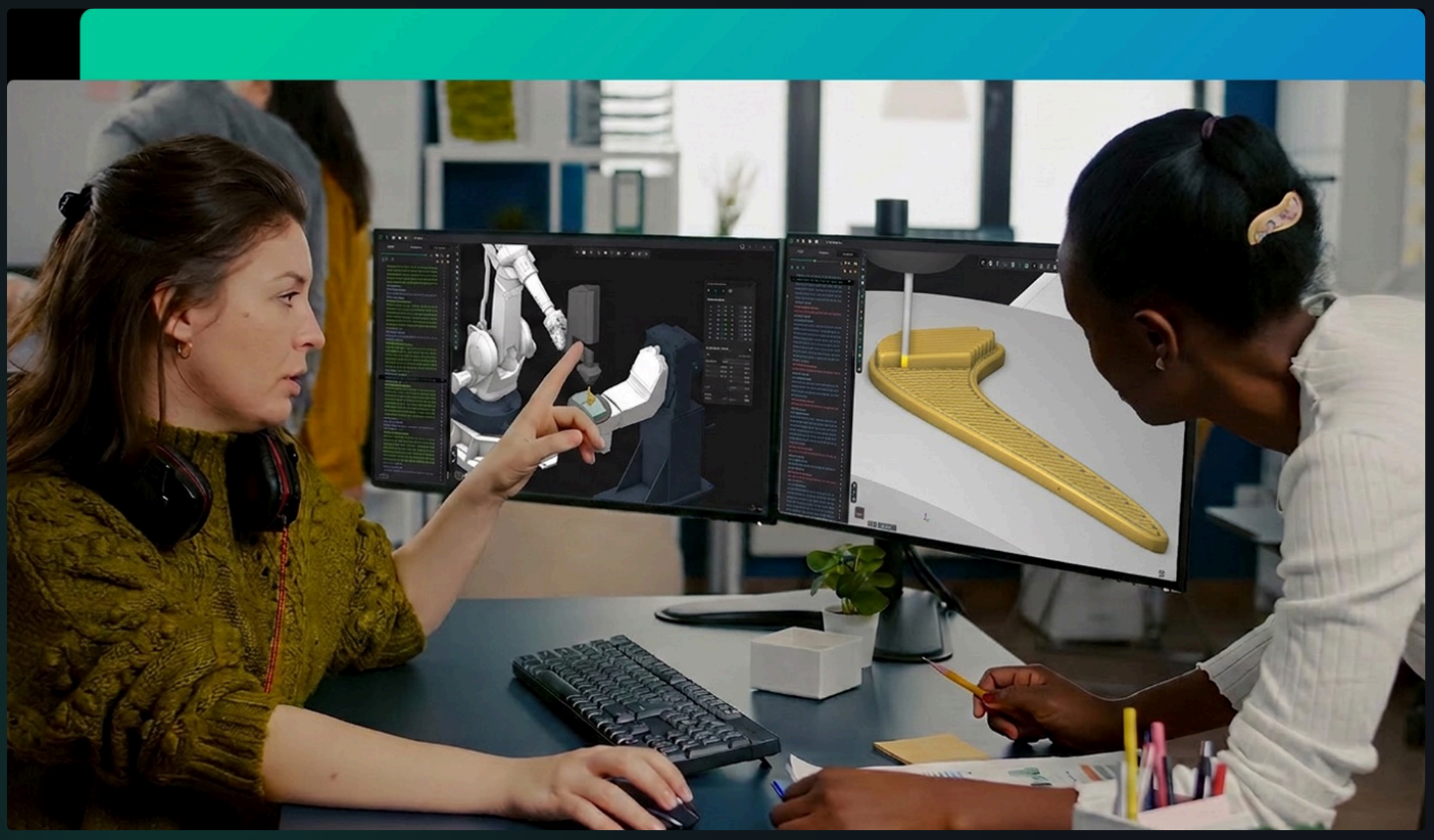
These costs compound over time. More machines should add capacity — not coordination overhead.

WHAT CHANGES WITH ENCY

ENCY connects programming, simulation and postprocessing in one environment

- Faster transition from programming to production
- Shared machine context across all stages
- Fewer iterations and corrections
- More consistent results across machines and teams
- Less dependency on manual troubleshooting
- Ability to scale without adding coordination complexity

Instead of optimizing individual steps, ENCY improves how the production process works as a whole.



The decision is structural

Manufacturers are not choosing between similar tools. They are choosing between two production models.

PATH A

Continue to manage fragmented workflows.

Complexity increases · Coordination overhead increases

OR

PATH B

Move to a connected environment designed for integration.

Scalability increases · Consistency improves

THE ENCY PRODUCT ECOSYSTEM

ENCY is not a single tool — it is a connected product ecosystem



ENCY



ENCY Robot



ENCY Tuner



ENCY Hyper



ENCY Clouds



MachineMaker

ENCY is not a tool replacement. It is a **production model transition.**

ENCY represents a shift to a different production model — one designed for integration, consistency and scale.

06 • MARKET CONTEXT

Three forces reshaping manufacturing workflows

Manufacturing is converging. Software must follow. Three forces are exposing the limits of **fragmented software architectures**.

01

Increasing process complexity

Modern production involves:

- Multiple machines
- Multiple technologies
- Separate programming environments

Each additional layer increases complexity — and makes coordination harder. Fragmented tools **do not scale** as production converges.

02

Demand for predictability

Manufacturers can no longer rely on:

- ~~Trial-and-error~~
- ~~Repeated verification cycles~~
- ~~Corrections at the machine~~

Production must be:

- Predictable
- Repeatable
- Scalable

This requires alignment between **programming, simulation and production**.

03

Convergence of CNC and robotic machining

CNC and robotic machining are increasingly combined:

- Hybrid production cells
- Automated programming workflows
- Multi-stage processes

But software remains **fragmented** — forcing parallel workflows and additional coordination.

KEY TAKEAWAY

Manufacturing is **converging** — but software remains **fragmented**.

The gap is structural

The limitations of current manufacturing software are not caused by missing features. They are caused by how the architecture was built.

Most manufacturing software platforms evolved over time through:

Incremental extensions | External components | Disconnected software modules

Their architecture reflects past production requirements — not current ones.

WHERE THE GAP APPEARS

Toolpaths without machine context Toolpaths are generated from geometry first and adapted to the machine later	→	Additional corrections and rework
Simulation disconnected from machine behavior Simulation is performed separately from programming and machine context	→	Reduced consistency between simulation and machine behavior
Fragmented workflows CAD, CAM, simulation and robotic machining operate in separate systems	→	Repeated data transfer and verification
Data loss in handoffs Data is exported, converted and re-imported between stages	→	Errors, delays and inconsistency

WHAT THIS MEANS

These inefficiencies are not operational. They are architectural.

CONCLUSION

Feature improvements cannot fix architectural fragmentation. Manufacturing software must be rethought at the architecture level — with a focus on how programming, simulation and verification are connected, not just how individual tools perform.

07 • INDUSTRY CHALLENGES

Time-to-part defines manufacturing software performance

In modern manufacturing, one metric defines software efficiency: **time-to-part** — not feature count.

DEFINITION

Time-to-Part

Time from CAD geometry to the first verified good part.

WHY IT MATTERS

Directly impacts:

- Production responsiveness
- Machine utilization
- Return on capital investment

WHERE TIME IS LOST · TYPICAL WORKFLOW

01	02	03	04	05	06
Geometry	Setup preparation	Toolpath calculation	Simulation	NC output	Machine
	bottleneck	bottleneck	bottleneck		

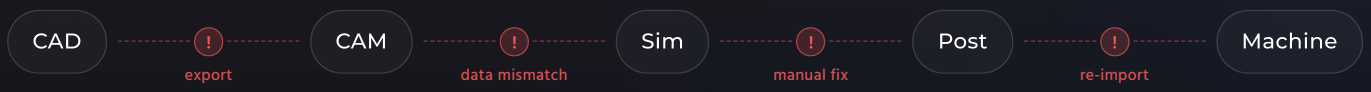
Programming + simulation are the main bottleneck.

The bottleneck is not ~~machining~~. It is programming and verification.

The constraint is structural

Most manufacturing workflows are built from multiple independent systems. At each stage, data is transferred, reinterpreted, manually adjusted — creating structural breakpoints.

LEGACY WORKFLOW — HANDOFFS



Between stages: export, re-import, data mismatch and manual correction.

CORE ISSUE 01

Geometry-first toolpath calculation

Toolpaths are generated from geometry first. Machine behavior is applied later.

But real production depends on:

- Kinematics
- Axis limits
- Controller logic
- Fixturing

When these constraints are introduced late, issues appear late — **often at the machine**.

CORE ISSUE 02

Simulation mismatch

Simulation and machine behavior are not fully aligned.

As a result:

- Additional verification is required
- Trial runs increase
- Correction cycles repeat

This **increases time-to-part** and reduces predictability.

TOP LAYER

Geometry-based toolpaths

MISMATCH

BOTTOM LAYER

Real machine behavior

Small gaps compound into production delay

The compounding effect: programming friction at one stage propagates through the entire process — extending cycles, eroding utilization and delaying ROI.

WHAT THIS LEADS TO

Longer programming cycles Recalculations across disconnected tools.	→	More engineering hours per part
Repeated verification loops Simulation requires additional manual verification.	→	Reduced confidence in first-run output
Increased production risk Unexpected machine behavior.	→	Trial runs and correction cycles
Underutilized machines Equipment waits for programming.	→	Capacity not converted into output
Delayed ROI Utilization defines return — not machine cost.	→	Slower payback on capital investment

KEY INSIGHT

The bottleneck is not ~~machining~~. It is the system around it.

FRAGMENTED TOOLS	UNIFIED PLATFORM
~~Multiple handoffs~~	Continuous workflow
~~Geometry-first~~	Machine-aware from start
~~Simulation separate~~	Simulation aligned with machine behavior
~~Manual NC adjustments~~	Minimal manual correction
~~Growing integration overhead~~	Single process logic

The challenge is architectural. Modern production requires machine-aware computation, consistent simulation and connected processes — and the software must be designed around machines, not software history.

08 • WHY ENCY

Not another evolution of CAM

Most manufacturing software evolved incrementally — through features, modules and extensions — but the underlying architecture stayed the same. ENCY does not extend that model. It **replaces** it.

TRADITIONAL	ENCY
Assembled from components	Built as one architecture from the ground up

CORE ARCHITECTURAL PRINCIPLES

01

Simulation aligned with machine behavior

Simulation and machine behavior use the same computational foundation. Results are verified against real machine behavior — not adjusted after the fact.

02

Machine-aware toolpath calculation

Toolpaths are calculated in the context of machine kinematics, limits and tooling — not adapted later through postprocessing.

03

One data model

Geometry, toolpaths and simulation operate on a shared representation. No exports. No reinterpretation. No data loss between stages.

04

One environment, not a toolchain

Programming, simulation and verification run within a single environment. No fragmentation across separate tools.

One core. One logic. One workflow.

ENCY integrates geometry, toolpath generation, simulation, and NC output within a single computational core — no separate modules, no translation layers between stages.

MACHINE-AWARE BY DESIGN

Toolpaths are calculated with machine context from the start:

Kinematics · Axis limits · Tooling · Constraints

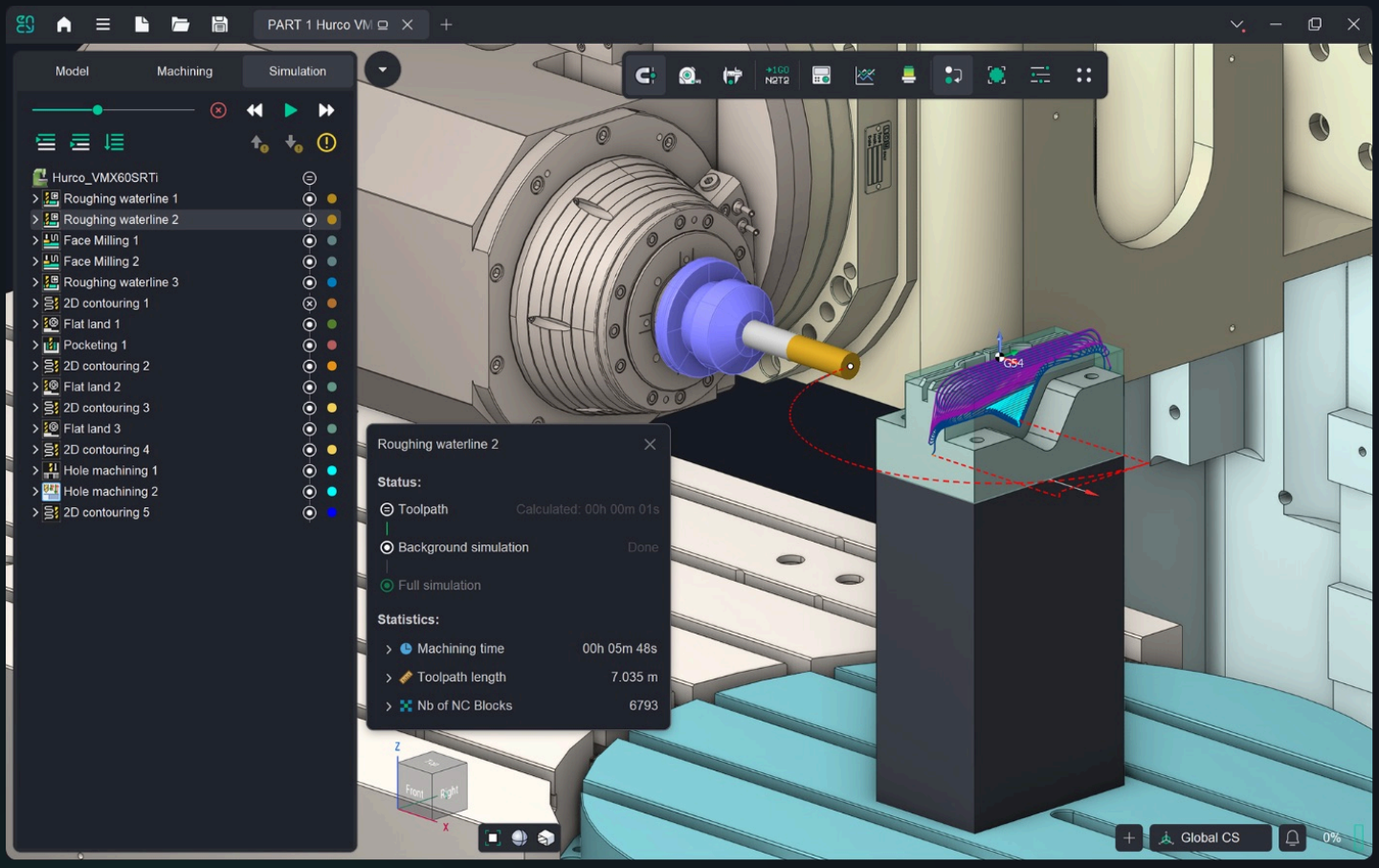
Machine behavior is part of the computation — not applied later.

UNIFIED SIMULATION

Simulation uses the same model as toolpath generation. It reflects:

Machine kinematics · Limits and collisions · Actual motion behavior

Simulation acts as verification of execution — not a separate step.



IN PRACTICE

- Reduced post-process adjustments
- Fewer simulation–machine discrepancies
- Less manual correction between stages

KEY IDEA

Not connected. Not synchronized. Native.

The system is unified at the computational level — not integrated through external layers.

From fragmented to predictable

Two production models — same machines, different software logic.

TRADITIONAL APPROACH

- Data exported between systems
- Multiple verification steps
- Corrections at the machine

Result: iterative and unpredictable process

CAD › CAM › Simulation › Postprocessing › Machine

ENCY APPROACH

- One connected environment
- Shared data model across all stages
- Verification during programming and simulation

Result: consistent and predictable output

Geometry → Toolpaths → Simulation → NC output → Machine

~~Before · 4–5 disconnected steps~~ → After · 1 connected process

Not workflow optimization. A different production model.

The next sections show how this architecture translates into platform capabilities and measurable production performance.

09 • ENCY VS TRADITIONAL

Architectural difference

Most manufacturing software platforms were not designed as unified architectures. They evolved through external kernels, acquired modules and add-ons — each component solves a task, but introduces an **architectural boundary**.

WHERE ARCHITECTURAL FRAGMENTATION COMES FROM

01

No machine-aware context in core calculation

Toolpaths are generated from abstract geometry and adapted to machine kinematics later. Machine-specific adjustments accumulate after calculation.

02

Simulation not aligned with machine behavior

Simulation models expected behavior — not always identical to machine behavior. Differences require additional verification and correction.

03

Fragmented workflows

Each stage runs in a separate system: CAD → CAM → Simulation → Postprocessing. Data must be transferred, converted and re-verified.

04

Parallel CNC and robotic machining workflows

CNC and robotic machining use different tools, data models and simulations. Hybrid production requires parallel processes.

KEY INSIGHT

Fragmentation is not accidental. It is a **consequence of how these architectures were built**.

EIGHT SYSTEM-LEVEL DIFFERENCES BETWEEN ENCY AND TRADITIONAL PLATFORMS

DIMENSION	ENCY	TRADITIONAL	PRODUCTION IMPACT
Architecture	Unified architecture	~~Assembled modules~~	Lower architectural complexity
External CAD dependency	Works without an external CAD stack	~~Requires external CAD stack~~	Greater flexibility
Machine awareness	Built into toolpath calculation	~~Applied after calculation~~	Fewer corrections
Simulation	Aligned with machine behavior	~~Separate module~~	Reduced verification effort
Robotic machining	Same environment as CNC machining	~~Separate tools~~	Enables hybrid CNC and robotic machining workflows
Data model	Single unified model	~~Multiple formats~~	Less data loss
Workflow	Continuous	~~Fragmented~~	Faster cycles
AI integration	Embedded in the process	~~Isolated features~~	Better production planning

Note: feature scope may vary depending on configuration and version.

Capability overview — observed production impact

ENCY architecture is designed to improve the CAD-to-part workflow. The figures below reflect selected internal benchmarks and customer deployment observations; actual results depend on workflow scope, machine configuration and implementation model.

up to 40–60% reduction*
Programming time in selected workflows

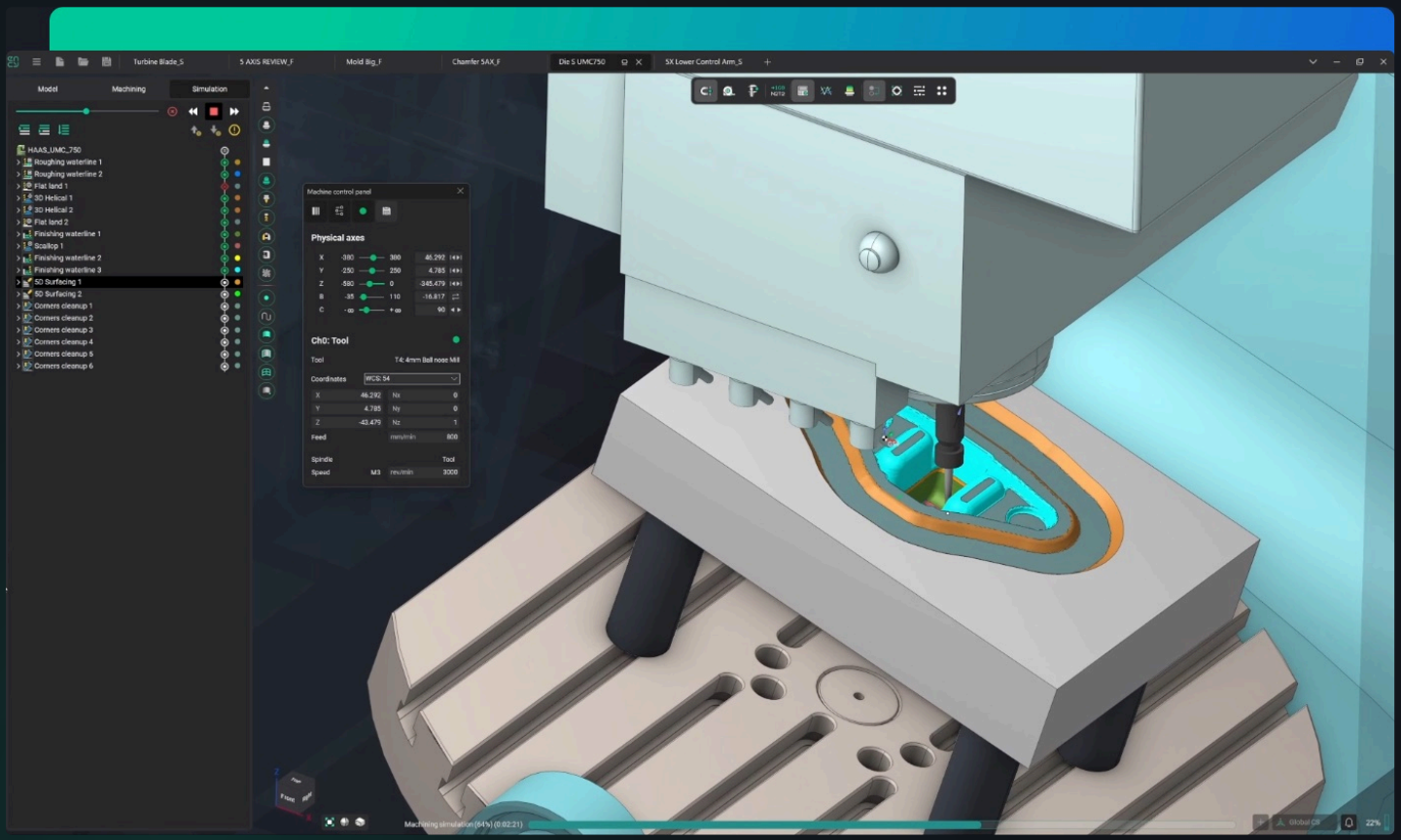
up to 60% reduction*
Robotic commissioning time in selected workflows

up to ±0.006 mm*
Observed simulation deviation

ROI timeline varies*
Depends on workflow scope and utilization

WHAT DRIVES THESE RESULTS

Machine-aware toolpath calculation	→ Fewer late corrections	Integrated simulation	→ More predictable verification before production
One connected environment	→ Faster path from programming to production use	Connected process	→ Less late-stage manual adjustment



*Figures are based on selected internal benchmarks and customer deployment observations. Results vary by part complexity, machine configuration, controller, tooling, baseline workflow, operator experience and implementation scope. ROI timelines depend on license scope, machine utilization and production volume.

10 • PLATFORM FOUNDATION

One coherent architecture — built on ENCY X

ENCY X is the platform foundation behind ENCY's machine-aware architecture. It connects CAD/CAM, robot programming, NC-code verification, cloud collaboration and AI-assisted workflows through one shared data model and computational logic.

FIVE LAYERS · ONE ENCY X FOUNDATION

05	AI-Assisted Manufacturing	Process planning · parameter support · NC code explainability
04	Open Architecture	APIs · integrations · extensibility without workflow fragmentation
03	Machine Digital Twin	Single machine definition reused across programming, simulation and verification
02	Integrated Simulation Core	One engine for CNC and robotic machining · continuous verification
01	Machine-Aware Calculation Core	Toolpaths calculated with real machine context from the start

WHAT THIS ENABLES

- No data reinterpretation between stages
- Consistent behavior across programming, simulation, NC-code verification and postprocessing
- Less duplicated logic across products and workflows

ARCHITECTURE PRINCIPLE

ENCY X platform foundation

- Proprietary geometry kernel
- Integrated simulation
- No dependency on external geometry kernels

LAYER 01

Machine-aware calculation core

ENCY starts with the machine. Toolpaths are calculated in a machine-aware context — with the machine's digital twin, kinematics, axis limits and constraints considered from the start.

TRADITIONAL APPROACH

- ~~Geometry-first toolpath~~
- ~~Simulation added as a separate step~~
- ~~Machine adaptation pushed to postprocessing~~
- ~~Issues found late in the workflow~~

ENCY APPROACH

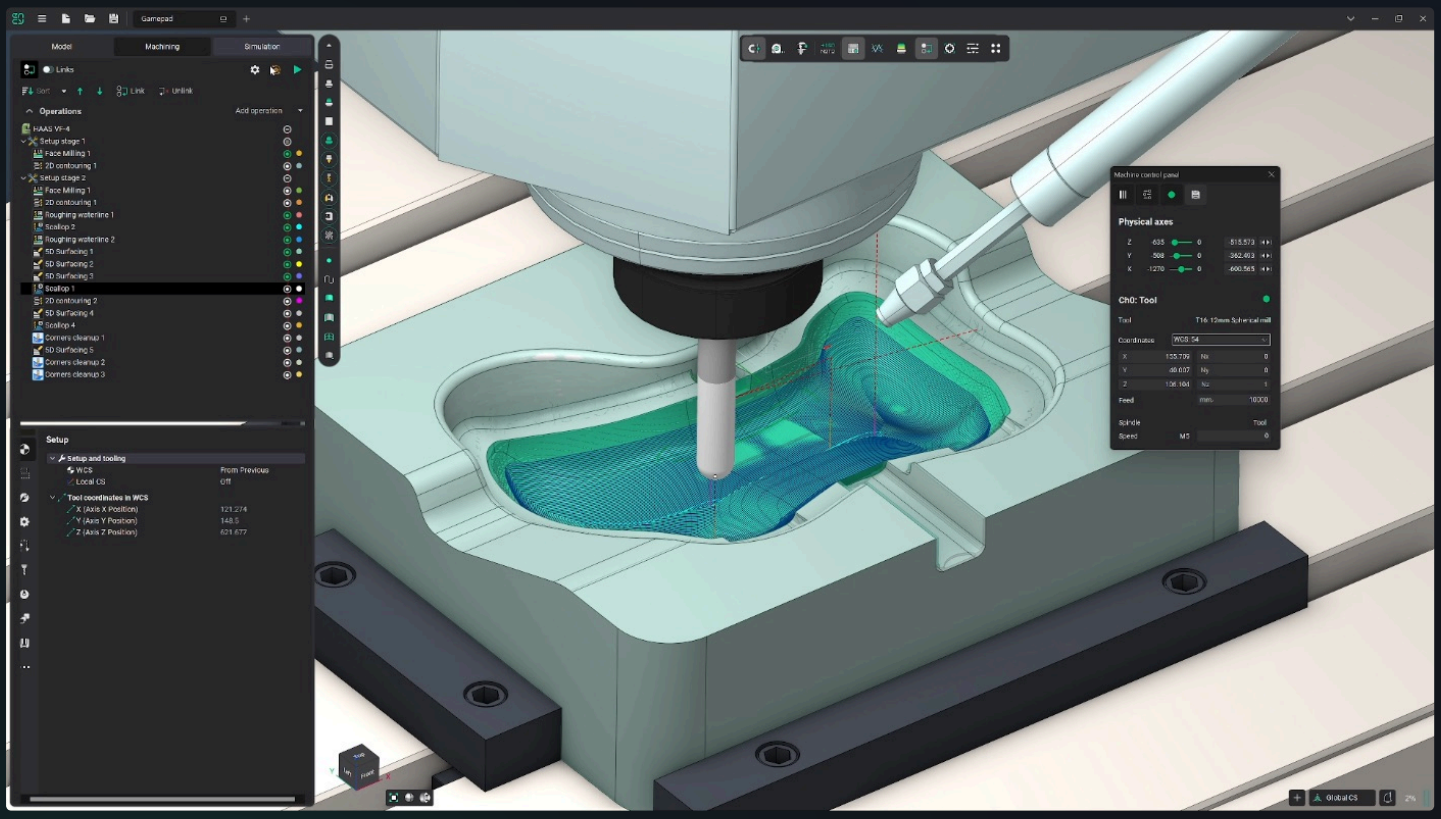
- Machine digital twin included from the start
- Toolpaths calculated in a machine-aware context
- Simulation and verification built into programming

WHY THIS MATTERS

- Helps reduce postprocessing adjustments
- Supports fewer setup iterations
- Brings issue detection earlier in the workflow

PRODUCTION IMPACT

- Faster setup preparation
- Fewer late corrections at the machine
- A clearer path to the first good part



LAYERS 02 + 03

Simulation and Digital Twin

In ENCY, simulation is integrated into the same computational core as toolpath calculation — one engine, one digital twin and continuous verification.

02

Unified simulation core

Everything runs in one environment:

Toolpaths · Machines · Fixtures · Stock

One engine · one digital twin · continuous verification.

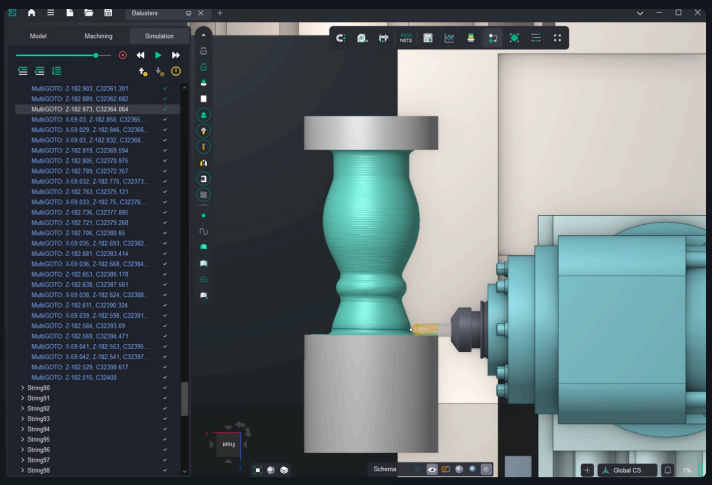
03

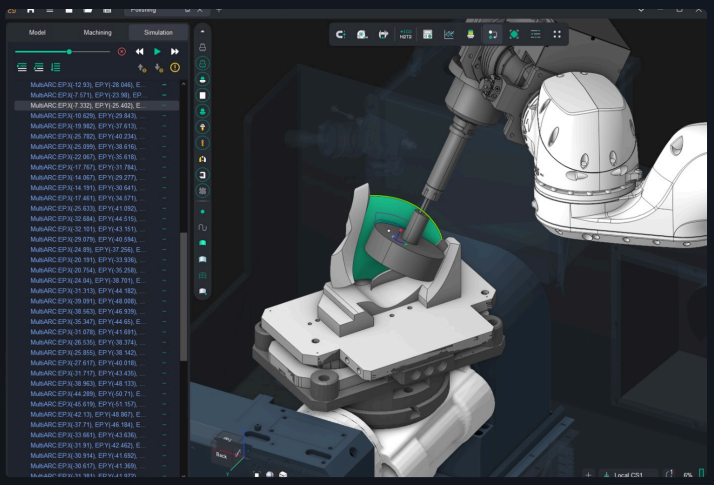
Machine digital twin

Machine definition includes:

Kinematics · Tooling · Fixtures

Defined once → reused across CNC, robotic machining and simulation.





WHAT THIS CHANGES

- Reduced discrepancy between simulation and machine behavior
- Continuous verification during programming

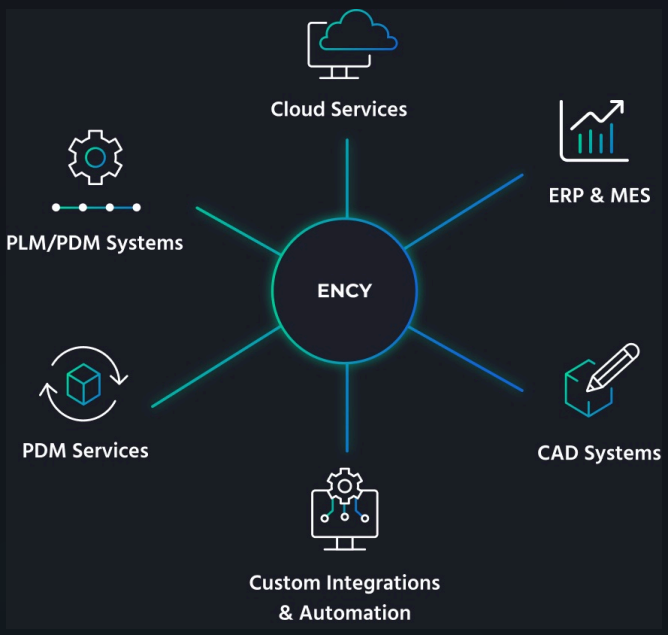
PRODUCTION IMPACT

- Fewer dry-runs
- Reduced downtime
- Improved predictability

LAYER 04

Open architecture

Open without fragmentation. ENCY provides APIs and integrations while keeping a unified core. External systems connect to the platform — they do not fragment it.



ENCY CONNECTS TO

CAD / PDM
Design data · part geometry

MES / shop floor
Production routing · shop-floor data

ERP / PLM
Enterprise systems · BOM

Cloud synchronization
Multi-site · ENCY Clouds

Robot controllers
KUKA · ABB · FANUC · Yaskawa

Machines / tooling
800+ postprocessors · CMM

WHAT THIS ENABLES

- Compatibility with existing systems
- Flexible integration without redesign
- Consistent processes across the stack

PRODUCTION IMPACT

- Easier deployment
- No need to rebuild processes
- Scalable across production environments

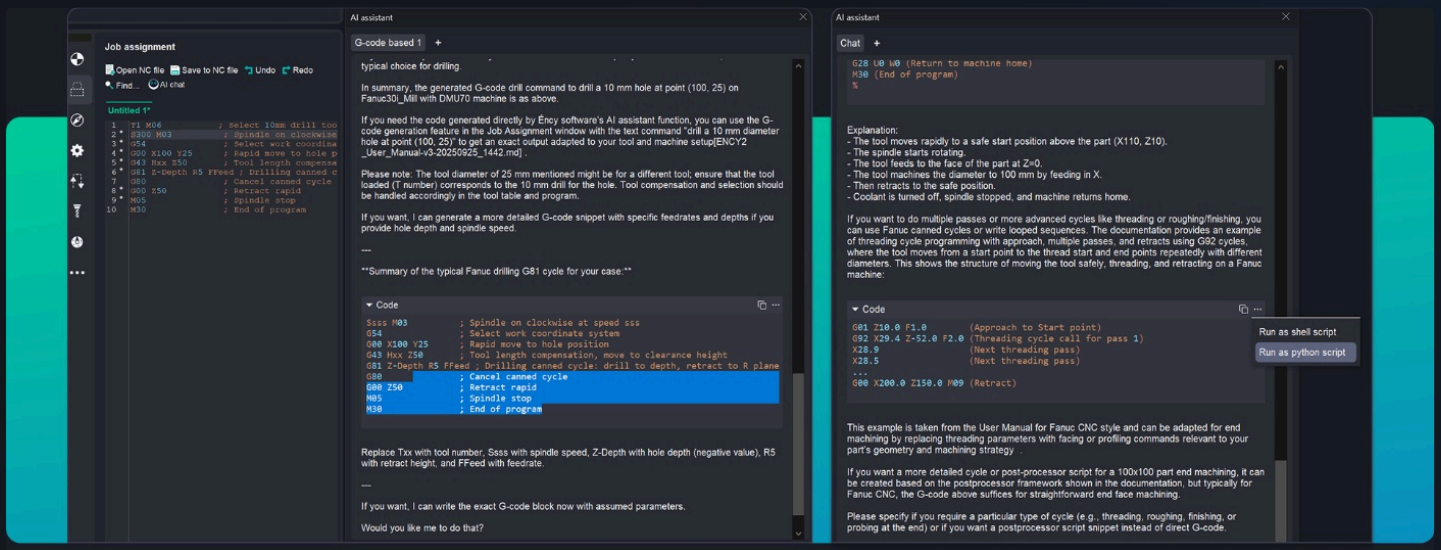
PRINCIPLE

Integrations extend the platform. They do not define it.

LAYER 05

AI-assisted manufacturing

AI in ENCY operates within the CAD/CAM environment — not as a separate tool. It supports process planning, parameter suggestions and NC code explainability.



01
Machine core
Kinematics · constraints · capabilities

→

02
Simulation
Live verification · digital twin · motion check

→

03
AI-assisted suggestions
Strategies · parameters · NC code explainability

MATURITY

NOW
AI-assisted programming → suggestions, not automatic decisions

NEXT
Predictive and adaptive manufacturing workflows

FOUNDATION REQUIREMENT

Machine-aware computation.

AI suggestions are grounded in the same digital twin and kinematic context used for toolpath calculation — not a separate model.

PRODUCTION IMPACT

- Faster programming
- More consistent decisions
- Reduced dependency on individual expert knowledge

PRINCIPLE

AI assists. Engineering decides.

11 • POWERED BY ENCY

How ENCY works as one

All ENCY products are built on one computational core and **one shared data model** — multiple products, one architecture.

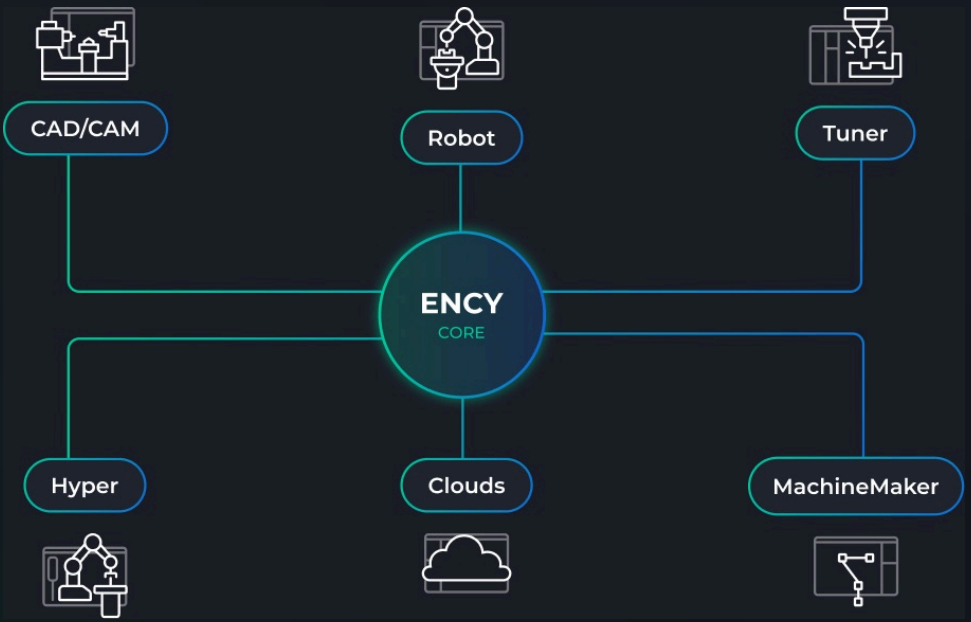
WHAT THIS MEANS

- Toolpaths, simulation, and machine behavior remain consistent
- Programming moves between CNC and robotic machining without reconfiguration
- Data does not need repeated export or conversion

WHAT THIS ENABLES

- Continuous processes across products
- Reduced data loss between stages
- Consistent process logic across the platform

ONE CORE · SIX PRODUCTS



KEY IDEA

Multiple products. One system.

Core products — where programming becomes production

Two core products support the main production workflow. Both run on the same computational core.

01

ENCY

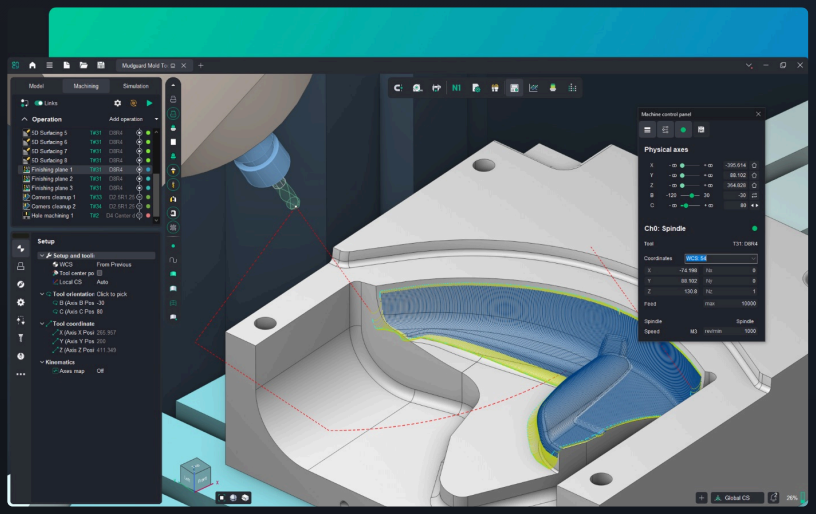
Foundation for CNC programming.

CAPABILITY

- Geometry definition
- Machine-aware toolpaths
- Integrated simulation

IN PRACTICE

- Faster programming of complex parts
- Fewer setup iterations
- Reduced postprocessing adjustments



02

ENCY Robot

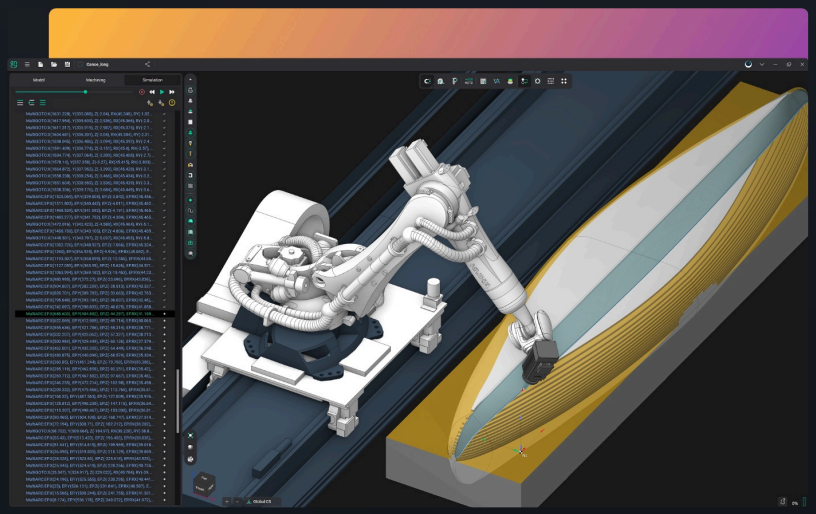
Same core. Applied to robotic machining.

CAPABILITY

- Identical programming logic
- Shared simulation model
- Shared data environment

IN PRACTICE

- Unified CNC and robot programming workflows
- Faster robotic cell deployment
- No separate robot programming system required



KEY IDEA

One logic across CNC machines and robots.

Platform products — extending the core

Additional products extend the same computational core — without creating separate workflows.

CONFIGURATION

ENCY Tuner

Machine and process configuration.

- Machine setup and calibration
- Cutting parameter control

IMPACT

Faster machine tuning · improved process stability

STRATEGIES

ENCY Hyper

Advanced machining strategies.

- Optimized toolpaths for efficiency
- Improved cutting conditions

IMPACT

Shorter cycle times · better tool utilization

CONNECTIVITY

ENCY Clouds

Data and workflow synchronization.

- Multi-site synchronization
- Shared libraries and programs

IMPACT

Improved collaboration · scalable deployment

TWIN · POST

MachineMaker

Digital twin and postprocessor creation.

- Machine configuration
- Postprocessor generation

IMPACT

Faster machine onboarding · reduced external dependency

FLOW ACROSS PRODUCTS · ONE DATA PATH



12 • ENCY CAPABILITIES

One platform. Every capability.

ENCY integrates core manufacturing capabilities within one CAD/CAM environment — from geometry to production.

CORE CAPABILITIES

01
Machine-aware toolpath calculation
Toolpaths are calculated in real machine coordinates from the start — fewer postprocessing adjustments, better predictability.

02
Unified simulation
One computational foundation for toolpaths and simulation — minimal discrepancy with machine behavior, less rework.

03
CNC programming
Multi-axis and multi-channel machining — faster programming of complex parts, consistent results across machines.

04
Robot programming (OLP)
Offline programming for industrial robots within the same environment — unified programming logic with CNC.

05
Digital twin
Machines are defined once and reused across programming, simulation and verification — consistent representation, faster onboarding.

06
AI-assisted process planning
AI supports planning and parameter selection within the CAD/CAM environment — fewer manual decisions, more consistency.

07
Advanced machining strategies
High-performance toolpath strategies — shorter cycle time, improved tool utilization.

PLATFORM CAPABILITIES

08
Cloud and data connectivity
Hybrid infrastructure for data synchronization and production collaboration — connecting teams and production environments at scale.

09
Open platform and APIs
Integration with ERP, MES and PLM systems — flexible deployment without disrupting core processes.

KEY IDEA

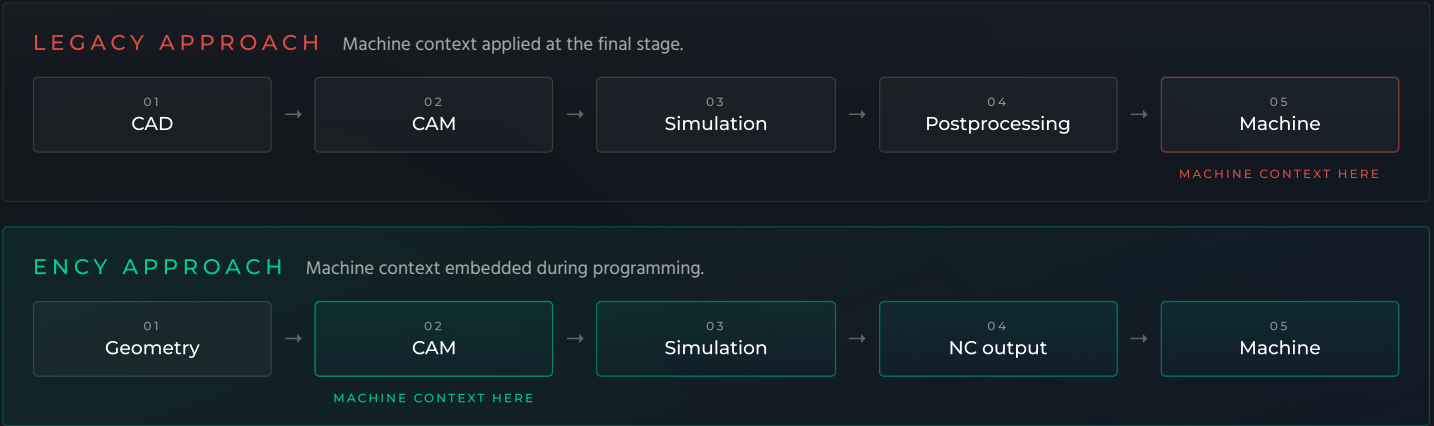
All capabilities operate within one environment · one data model · one workflow.

The following sections detail each capability area — including workflows, performance metrics and product-level implementation.

13 • WORKFLOW

Unified workflow. Five stages. One data model.

In traditional workflows, machine context is introduced late — typically during postprocessing. In ENCY, machine context is embedded earlier — from the moment toolpaths are calculated.



KEY DIFFERENCE

LEGACY machine defined at final stage

ENCY machine context defined during programming

This shifts verification upstream — where changes are faster and less costly.

KEY IDEA

One data model across all stages. No repeated handoffs between systems.

Stage by stage — what happens at each step

A part remains within one CAD/CAM environment — context is preserved at every stage.

01
Geometry

- STEP, IGES, STL and native CAD imports
- Solids, surfaces and meshes in one environment

RESULT

No external CAD dependency · no repeated imports

02
Toolpath calculation

MACHINE CONTEXT HERE

- Toolpaths are calculated in machine-aware context
- Kinematics · axis limits · tooling · controller logic

KEY POINT

Machine context is part of the calculation — not applied afterward

03
Simulation

- Same model as toolpath calculation
- Collision · material removal · kinematic checks

RESULT

Reduced discrepancy between simulation and machine behavior

04
NC output

- Controller-specific NC programs
- Based on machine-aware toolpaths

RESULT

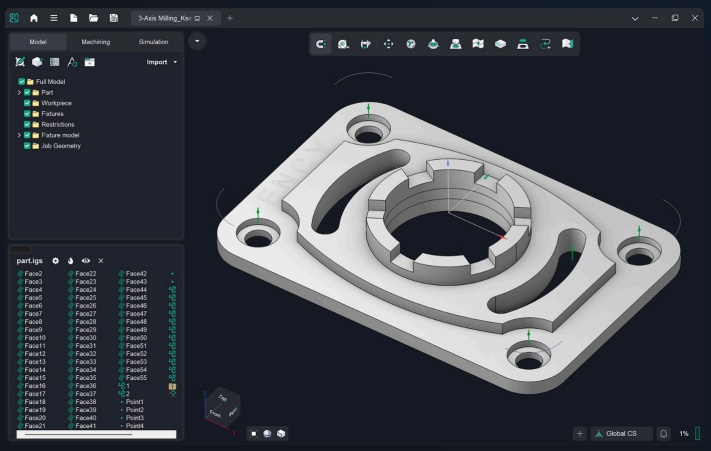
Output aligned with machine configuration

05
Production

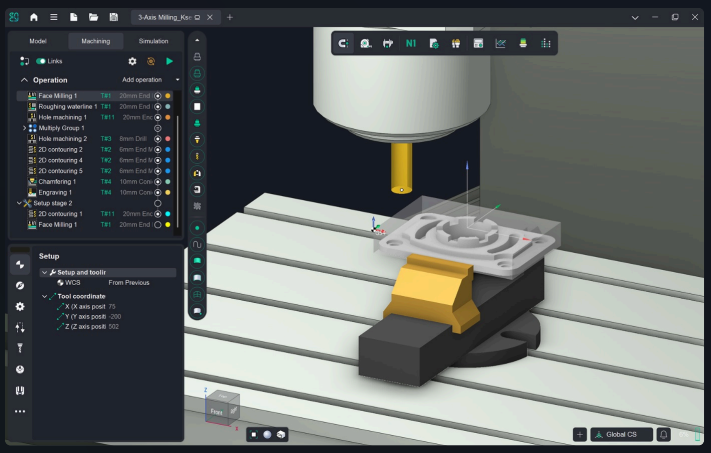
- CNC machines and robots
- Same programming logic and simulation foundation

RESULT

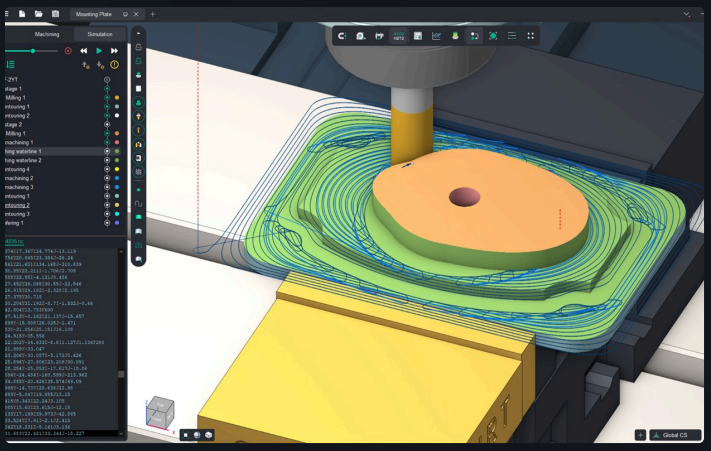
Consistent behavior across CNC and robotic machining



Stage 01 · Geometry view



Stage 02 · Toolpath calculation



Stage 03 · Simulation

KEY INSIGHT

Traditionally, a part passes through multiple systems. In ENCY, it remains within one CAD/CAM environment.

Where problems originate — visualized

Most shop-floor corrections are not caused by toolpaths themselves — they come from when machine context is introduced.

LEGACY APPROACH

- Machine added at final stage
- Toolpaths adapted after postprocessing
- Simulation uses separate model
- Issues detected at the machine

ENCY APPROACH

- Machine context included during programming
- Toolpaths calculated in machine coordinates
- Simulation aligned with machine behavior
- Issues detected upstream

LEGACY WORKFLOW	ENCY WORKFLOW
Machine context introduced late	Machine context introduced during programming
Geometry-first	Machine-aware
Separate simulation	Integrated simulation
Multiple tools	One CAD/CAM environment

IMPACT METRICS

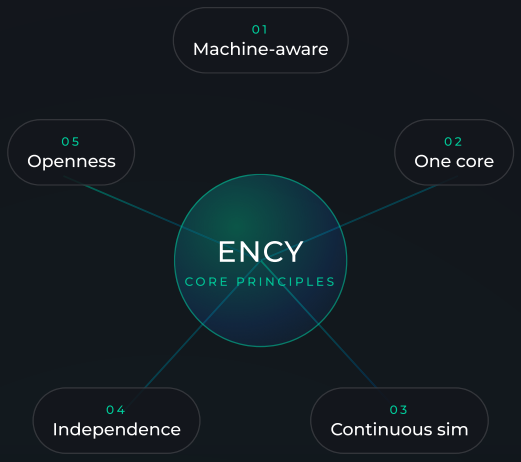
- ↓ time-to-first-good-part
- ↑ verification cycle speed
- ↑ output predictability

*Exact values depend on machine configuration and process complexity.

14 • KEY DIFFERENTIATORS

Defined by principles.
Not by features.

ENCY is defined not by a set of features, but by **architectural principles** — they shape how the platform behaves across programming, simulation and production, for different equipment and production environments.



01 **Machine-aware from the start**
Machine context is considered during toolpath calculation, not after.

02 **One core for all products**
CNC machining and robotic machining operate on a single computational core.

03 **Simulation as part of the process**
Simulation is integrated into programming, not performed as a separate step.

04 **Independence**
Fully in-house architecture.

05 **Openness**
API-based integrations without fragmenting the platform.

FOUNDATION

These are not added features. They are the **foundation** of the platform.

PRINCIPLE 01

Machine-aware from the start

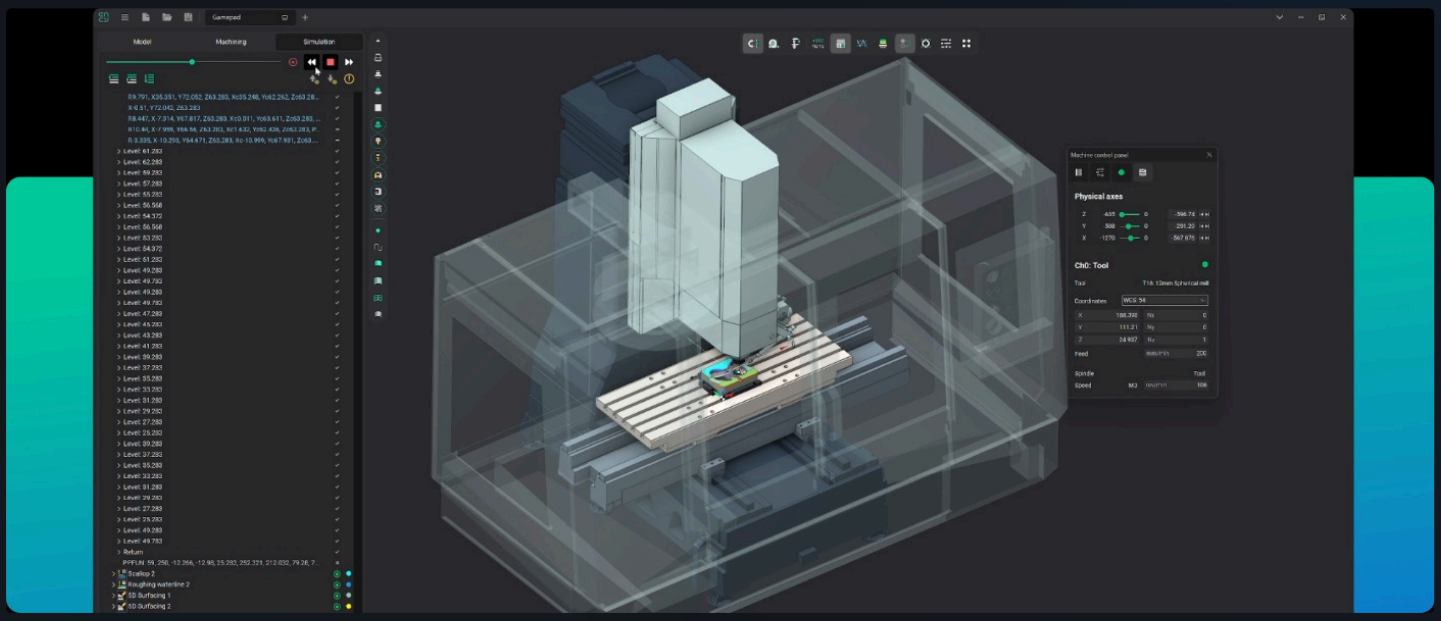
In traditional systems, machine context is added after the toolpath is calculated. In ENCY, it is considered during toolpath calculation.

WHAT THIS CHANGES

- Machine constraints are considered from the beginning
- Issues are identified earlier in the process
- Fewer iterations and rework cycles

PRODUCTION IMPACT

- Fewer adjustments after postprocessing
- Faster setup and onboarding
- More predictable results



KEY IDEA

Issues are easier to fix during programming than at the machine.

PRINCIPLE 02

One core for CNC and robotic machining

ENCY uses a unified computational core for geometry, kinematics, simulation and the machine digital twin.

APPLICATION A

CNC

- Multi-axis machining
- Constraint verification
- Controller-specific NC output

ENCY

UNIFIED CORE

geometry · kinematics
simulation · digital twin

APPLICATION B

Robotic machining

- Same kinematic models
- Same simulation logic
- Unified offline programming

WHAT THIS ENABLES

A unified workflow for CNC and robotic machining	Consistent toolpath calculation logic	Changes propagate across programming, simulation and NC output

STRATEGIC IMPACT

ENCY scales across CNC and robotic machining without increasing architectural complexity.

PRINCIPLE 03

Simulation as part of the process

Simulation is integrated into programming — not performed as a final step.

TRADITIONAL APPROACH

Create → Verify → Issues found late

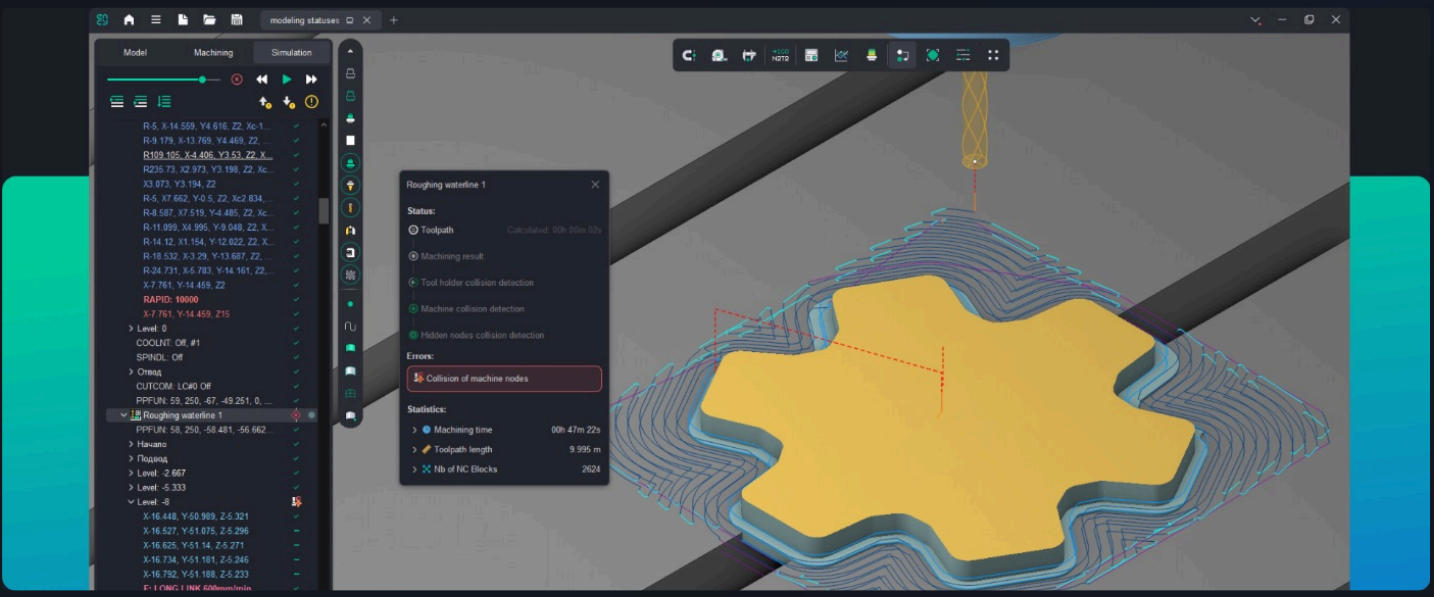
Toolpaths are created, then verified — issues are identified late.

ENCY APPROACH

Programming ↔ Simulation

Simulation runs during programming. Issues are detected earlier.

- Fewer iterations
- Faster programming cycle
- More predictable results



IMPORTANT CLARIFICATION

Simulation closely reflects machine behavior, but still requires engineering verification.

Independence — and openness

PRINCIPLE 04

Independence

ENCY is developed entirely in-house.

WHAT THIS MEANS

- Proprietary geometry kernel
- Proprietary simulation engine
- Unified architecture

WHAT THIS ENABLES

- No third-party dependency
- Full control over development
- Evolution without constraints

STRATEGIC IMPACT

The architecture evolves consistently — without accumulating technical debt.

PRINCIPLE 05

Openness

ENCY connects to external systems via APIs.

INTEGRATIONS

- Extend the platform
- Do not fragment the core

SUPPORTED SYSTEMS

- ERP
- MES
- PLM

PRODUCTION IMPACT

Flexible integration · scalability without changing the core architecture.

KEY IDEA

Open — but still one platform.

15 • CORE TECHNOLOGIES

Four technologies. One architecture.

ENCY is built on four core technologies operating within **one architecture** — not as separate modules.

01 LAYER

Geometry kernel

PROPRIETARY GEOMETRY FOUNDATION

The internal geometry engine defines and processes models within the ENCY environment.

WHY IT MATTERS

- Independence from external CAD kernels
- Consistent geometry across all stages

PRODUCTION IMPACT

- Stable geometry handling
- Reduced data transfer errors

02 LAYER

Toolpath calculation engine

MACHINE-AWARE COMPUTATION

Toolpaths are calculated with machine kinematics and constraints included from the start.

WHAT'S DIFFERENT

- Machine context applied during toolpath calculation
- No late-stage adaptation required

PRODUCTION IMPACT

- Fewer corrections
- Faster setup

03 LAYER

Simulation and machine digital twin engine

CONTINUOUS VERIFICATION

Simulation operates on the same computational logic as toolpath calculation.

WHAT THIS ENABLES

- Consistent behavior between simulation and machine behavior
- Verification during programming, not after

PRODUCTION IMPACT

- Fewer iteration cycles
- Reduced machine downtime

04 LAYER

Machine digital twin framework

REUSABLE MACHINE DEFINITION

Machines, kinematics and constraints are defined once and reused across programming, simulation and verification.

WHY IT MATTERS

- Unified approach for CNC and robotic machining
- Consistent machine representation

PRODUCTION IMPACT

- Faster machine onboarding
- Predictable behavior across machines and setups

Core computational technologies developed in-house

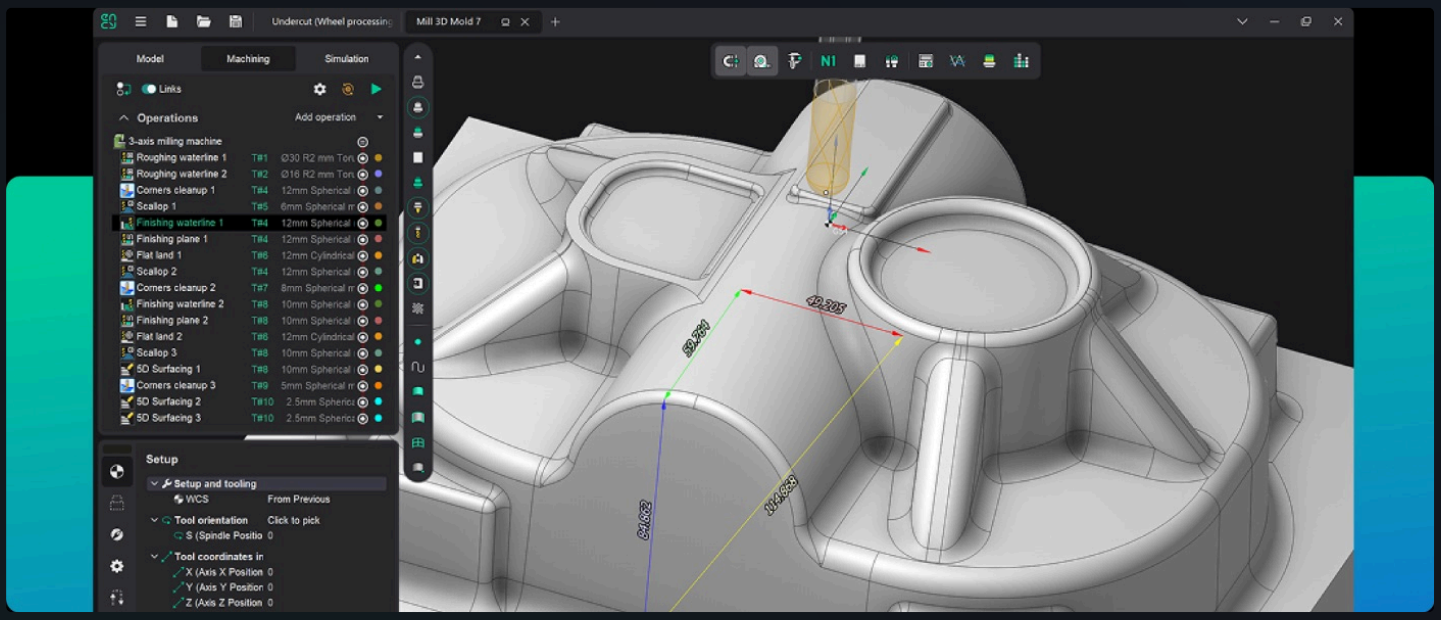
ENCY is built around core computational technologies developed in-house, including geometry processing and integrated simulation logic.

DOES NOT DEPEND ON

- Reduced dependency on external computational components
- Third-party simulation engines
- Fragmented technology stacks

WHAT THIS PROVIDES

- Full control over product behavior
- Consistent architectural evolution
- New capabilities without architectural limits



KEY IDEA

Not a collection of integrated technologies. One architecture — designed and built as one.

16 • PERFORMANCE & ROI

Impact across production. Driven by architecture.

The same architecture that defines how ENCY works can create **measurable impact** across programming, simulation and production — depending on workflow scope, machine configuration and implementation model.

01

40–60% reduction observed*

PROGRAMMING TIME IN SELECTED WORKFLOWS

Less rework and fewer late manual corrections across programming, simulation and postprocessing.

02

up to **60%** reduction observed*

ROBOTIC COMMISSIONING TIME IN SELECTED WORKFLOWS

Unified CNC and robot programming in one machine-aware environment.

03

Fewer setup iterations and dry-runs*

VERIFICATION CYCLES

Machine-aware simulation can reduce late verification at the machine.

04

up to **±0.006** mm observed*

OBSERVED SIMULATION DEVIATION

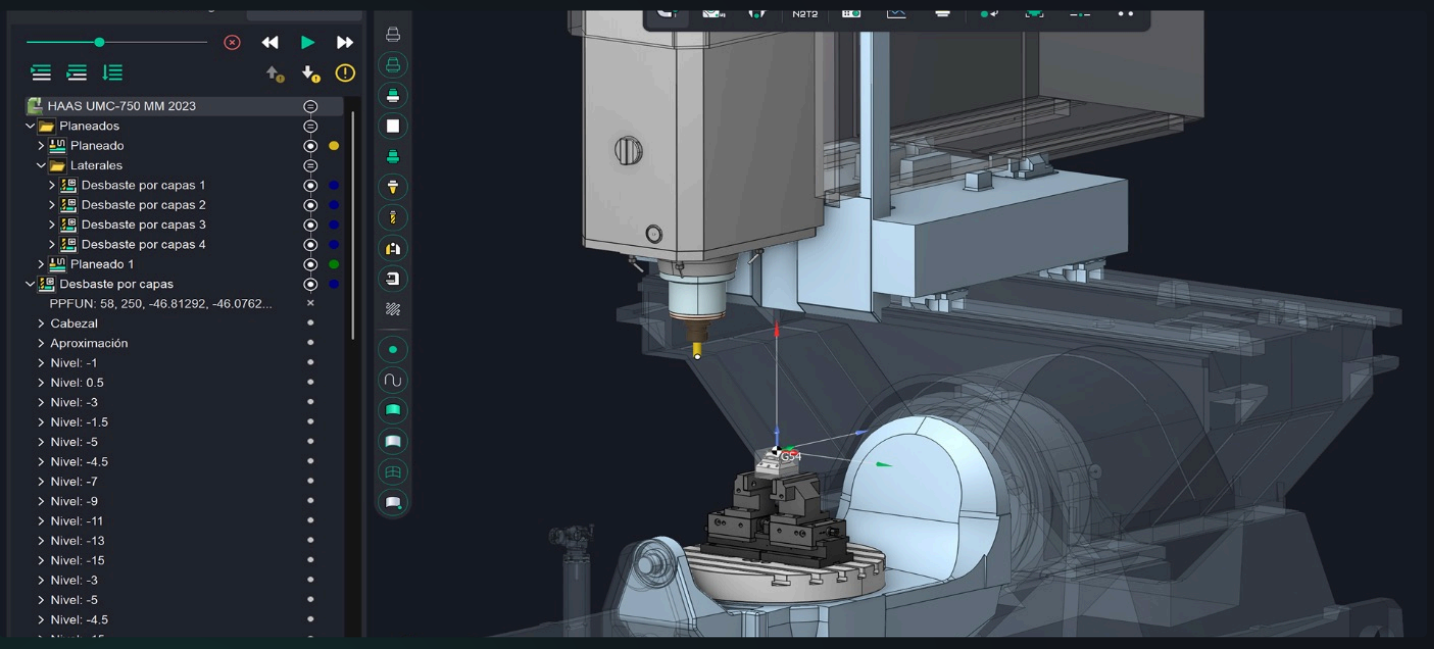
Observed under defined internal benchmark conditions using shared computational logic for toolpath calculation and verification.

05

ROI timeline varies*

DEPENDS ON WORKFLOW SCOPE

ROI depends on license scope, machine utilization, production volume and implementation model.



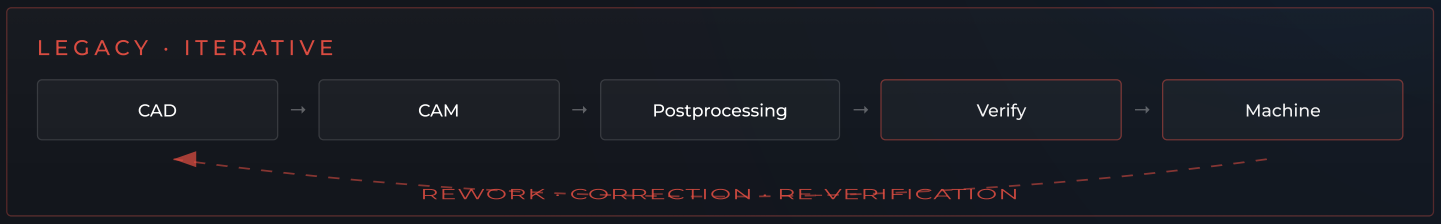
* Figures are based on selected internal benchmarks and customer deployment observations. Results vary by part complexity, machine configuration, controller, tooling, baseline workflow, operator experience and implementation scope. ROI timelines depend on license scope, machine utilization and production volume.

WHY THE METRICS HOLD

Gains come from **machine-aware toolpath calculation**, integrated simulation and one connected data model — not from optimizing isolated steps.

Faster programming — fewer verification cycles

Less fragmentation. **Faster programming.**





WHAT CHANGES

- No postprocessing adjustment loops
- Fewer repeated verification cycles
- No data re-import between stages

PRODUCTION IMPACT

- Faster part programming
- Reduced engineering effort
- Shorter lead times

40–60%

REDUCTION IN PROGRAMMING TIME

From geometry to verified NC output — in complex multi-axis operations.

WHY IT WORKS

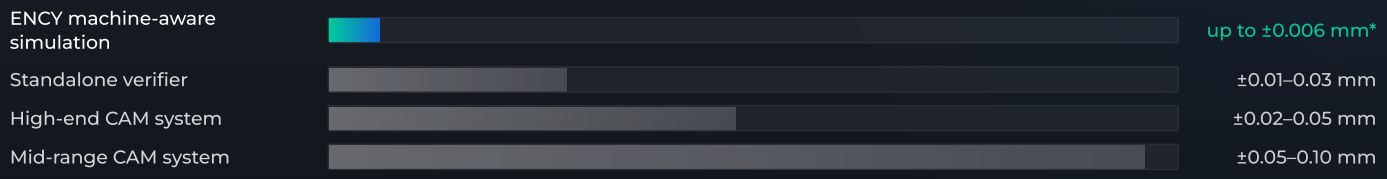
Toolpaths are calculated with machine-aware context included — reducing downstream correction and iteration.

From approximation to predictability

Shared computational logic brings simulation closer to the real machine context — making verification more predictable before the first run.

OBSERVED SIMULATION DEVIATION · MACHINE BEHAVIOR

↓ smaller = more accurate



*Observed in internal benchmark conditions. Actual deviation depends on machine model, controller, kinematic setup, calibration quality and machining context. Comparative ranges are illustrative and should be validated for each production environment.

WHAT CHANGES

- Less reliance on late-stage dry runs
- Fewer late corrections at the machine
- More confidence before NC output reaches the machine

PRODUCTION IMPACT

- Reduced risk of machine downtime
- More predictable machine utilization
- A clearer path to the first good part

The hidden cost of fragmented workflows

In fragmented environments, inefficiencies accumulate across programming, simulation and production. The cost is not only operational — it is built into the workflow architecture.

WHERE TIME IS LOST

01
Rework between stages
Each handoff can introduce errors, rework and re-verification.

02
Manual corrections
Postprocessing and data re-import can add recurring effort.

03
Repeated setup cycles
Machine parameters may need to be re-verified across disconnected contexts.

04
Machine idle time
Late dry runs and verification can delay production.

ENCY APPROACH

- One connected data model
- Integrated machine simulation and verification
- One continuous CAD-to-part workflow

WHAT CHANGES

- Fewer handoffs and less rework
- Consistent machine context across programming, simulation and verification
- Less dependency on late verification at the machine

PRODUCTION IMPACT

- Reduced risk of idle time
- Fewer late iteration cycles
- More predictable path to production

ROI period depends on workflow scope, machine utilization and implementation model.*

Path to measurable impact — from deployment to production

When programming, simulation and production run in one connected workflow, value can become visible from the first stages of deployment.

EARLY DEPLOYMENT

Initial workflow impact

- Reduced programming effort in selected workflows
- Faster onboarding for connected CAD/CAM workflows
- First measurable workflow improvements

WORKFLOW STABILIZATION

More predictable production flow

- Fewer late interruptions at the machine
- Fewer repeated setup iterations
- More consistent throughput potential

SCALING IMPACT

ROI potential

- ROI timeline depends on workflow scope and machine utilization
- More stable and scalable production processes
- Cumulative efficiency gains across the workflow

KEY IDEA

ENCY does not optimize isolated steps. It connects the CAD-to-part workflow — so improvements can compound across programming, simulation and production.

17 • VALUE DRIVERS

From software expense to production workflow advantage

Manufacturing software is not just a tool cost — it shapes how efficiently programming, simulation and production work together. ENCY turns CAD/CAM into a connected production workflow. The value is not only in features — it is in the architecture behind them.

01
Lower workflow friction

Fewer repeated programming iterations, less late-stage rework and fewer setup cycles across programming, simulation and production.

02
More predictable machine utilization

A more stable CAD-to-part workflow can support better machine utilization without adding equipment or engineering headcount.

03
Reduced production risk

More consistent machine context, less data loss between stages and more standardized processes across teams.

04
Scalable production

From single machines to production cells — CNC machining, robot programming and verification in one connected environment.

05
Future-ready operations

Less dependency on isolated expertise, with a workflow that can evolve as production requirements change.

06
Production-proven direction

Validated through customer workflows across different industries, applications and production environments.

FOUNDATION

Each value driver follows from architecture — from how ENCY connects programming, simulation, verification and production into one workflow.

Production efficiency. Architectural risk.

ENCY improves both by reducing fragmentation across the CAD-to-part workflow — not by optimizing isolated steps in isolation.

Reducing cost pressure through workflow efficiency

SOURCE OF COST	ENCY APPROACH	BUSINESS IMPACT
Programming iterations	Connected CAD-to-part workflow	Lower cost pressure per part
Machine idle time	Integrated machine simulation	More predictable machine utilization
Setup cycles	Machine-aware toolpaths	More consistent throughput potential
Tool wear	Optimized machining strategies	Reduced consumables pressure

RESULT

- Lower cost pressure per part
- More predictable machine utilization
- More consistent throughput potential

ROI timeline depends on workflow scope, machine utilization and implementation model.*

WHAT CHANGES

- Fewer repeated iteration cycles
- Less late-stage manual correction
- More consistent path to production results

Reducing risk at the architecture level

FRAGMENTED WORKFLOW

- Errors introduced between workflow boundaries
- Inconsistent simulation and machine context
- Format conversions across handoffs
- Variation across teams and sites

Risk accumulates downstream.

ENCY · ARCHITECTURE-LEVEL

- Consistent computational logic
- One connected data model
- Standardized workflows across teams

Risk is addressed earlier in the workflow.

BUSINESS IMPACT

- Fewer late-stage production errors
- Lower risk of scrap and rework
- More predictable delivery timelines

WHAT CHANGES

- Simulation and machine behavior are connected through shared computational logic
- One connected data model across stages
- Standardized workflows across teams and sites

KEY IDEA

Risk is not only managed downstream. It is addressed earlier — at the architecture level.

Enabling scalable, future-ready production

ENCY provides a foundation for scaling without increasing architectural complexity.

WHAT THIS ENABLES

Expansion across production scope

From single machines to full production cells — within the same platform.

WHAT THIS ENABLES

CNC and robotic machining in one environment

No separate programming tools required.

WHAT THIS ENABLES

Standardization across teams and sites

Shared machine definitions, tool libraries and processes.

BUSINESS IMPACT

Faster scaling

Adding machines or sites requires configuration — not platform replacement.

BUSINESS IMPACT

Reduced dependency on individuals

Knowledge embedded in processes and shared libraries.

BUSINESS IMPACT

Long-term flexibility

Independent architecture with open integration capabilities.

PLATFORM FOOTPRINT

30+
Years of engineering experience behind ENCY

WORLDWIDE
Global presence

400+
robot digital twins

800+
postprocessors

* Built on 30+ years of CAD/CAM development experience, ENCY brings this engineering foundation into a modern, machine-aware manufacturing platform.

From value drivers to real-world results

ENCY's value is reflected in production environments across industries and use cases.

01

Operating efficiency

Fewer iterations, reduced idle time, and fewer setup cycles.

02

Risk reduction

More consistent production results and reduced workflow fragmentation.

03

Scalability

From standalone machines to integrated production environments.

KEY IDEA

These outcomes are not feature-driven. They are the result of architecture.

18 • PRODUCT LINE

Each product has a role.
Together — they form a system.

ENCY is a platform where each product extends a continuous manufacturing workflow. They are not standalone tools — they operate on the same core architecture.

One core. Multiple products. One system.

Tier 01
Core products
Where production runs.

ENCY
Defines geometry, generates machine-aware toolpaths, and validates them through unified simulation. **Foundation of production workflows.**

ENCY Robot
Extends the same computational core to robotic manufacturing. **Enables unified CNC and robot workflows.**

Tier 02
Specialist products
Where performance is tuned.

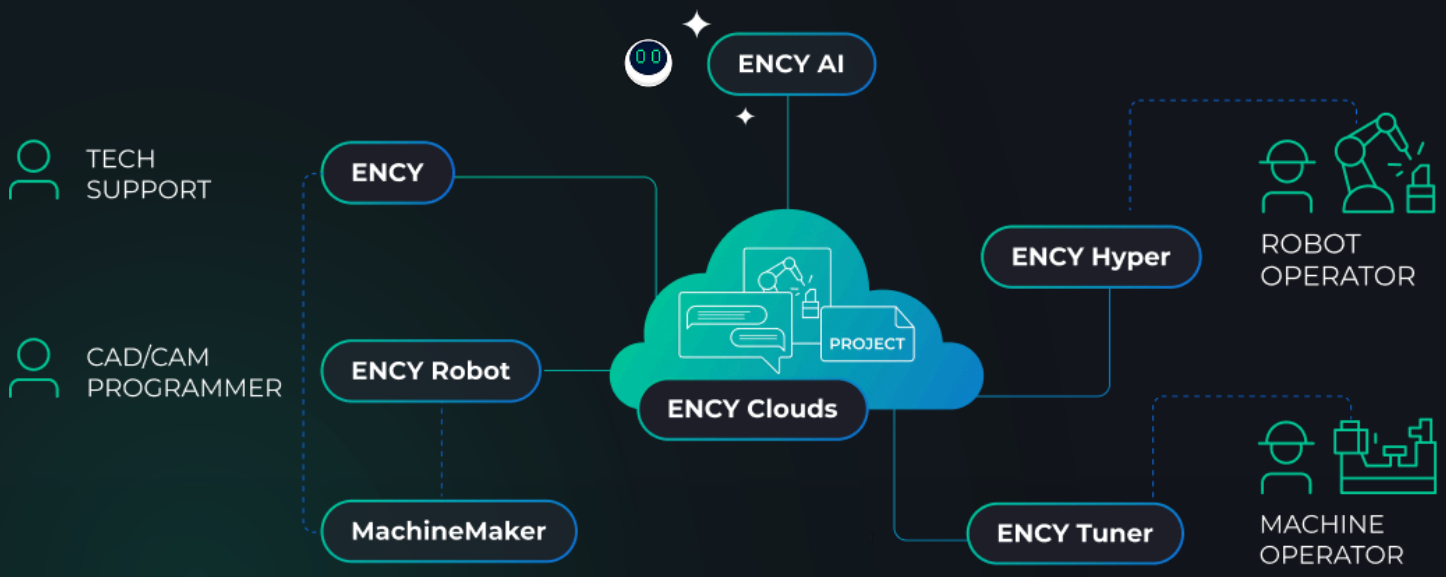
ENCY Tuner
Simulates, edits and fine-tunes NC code before it reaches the machine.

ENCY Hyper
Hybrid robot programming with real-time execution, CAM features and touch interface.

Tier 03
Infrastructure products
Where the system scales.

ENCY Clouds
Connects data, teams, and workflows across environments.

MachineMaker
Builds machine digital twins and post-processors.



Core products. Where programming becomes production.

Two core products support the main production workflow — **built on the same computational core**.

CORE · 01

ENCY

CAD/CAM FOR A NEW GENERATION

Delivering sophisticated CAM technology with an intuitive user interface and natural workflow.

IN PRACTICE

- Faster programming of complex parts
- Fewer setup iterations
- Reduced manual correction

CAPABILITIES

MACHINING	2.5D · 3D · 4-axis · 5-axis · Turning · Mill-turn
AWARENESS	Kinematics · axis limits · holder collision · reach
SIMULATION	Continuous verification · material tracking · gouge detection
CAD	STEP · IGES · native formats · feature recognition
AI	Strategy suggestions · parameter guidance · NC code explainability

40–60%	shorter	<12 mo
reduction in programming time	time-to-first-good-part	typical ROI

CORE · 02

ENCY Robot

A COMPLETE OFFLINE ROBOT PROGRAMMING SOLUTION

The ultimate toolpath calculation, kinematics management, and simulation software for robots.

WHAT THIS ENABLES

- Unified CNC and robot programming workflows
- Reduced commissioning time
- Consistent programming logic across machines

KEY DIFFERENCE

Traditional robot programming tools operate as separate systems. ENCY Robot shares the **same data model · same simulation logic · same programming environment**.

SUPPORTED APPLICATIONS

Robotic milling · trimming · polishing · drilling · welding · inspection

~60%	400+	1
reduction in commissioning time	robot models	environment · CNC and robot programming

Tuning, performance, connectivity, control

Specialist and infrastructure products extend the same core — without creating separate workflows.

Specialist products — optimizing performance

ENCY Tuner

SHOP-FLOOR NC-CODE SIMULATION SOFTWARE

WHAT IT DOES
- NC-code simulation and verification
- NC-code preview, editing and fine-tuning
- NC-code re-engineering for new machines or controllers

IMPACT
- Faster NC-code review before machine execution
- More controlled shop-floor verification

ENCY Hyper

HYBRID PROGRAMMING OF INDUSTRIAL ROBOTS

WHAT IT DOES
- Hybrid online and offline robot programming
- Real-time robot control and adjustment
- Digital-twin simulation for robot cells

IMPACT
- Faster robot commissioning workflow
- More flexible on-cell robot programming

Infrastructure — connecting the platform

ENCY Clouds

CLOUD-BASED DIGITAL WORKSPACE FOR CAD/CAM PROGRAMMERS AND MACHINE OPERATORS

WHAT IT ENABLES
- Multi-site synchronization
- Centralized data access
- Collaborative processes

PURPOSE

Connects teams, data and processes across locations.

MachineMaker

ZERO-CODE DIGITAL TWIN BUILDER

WHAT IT ENABLES
- Faster machine onboarding
- Reusable machine definitions
- Reduced dependency on external tooling

PURPOSE

Defines machines and generates postprocessors within the platform.

How products work together

All ENCY products operate on one shared data model and computational logic. Each product builds on the previous — without repeated data entry or format conversion.

01	02	03	04	05
MachineMaker	ENCY Tuner	ENCY	ENCY Robot	ENCY Clouds
Define machine digital twin	Simulate, edit and fine-tune NC code	Calculate and verify toolpaths	Program robot motion	Distribute across teams and sites
→ Machine configuration	→ Verified NC-code context	→ Verified NC output	→ Robot motion	→ Synchronized data

WHAT THIS ENABLES • Reduced data loss between products • Connected process • Consistent behavior across products

Step-by-step adoption

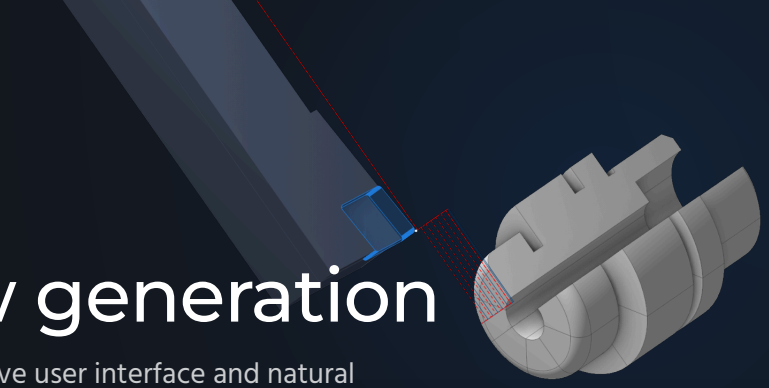
ENCY can be adopted progressively — each product adds capability, not fragmentation.

A	B	C
START	EXTEND	SCALE
CAD/CAM	Robotic machining	Full production environments

KEY IDEA

The platform expands without increasing complexity.

19 • ENCY



CAD/CAM for a new generation

Delivering sophisticated CAM technology with an intuitive user interface and natural workflow.

01 CAPABILITY

Milling and multi-axis machining

From 3-axis machining to complex multi-axis and mill-turn operations

- Faster programming workflow for complex parts
- More consistent toolpath behavior across machine setups

02 CAPABILITY

Multi-technology machining

Turning, mill-turn, Swiss-type machining, Wire EDM and hybrid processes in one connected environment

- Less dependency on separate systems for multi-technology workflows
- One connected workflow across CNC technologies

03 CAPABILITY

Unified simulation

Simulation built on the same computational logic as toolpath calculation

- More consistent alignment between simulation and machine behavior
- Less reliance on late-stage dry runs

04 CAPABILITY

AI-assisted programming

AI supports parameter selection and process planning — while engineering stays in control

- Faster decision support during programming
- More consistent programming practices across teams

05 CAPABILITY

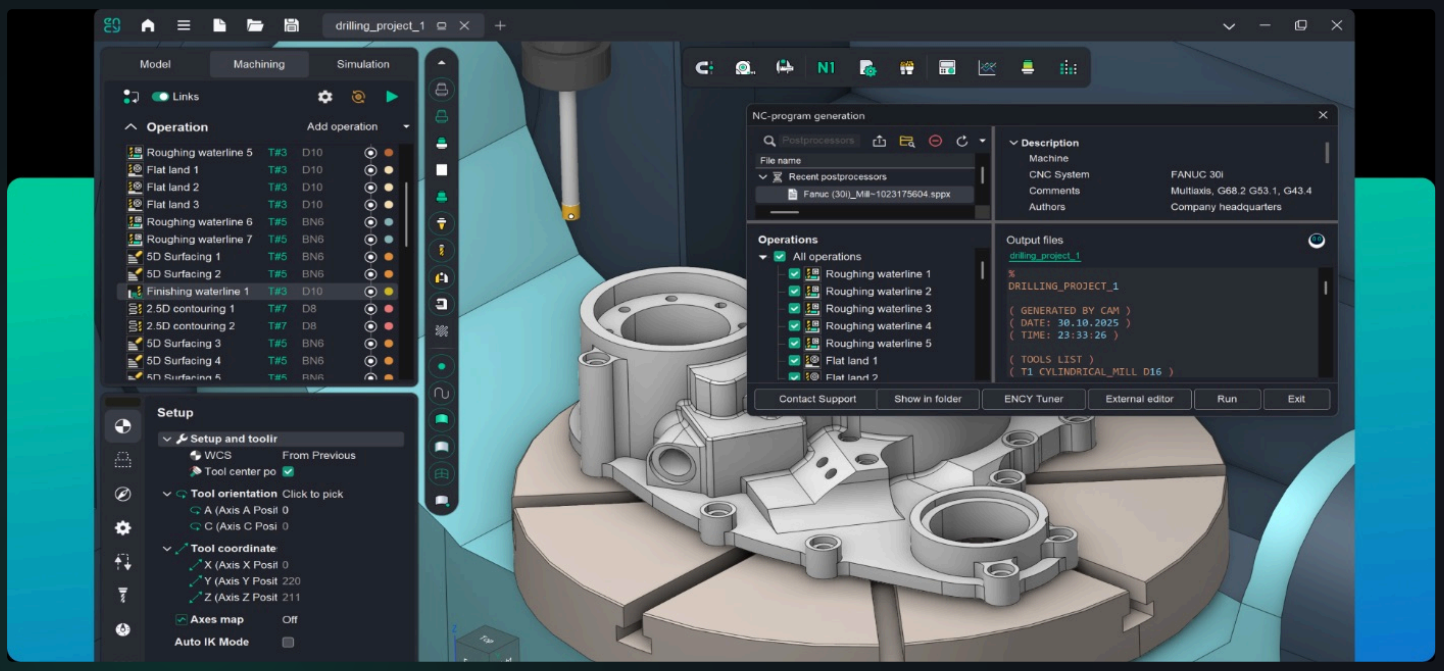
NC output and postprocessing

NC output generated from verified toolpaths with embedded machine context

- Less need for late manual correction
- More predictable machine execution

KEY IDEA

Same data model. Same computational logic. One connected CAD-to-part workflow.



Machine-aware from the start

CONVENTIONAL CAM

Abstract toolpaths → adapted later

WORKFLOW

- Geometry-first toolpaths
- Separate simulation
- Output requires adjustment
- Correction loops

RESULT

Machine behavior is verified

late

— when corrections are costly.

ENCY

Machine-aware calculation → verified output

WORKFLOW

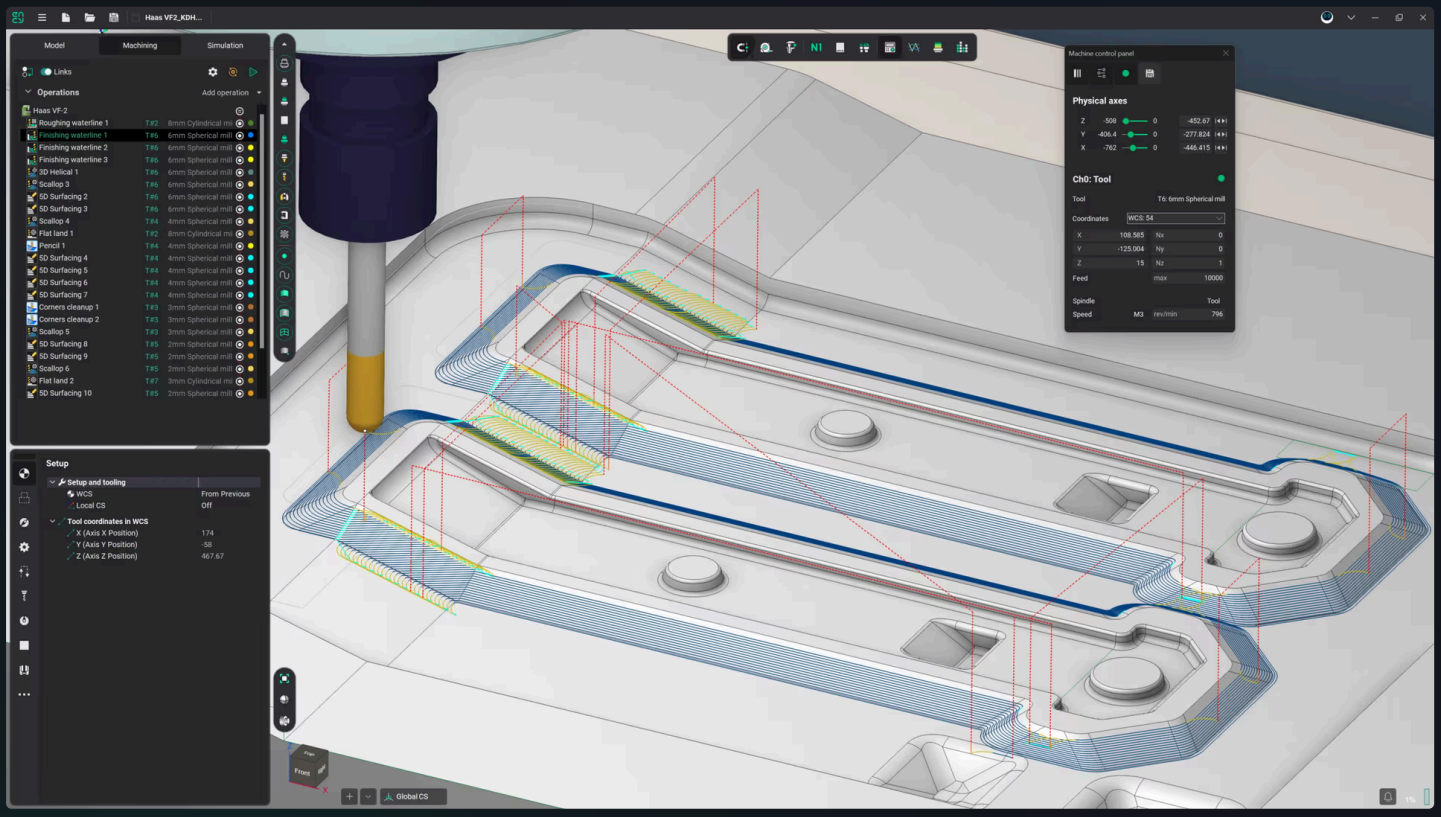
- Machine constraints included
- Shared simulation logic
- Verified NC output
- One continuous environment

RESULT

Machine behavior is accounted for

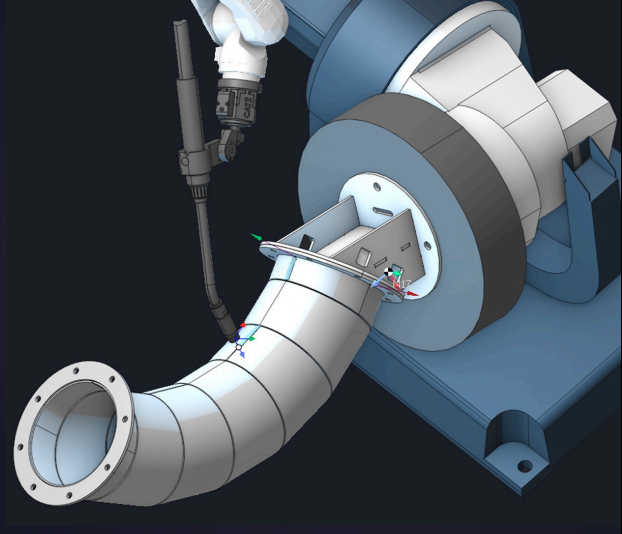
during programming

— reducing downstream correction and iteration.



EXTENDS TO ROBOTICS: same digital twin, simulation logic and workflow environment.

20 • ENCY ROBOT



A complete offline robot programming solution

The ultimate toolpath calculation, kinematics management, and simulation software for robots.

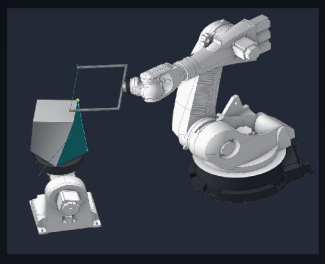
Across robot platforms and applications

SUPPORTED ROBOT BRANDS

KUKA · ABB · FANUC · Yaskawa · Stäubli · Universal Robots · Kawasaki · Mitsubishi · Nachi · + more

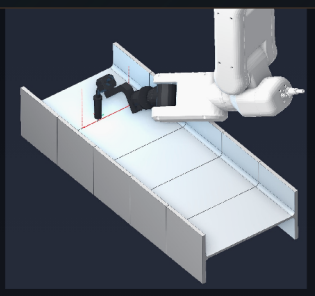
Different robots — . Robot-specific output is generated from the digital twin. Other brands supported on request.

Application coverage



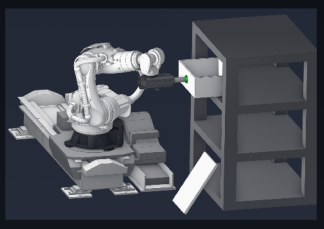
Machining and processing

Trimming · cutting · polishing · deburring · drilling



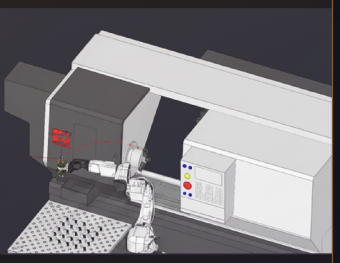
Welding and additive manufacturing

Arc welding · spot welding · directed energy deposition



Handling and inspection

Pick-and-place · fastening · measurement paths



Hybrid operations

Combined CNC and robot programming workflows in one environment

What makes it different

Same core. Extended to robot programming.

ENCY Robot is not a separate programming system. It uses the same:

- computational core
- simulation logic
- data model

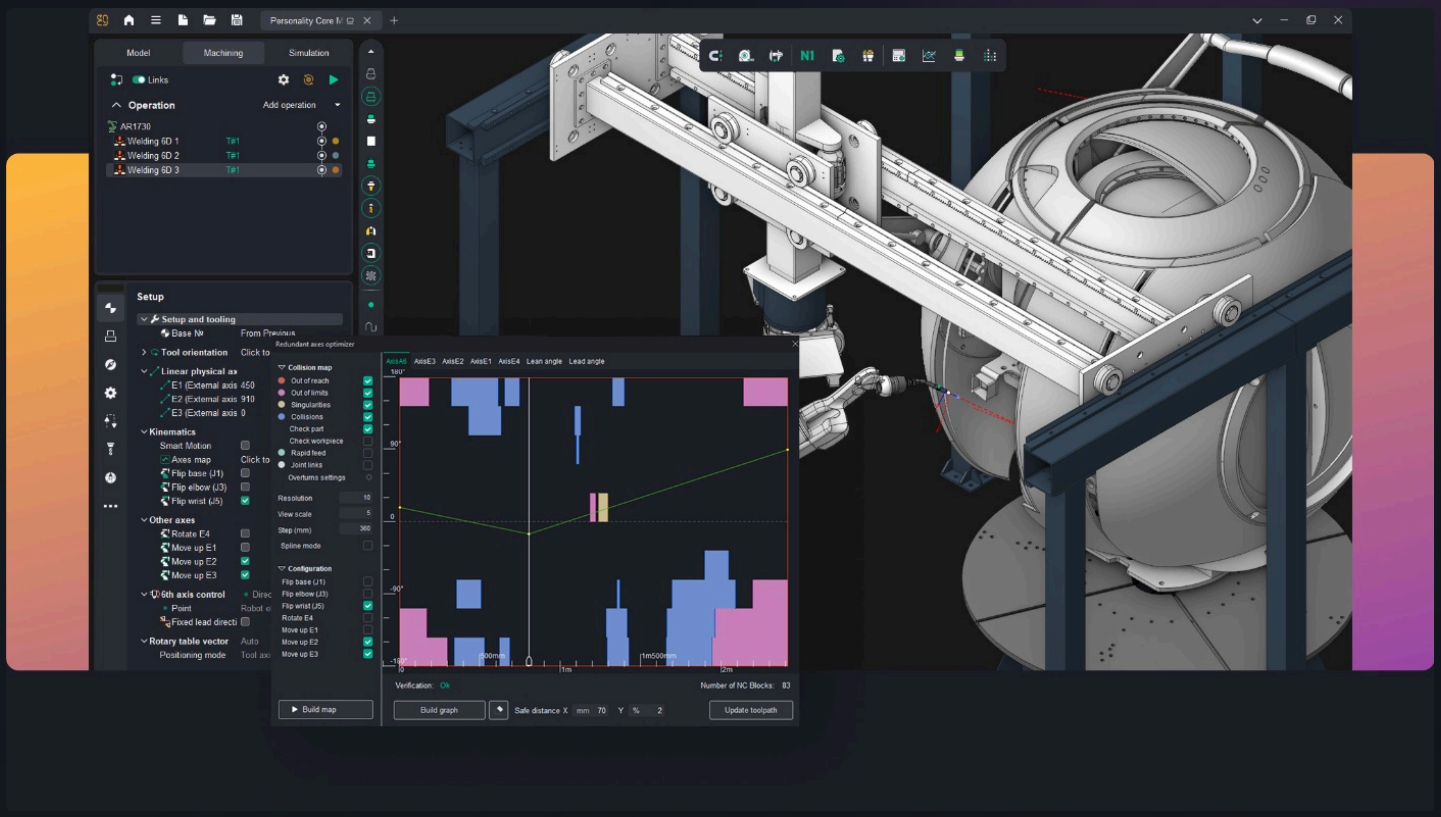
...as ENCY.

What this enables

- Unified CNC and robot programming workflows
- Consistent programming environment
- Reduced need for data transfer between programming systems

Built on the same core

ENCY Robot uses the same simulation engine, machine digital twin architecture and kinematic calculation — applied to robot programming.



- Offline programming (OLP)
- Machine-aware path calculation
- Reuse of machining strategies

- Full robot cell simulation
- Collision detection across robot, tooling and environment
- Digital twin-based verification

- Shared data model with CAD/CAM
- Unified CNC and robot programming workflow
- Minimized data transfer and re-verification

WHY THIS MATTERS

- No separate CNC and robot programming systems to maintain
- Reduced training overhead across teams
- Faster robotic cell deployment

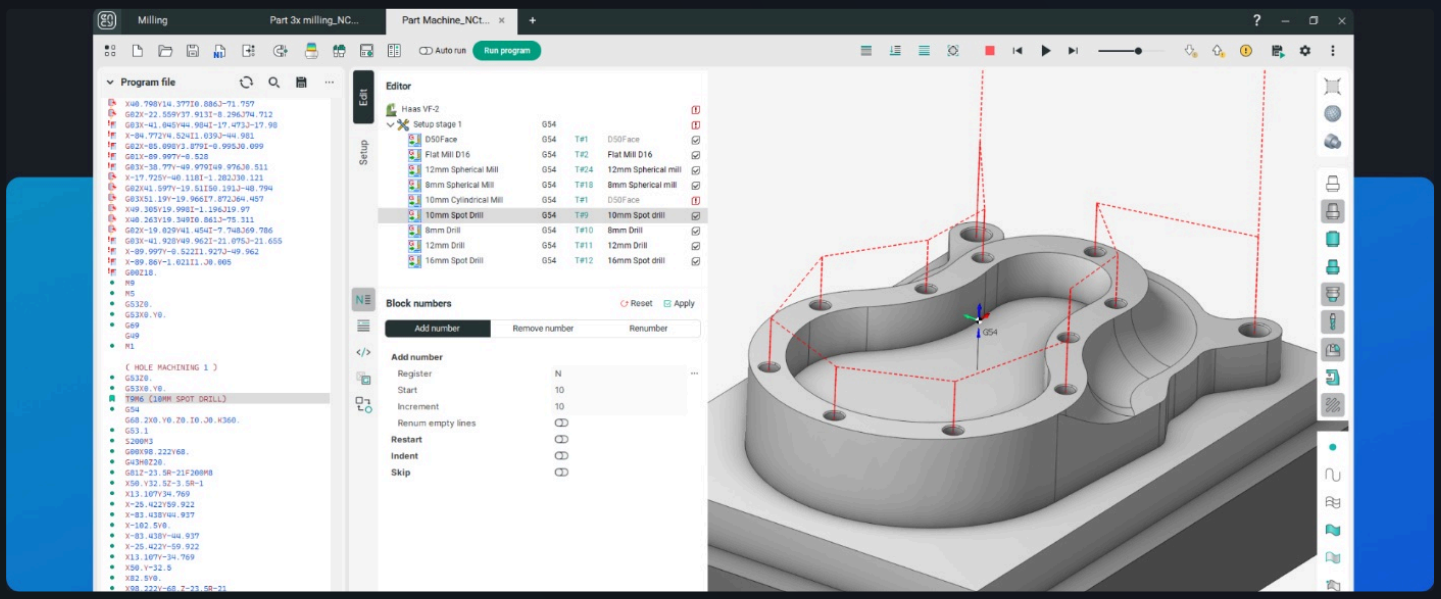
PLATFORM CONNECTION

ENCY Tuner defines and verifies the machine digital twin used across CNC machining and robot programming — configuration is performed once and reused across the platform.

21 • ENCY TUNER

Shop-floor

NC-code simulation, fine-tuning, and re-engineering for CNC machines and industrial robots.



Core capabilities

01

NC-code simulation

Preview and simulate G-code before running it on a CNC machine or industrial robot.

→ supports safer NC-code validation before machine execution

02

NC-code editing and fine-tuning

Edit, adjust and fine-tune NC-code commands directly in the shop-floor workflow.

→ helps adapt programs without restarting the full CAM workflow

03

NC-code re-engineering

Re-engineer proven or legacy G-code for updated machines, controllers or production requirements.

→ extends the usable life of existing NC programs

04

Machine-aware verification

Use machine setup, tools, fixtures and simulation context to check program behavior before production.

→ improves visibility before machine execution

How it works

01
Preview
NC-code file opened and reviewed before machine execution

→ rapid NC-code evaluation

→

02
Edit
Commands, numbering, parameters and toolpath sections adjusted where needed

→ fine-tuned NC-code

→

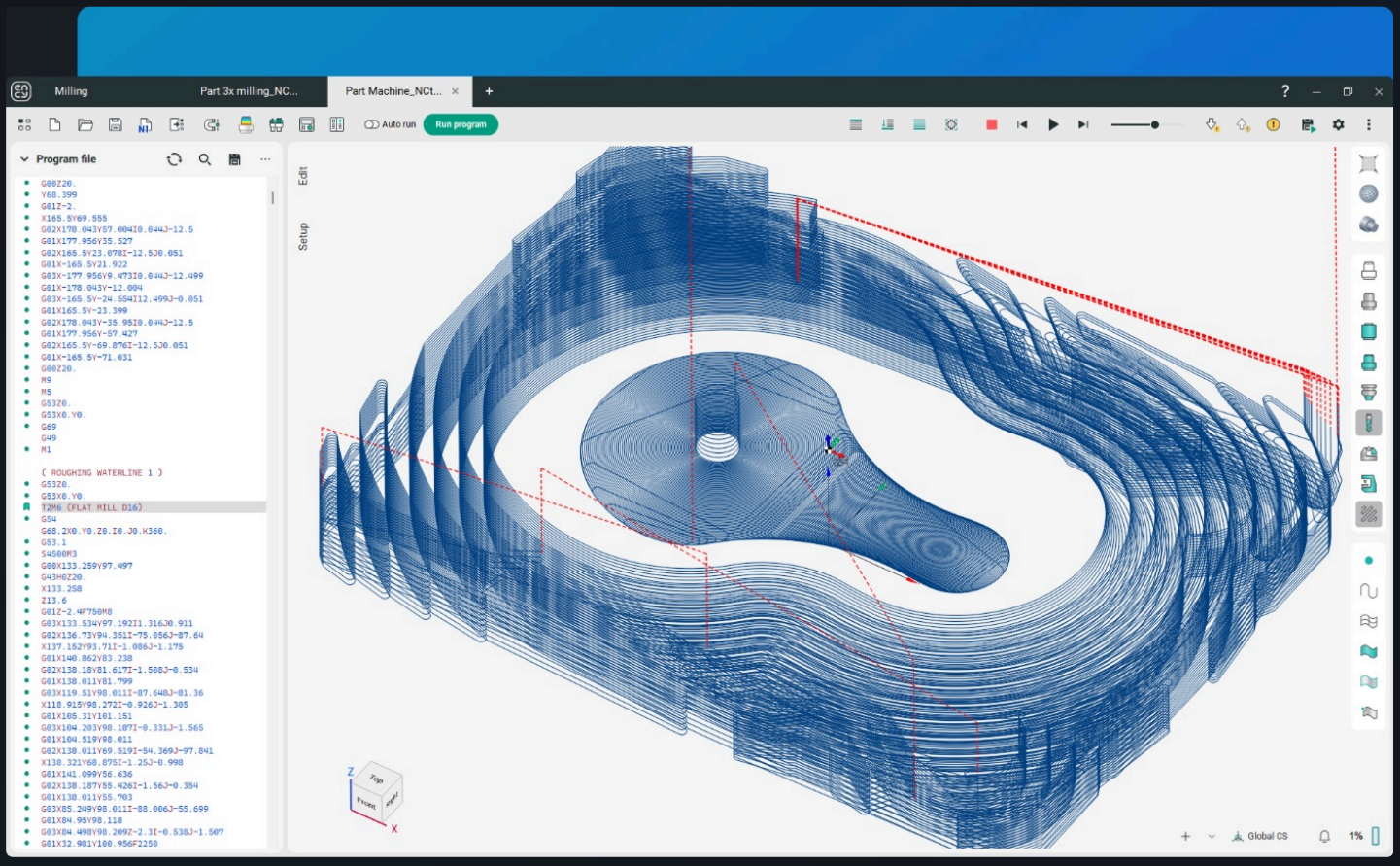
03
Simulate
Machine movements, material removal, collisions and machining result checked in simulation

→ verified program behavior

→

04
Re-engineer
Proven or legacy G-code adapted for new machines, controllers or production requirements

→ updated NC-code workflow



WHEN TO USE ENCY TUNER

- Verifying NC code before machine execution
- Fine-tuning shop-floor NC programs
- Re-engineering proven or legacy G-code
- Checking material removal, collisions and machining result

WHY THIS MATTERS

- More controlled NC-code verification
- Better visibility before production
- Less late trial-and-error at the machine

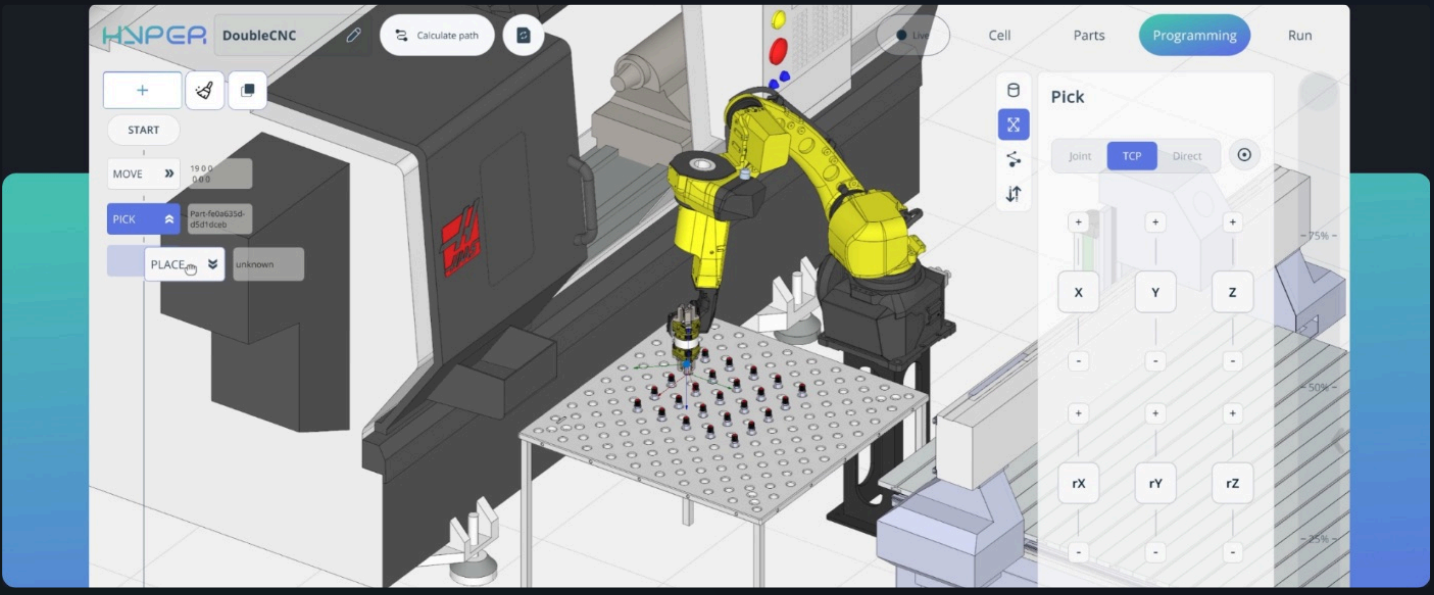
PLATFORM ROLE

ENCY Tuner extends the ENCY workflow to the shop floor. It helps operators simulate, edit, fine-tune and re-engineer NC code before machine execution, using machine setup and simulation context where needed.

22 • ENCY HYPER

Hybrid programming

Empowers every shop-floor operator with the capabilities of a professional robot platform.



robot programming

Prepare robot projects offline, then refine and execute them next to the real robot.

- Offline preparation
- On-cell adjustment

robot control

Connect to the robot, test motion and adjust process logic directly in production context.

- Live robot communication
- Faster correction loops

cell simulation

Simulate robot cells, auxiliary equipment and process logic before running the job.

- Cell-level verification
- Collision-aware workflow

workflow

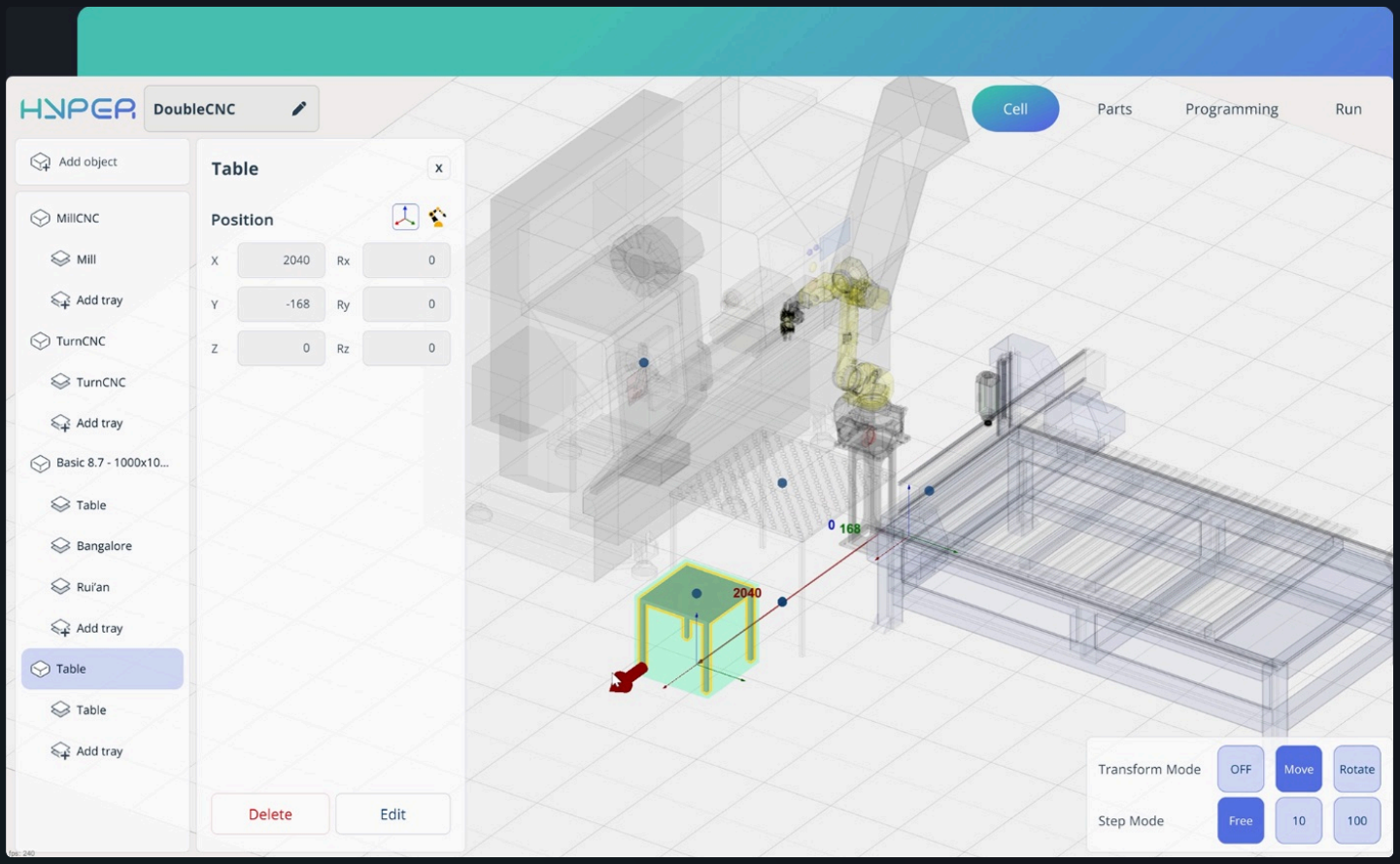
Use a visual, operator-friendly interface for robot programming, testing and execution.

- Tablet-ready interface
- Easier shop-floor adoption

Hyper Max Maximum performance mode

Hyper Max applies advanced machining strategies at
— balancing speed, tool load and stability.

- Higher material removal rate
- Shorter cycle time
- Stable machining under high load



WHEN TO USE

- High-volume production
- Hard-to-machine materials
- Complex geometries
- Cycle-time-critical machining operations

WHY THIS MATTERS

- Higher throughput without additional machines
- Lower cost per part
- Longer tool life · lower tooling cost

PLATFORM ROLE

ENCY Hyper operates on the same machine-aware calculation core and uses the same machine digital twin and simulation logic as ENCY.

23 • ENCY CLOUDS

Cloud-based digital workspace for CAD/CAM programmers and machine operators

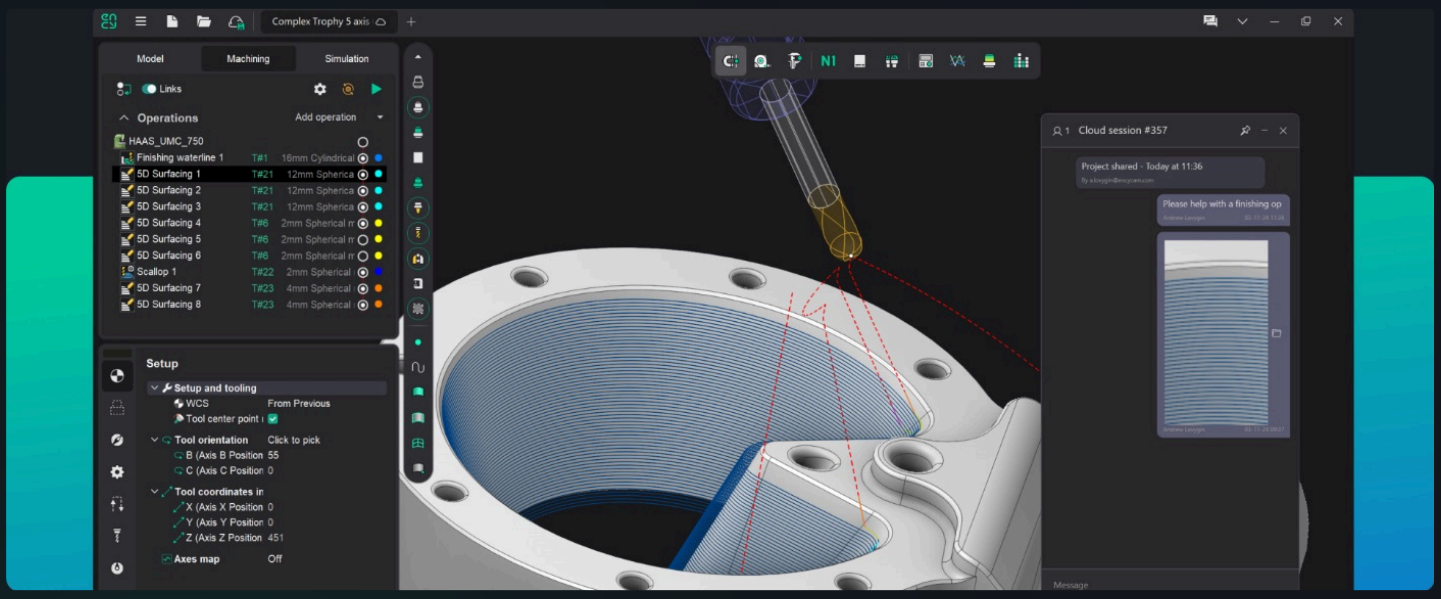
Supercharge your CAD/CAM software with a cloud collaboration tool. Dramatically cut down on wasted time in workflow areas that involve external parties, such as NC-code fine-tuning, technical support, postprocessor customization, and collaboration with fellow CAD/CAM programmers.

TRADITIONAL ENVIRONMENT

- Data stored across multiple systems
- Disconnected processes between teams
- Inconsistent version control
- Complex scaling across sites

WITH ENCY CLOUDS

- One unified data layer across ENCY products
- Synchronized processes between teams and locations
- Centralized version control
- Scalable infrastructure without process disruption



Multi-site structure

MASTER

Headquarters

- Tool library — single source of truth
- Machine twin registry
- NC program archive

PLANTS

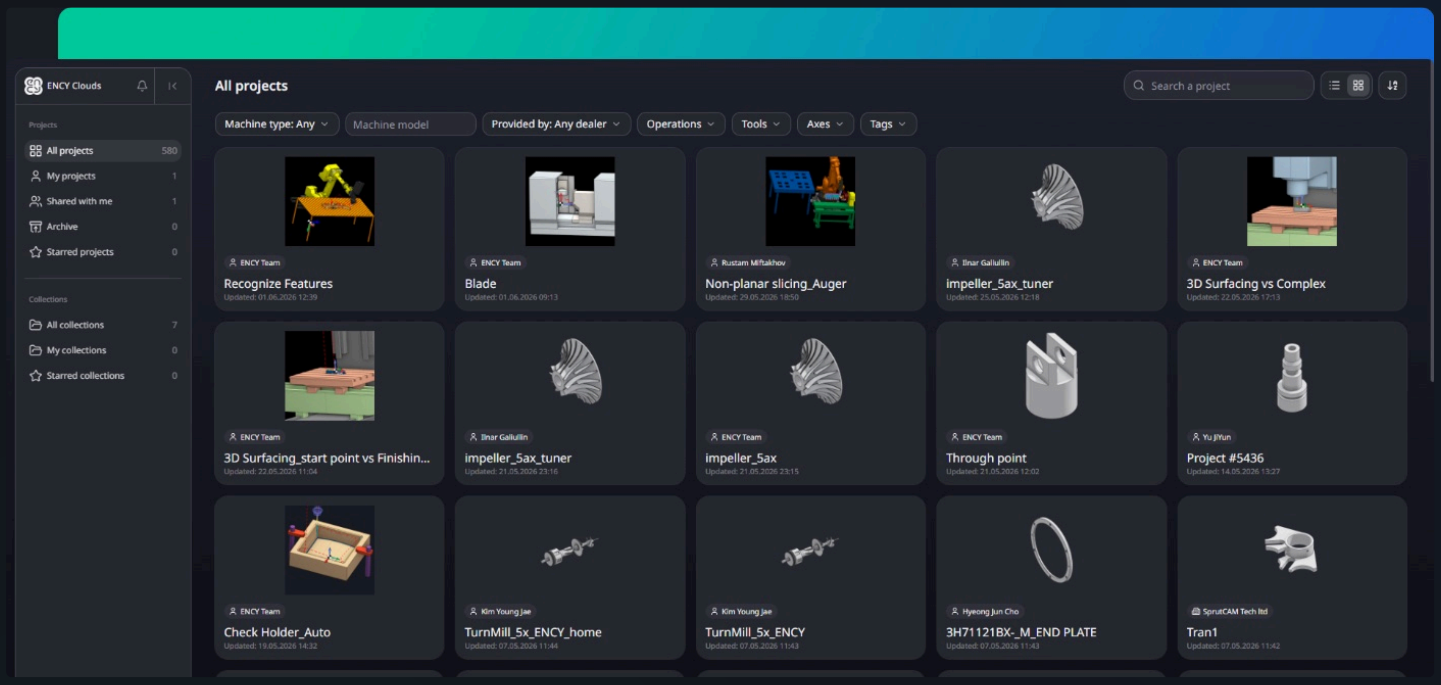
Production sites

- Local ENCY environment
- Synchronized libraries and machine digital twins
- Controlled access to NC programs

REMOTE

Engineering

- Full access to the ENCY platform
- Program machines across sites
- Shared data context for all users



WHAT THIS ENABLES

- Collaboration across teams and locations
- Consistent production processes across all sites
- Remote programming with full machine context
- Faster scaling without duplicating infrastructure

WHY THIS MATTERS

- Reduces coordination overhead
- Eliminates data fragmentation
- Ensures consistency across production environments
- Enables multi-site operations without added complexity

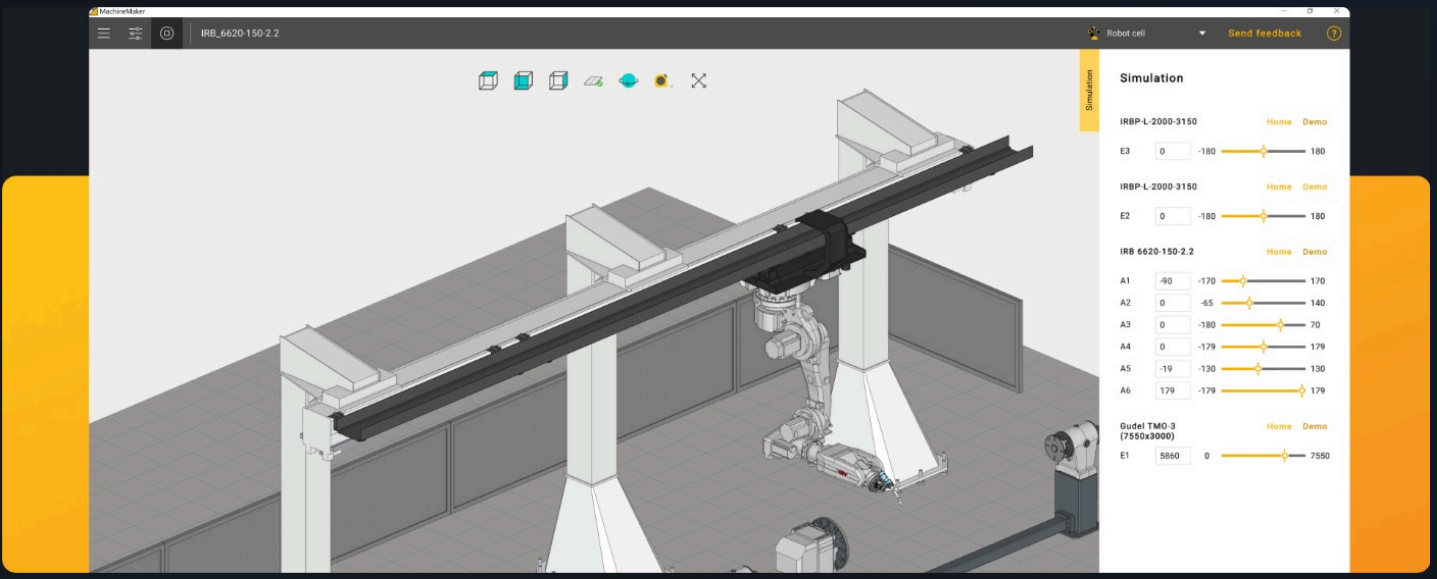
PLATFORM ROLE

ENCY Clouds extends the platform beyond a single workstation — creating one connected production environment across the organization.

24 • MACHINEMAKER

Zero-code

Advanced and interactive builder for virtual CNC machines and robotic cells.



TRADITIONAL APPROACH

- Postprocessors sourced externally
- Long lead times for machine configuration
- Limited control over machine behavior
- Dependency on third-party updates

WITH MACHINEMAKER

- Postprocessors created and maintained in-house
- Machine configurations updated immediately
- Full control over machine digital twin definition
- No dependency on external vendors

WHAT THIS ENABLES

- Faster onboarding of new CNC machines and robotic cells
- Unified and consistent machine behavior across the platform
- Independent control of machine kinematics and postprocessor logic
- Reuse of machine configurations across sites

WHY THIS MATTERS

- Eliminates vendor dependency in machine integration
- Reduces time-to-production for new equipment
- Ensures consistency between programming, simulation and machine behavior
- Gives full ownership of the machine digital twin and NC output

PLATFORM ROLE

MachineMaker defines the ENCY Robot and simulation. — providing the machine digital twin and postprocessor logic used across ENCY,

25 • CAPABILITY MATRIX

Every capability. One ENCY X platform.

ENCY X connects core manufacturing capabilities within one platform — linking CAD/CAM, robot programming, NC-code verification, cloud collaboration and machine-aware simulation in one workflow.
No disconnected handoffs. No parallel workflows. One connected manufacturing environment.

ENCY X PLATFORM PRODUCTS

ENCY
CAD/CAM programming and simulation

- Milling
- Turning
- Mill-turn
- Multi-axis machining
- Swiss-type machining
- Wire EDM

ENCY Robot
Offline robot programming and simulation

- Multi-brand support
- CNC and robot programming in one workflow

ENCY Tuner
Shop-floor NC-code simulation

- NC-code simulation and verification
- NC-code editing, fine-tuning and re-engineering

ENCY Hyper
Hybrid robot programming

- Real-time robot execution
- Touch-based robot control workflow

ENCY Clouds
Cloud collaboration layer

- Multi-site synchronization
- Version control
- Collaboration

MachineMaker
Machine digital twin and postprocessor creation

- Machine digital twin and postprocessor setup

LEGEND

- ● Included in base configuration
- ○ Optional add-on
- – Not available

MATRIX OVERVIEW

Products connected through the ENCY X platform.
Rows: capability domains covered in the following pages.

ENCY	ENCY Robot	ENCY Tuner	ENCY Hyper	ENCY Clouds	MachineMaker
●	●	○	○	–	●

26 • ECOSYSTEM & INTEGRATIONS

Six products. One data model.

ENCY is not a collection of tools. It connects machines, production processes and enterprise systems within one architecture — turning isolated systems into a continuous digital thread.

CORE PRODUCTS

Where production happens



ENCY
CAD/CAM for a new generation — with machine-aware toolpaths and integrated simulation



ENCY Robot
A complete offline robot programming solution — built on the same computational core

SPECIALIST LAYER

Configuration and performance



ENCY Tuner
Shop-floor NC-code simulation, fine-tuning, and re-engineering



ENCY Hyper
Hybrid programming of industrial robots with real-time execution

INFRASTRUCTURE LAYER

Data and foundation



ENCY Clouds
Cloud-based digital workspace for collaboration and process continuity



MachineMaker
Zero-code digital twin builder for CNC machines and robotic cells

Everything runs on one core

All ENCY products operate on a shared computational core and one unified data model — not through synchronization layers, but natively within the same platform.

WHAT THIS MEANS

- No data duplication
- No translation between products
- No format conversion
- Consistent behavior across all products

SHARED FOUNDATION

ENCY computational core

01
Geometry kernel
Proprietary geometry foundation for models within the ENCY platform

02
Machine kinematic model
Real machine context applied during toolpath calculation

03
Simulation engine
Same computational logic as toolpath calculation

04
Unified data model
One representation reused across programming, simulation and output

PRODUCT INTERACTION

ENCY	→	calculates machine-aware toolpaths
ENCY Robot	→	uses the same simulation logic and kinematics
ENCY Tuner	→	defines machine behavior and tooling parameters
MachineMaker	→	provides machine digital twins
ENCY Hyper	→	extends machining strategies
ENCY Clouds	→	synchronizes production data across sites

ENCY as a hub — not a dependency

ENCY integrates with enterprise systems while remaining the operational core.
External systems connect to the platform — they do not fragment it.



INTEGRATION PRINCIPLES

- Systems connect to ENCY — they do not replace it
- Integrations extend the platform — they do not define it
- No disruption to core production processes

WHAT THIS ENABLES

- Seamless data exchange
- Compatibility with existing infrastructure
- Stable production processes independent of external systems

Scale without rebuilding systems

Traditional environments scale by adding tools. ENCY scales within one architecture — capacity expands without adding complexity.

SCALING PATH

01 — Start with CNC
ENCY
Machine-aware programming for existing machines

02 — Add robotics
ENCY ROBOT
Same team, same process, no new system to learn

03 — Expand to multi-site
ENCY CLOUDS
Synchronized data and processes across locations

04 — Optimize performance
HYPER + TUNER
Higher efficiency without changing the architecture

KEY PRINCIPLE

Scaling adds capacity — not complexity.

RESULT

- No system replacement
- No process migration
- No retraining cycles
- Knowledge accumulates over time

Workflow is the integration layer

ENCY does not connect fragmented processes through integrations. Geometry, machine context and machine behavior stay in one continuous environment from the first step.

LEGACY PROBLEM

- Geometry reinterpreted at import
- Machine context added too late
- Simulation disconnected from machine behavior

ENCY PROCESS

01 Model and machine setup
Geometry and machine digital twin loaded together
Machine constraints active from the start

→

02 Toolpath calculation
Machine-aware calculation
No postprocessing adaptation

→

03 Continuous simulation
Runs during programming
Errors detected early

→

04 NC output
Generated from verified data
Ready for execution

→

05 Production handoff
NC output delivered with full context
No manual coordination

No data loss
between stages

No fragmentation
across the process

Full traceability
from CAD to machine

27 • INDUSTRIES

Six industries. One architecture.

Manufacturing requirements differ by industry — but the underlying challenges are the same: **fragmented processes, limited predictability and increasing architectural complexity.** ENCY addresses these challenges with one unified platform — adaptable across different production environments.



Aerospace and aviation

High precision · complex geometries · tight tolerances



Automotive and transportation

High volume · cost pressure · cycle-time optimization



Die and mold

Complex surfaces · long machining cycles



Medical and dental

High precision · small batches · variability



Energy, oil and gas

Large components · high loads · long cycles



Heavy equipment and mining

Large parts · complex setups · coordination overhead

ARCHITECTURAL ADVANTAGE

One architecture. Multiple industries. Consistent results.

Aerospace & Automotive

High precision and high volume — different production pressures, addressed through the same architecture.



Aerospace & Aviation

High precision. High cost of error.

CHALLENGE

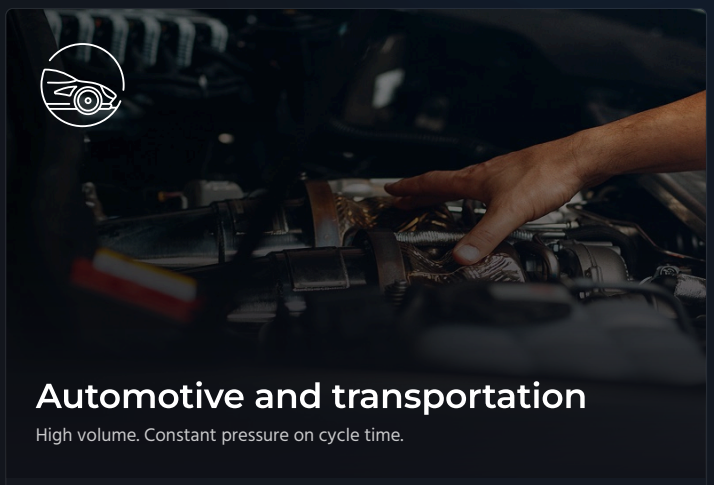
- Complex multi-axis geometries
- Long programming cycles
- High cost of mistakes

ENCY

- Machine-aware toolpaths from the first calculation
- Integrated simulation for verification
- Fewer iterations between programming and the machine

RESULT

High precision with faster delivery



Automotive and transportation

High volume. Constant pressure on cycle time.

CHALLENGE

- Throughput improvement
- Process consistency
- Scaling across machines

ENCY

- High-efficiency machining strategies with ENCY Hyper
- Unified CNC and robot programming workflows
- Scalable deployment across production cells

RESULT

Higher throughput at lower cost

Die & Mold & Medical

Surface quality and small-batch precision — different production pressures, one consistent architecture.



Die and mold

Surface quality defines the outcome.

CHALLENGE

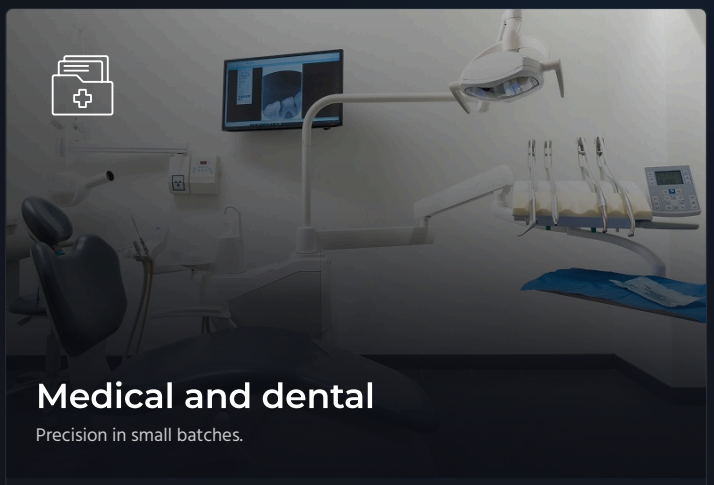
- Complex 3D surfaces
- Tool wear during long cycles
- Long programming time

ENCY

- Adaptive toolpath strategies for surface consistency
- Controlled tool engagement
- Integrated simulation before machining

RESULT

Improved surface quality with shorter cycles



Medical and dental

Precision in small batches.

CHALLENGE

- High variability
- High cost of error
- Short lead-time requirements

ENCY

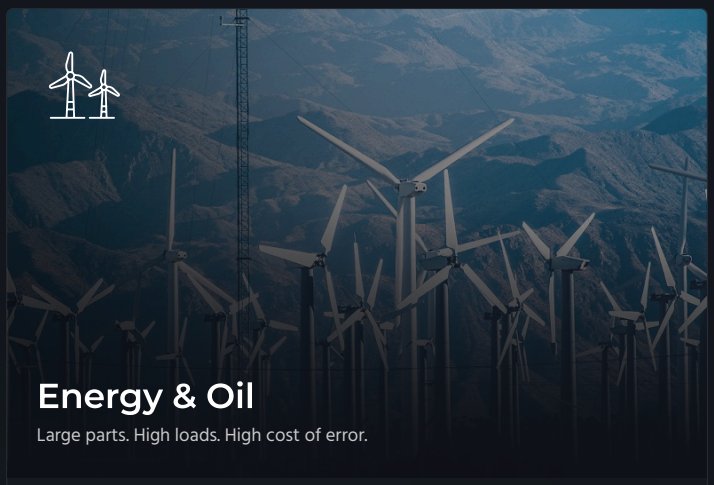
- Accurate verification before machining
- Consistent machine-aware calculation
- Reusable processes and faster setup

RESULT

Consistent quality with shorter lead times

Energy & Heavy Equipment

Large parts, high loads and complex setups — where setup iterations and downtime are especially costly.



Energy & Oil

Large parts. High loads. High cost of error.

CHALLENGE

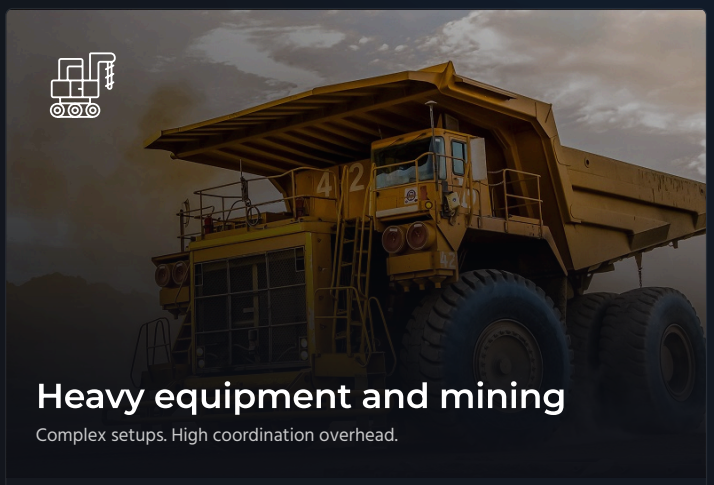
- Long machining cycles
- High tool wear risk
- Heavy machine loads

ENCY

- Tool-load-controlled toolpaths
- Stable cutting conditions
- Machine-aware motion from the start

RESULT

More stable machining with lower tool wear



Heavy equipment and mining

Complex setups. High coordination overhead.

CHALLENGE

- Multi-machine coordination
- Complex setup verification
- Downtime risk

ENCY

- Unified CNC and robot programming workflow
- Full machine digital twin simulation
- Reduced setup iterations

RESULT

Faster setup with fewer disruptions

One System — Across All Industries

ENCY adapts to different production environments without changing its core architecture.

WHERE IT APPLIES

Precision industries
Aerospace · medical · die and mold

Focus: accuracy, verification, repeatability

Production industries
Automotive · energy · heavy equipment

Focus: throughput, efficiency, scalability

Hybrid manufacturing
CNC · robot programming · additive

Unified processes across technologies

KEY PRINCIPLE

Industry requirements are addressed through configuration — not separate systems.

PLATFORM CONSISTENCY

One simulation model
Same computational foundation across industries

One data model
Shared representation across programming, simulation and output

One process logic
Consistent behavior across production applications

Different industries. Same architectural advantage.

28 • USE CASES

Real deployments.
Practical outcomes.

ENCY shows its value in real production workflows — across different industries, processes and constraints. **From complex setups to more predictable results.**

KEY USE CASES

UC 01

High-mix precision production

Small batches · complex geometries · frequent changeovers

- → shorter programming cycles
- → fewer setup iterations

UC 02

Hybrid CNC + robotics

Integrated machining + robotic operations in one call

- → integrated robot milling and additive workflow
- → one ENCY Robot workflow for complex robot paths

UC 03

5-axis precision machining

Subcontract production · complex workholding · diverse machine fleet

- → one 5-axis programming workflow across the machine fleet
- → tailored postprocessors

UC 04

Aerospace & energy supplier

Complex multi-axis parts · robotic welding · strict tolerances

- → more consistent robotic automation
- → repeatable robot workflows across welding, milling and industrial processes

UC 05

Job-shop automation

High variability · multiple machines · operator dependence

- → more predictable robot milling workflow
- → high-mix job-shop and mold-making applications

UC 06

CAM migration and programming standardization

Global manufacturing · 4-axis CNC + turning

- → structured CAM migration
- → modernized CNC programming workflow for milling and turning

FROM COMPLEXITY

Six scenarios. Six environments. One connected workflow logic.

UC 01 · CNC MACHINING

Two-Step Milling of Complex Parts

Intricate aluminum and brass workpieces machined in two operations — with precision vises, rotary tables and 4th- and 5th-axis setups on a vertical machining center.

SITUATION

- Complex aluminum & brass workpieces
- Two-operation CNC milling workflow
- 4th- and 5th-axis setups with rotary tables

CONSTRAINT

- Multi-stage fixture coordination
- High accuracy across operations
- Complex contouring and hole operations

ENCY APPROACH

- ENCY CAD/CAM for 2.5x, 3x and rotary/multiaxis milling workflows
- Toolpath programming and setup management in ENCY CAD/CAM
- Programming and management of complex contouring and hole operations

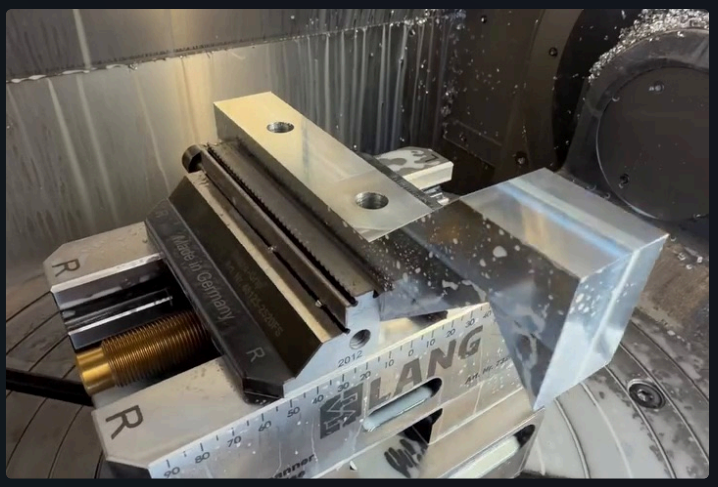
OUTCOME

- Streamlined programming workflow for complex aluminum and brass workpieces
- Stable fixturing across varied 4th- and 5th-axis setups
- Clear workflow for demanding multi-stage CNC production

CASE STUDY · CNC MACHINING

Complex contouring and hole operations on aluminum and brass workpieces — two-step milling with 4th- and 5th-axis setups in one CAD/CAM environment.

jhc-kovo s.r.o.
Czech Republic · Powered by ENCY story



UC 02 · ROBOT MILLING AND ADDITIVE MANUFACTURING

Hybrid robot milling and additive workflows

Combining robot milling and additive processes in industrial prototyping — where disconnected programming environments can slow down the workflow.

SITUATION

- Industrial prototyping workflow
- 6-axis robot with high-speed spindle
- Foam and composite machining, plus 3D-printed sand cores

CONSTRAINT

- Disconnected programming environments
- Complex robot path coordination
- Setup and validation effort across robot milling and additive processes

ENCY APPROACH

- Offline robot programming with ENCY Robot
- Automated robot path control for complex robot paths
- One programming workflow for robot milling and additive applications

OUTCOME

- Integrated robot milling and additive workflow
- Consistent prototype and casting component production
- One ENCY Robot workflow for complex robot paths

CASE STUDY · FIELD

Automated robot path control, precise foam and composite machining, and 3D-printed sand core production for metal casting — powered by ENCY Robot in one offline programming workflow.

BlueFlame3D
Industrial prototyping · Powered by ENCY story







5-Axis Precision & Aerospace

UC 03 · 5-AXIS PRECISION MACHINING

Advanced 5-axis machining across a diverse machine fleet

Sintech S.r.l. · Italy · customer case

SITUATION	– Subcontract precision machining – AXO System workholding – 3-axis to gantry-type 5-axis machine fleet
CONSTRAINT	– Diverse machine fleet – Complex 5-face access requirements – Tailored postprocessors for each machine
ENCY	– ENCY CAM with tailored postprocessors – Implemented with SINTESI, ENCY's local reseller in Italy – Advanced CAM strategies for 5-face machining

OUTCOME

More consistent CAM workflow across a diverse machine fleet





UC 04 · AEROSPACE & ENERGY

Robotic automation for consistent quality

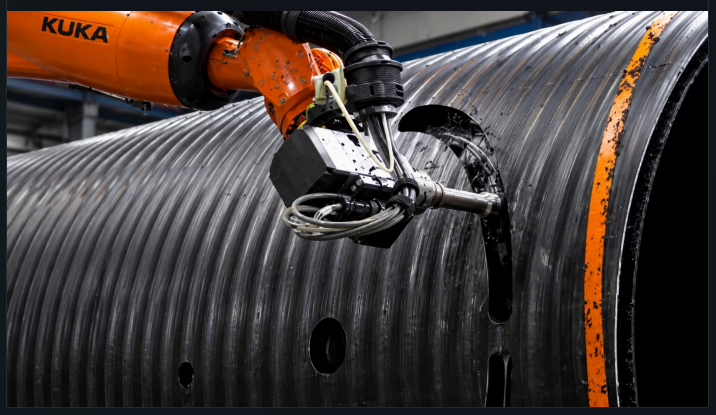
Ismael Henrique Schneider · Powered by ENCY story

SITUATION	– High variability across robotic production tasks – Multiple robotic cells and setup configurations – 6-axis robotic cells
CONSTRAINT	– Frequent process reconfiguration – High dependency on operator experience – Repeatability and traceability required across production runs
ENCY	– Offline robot programming with ENCY Robot – Machine-aware setup and simulation – More traceable robot programs across production runs

OUTCOME

More consistent and scalable robotic production workflow





Job Shop & Platform Migration

UC 05 · ROBOT MILLING FOR JOB SHOP WORKFLOWS

Robot milling for high-variety job-shop work

MecDATA SCP · Powered by ENCY story

SITUATION	– Prototype and mold components – Six-axis KUKA robotic milling setup – High-mix job-shop and die & mold scenarios
CONSTRAINT	– Complex robot paths and freeform geometry – Frequent adaptation to varied orders – Need for reliable, repeatable robot milling results
ENCY	– ENCY Robot for offline robot programming – Machine-aware simulation for robotic milling – Programming workflow for complex robot paths

OUTCOME

More predictable robot milling workflow for complex job-shop parts





UC 06 · CAM MIGRATION

CNC programming standardization after CAM migration

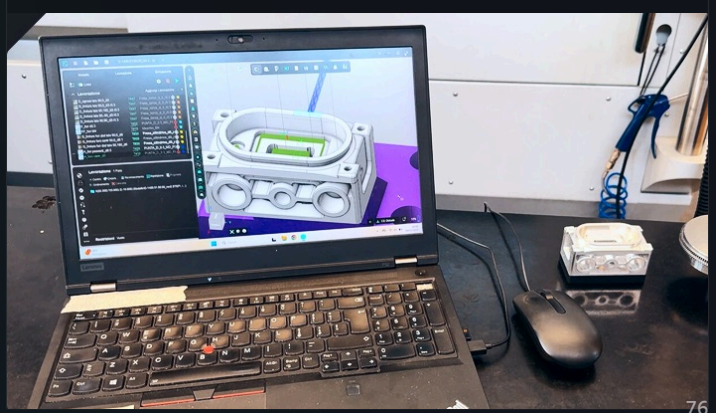
Flexball Italiana · Italy · customer case

SITUATION	– Italian manufacturer with established CNC production – Milling and turning operations – Previous CAM system: Tebis
CONSTRAINT	– CAM migration needed to support milling and turning – Team needed a practical, easy-to-adopt workflow – Programming logic had to stay flexible across machines
ENCY	– Migration from Tebis to ENCY – Single postprocessor logic across machines – Supported by Sintesi, ENCY's local reseller in Italy

OUTCOME

Modernized CNC programming workflow for milling and turning





From individual cases to system-level impact

Across these production scenarios, the pattern is clear: **ENCY does not just optimize individual steps — it connects the workflow as a whole.**

OBSERVED WORKFLOW IMPACT

Shorter programming cycles*	Faster commissioning path*	Fewer setup iterations*	✓	one connected
observed in selected customer workflows	for selected robotic and hybrid workflows	where machine-aware simulation is applied early	based on published and approved customer stories	CAD-to-part workflow

KEY INSIGHT

Different challenges. Same machine-aware architecture advantage.

CONCLUSION

The pattern is consistent because the workflow logic is architectural — not limited to one process, machine type or industry.

One core. Many applications. One connected workflow.

29 • PROOF & TRUST

Proven platform. Trusted approach.

Choosing a manufacturing platform is a long-term decision. ENCY is built on a consistent architecture — proven in real production environments.

WHAT TRUST IS BASED ON

01
Built in-house
In-house core technologies support more predictable behavior across programming, simulation and verification.

→ reduced dependency on disconnected external components

02
Engineering-first approach
Designed by manufacturing engineers

→ capabilities verified in real production use

03
Continuous evolution
Regular updates without process disruption

→ backward compatibility as a product design principle

04
Proven in production
Active deployments across industries and regions

→ proven where it matters most — on the shop floor

PLATFORM METRICS

WORLDWIDE	800+	400+	Core
Global presence	postprocessors	robot models supported	computational technologies developed in-house

Built as a system — from day one

ENCY was designed as a unified platform with a consistent architecture — not assembled from acquired modules or disconnected components.

PLATFORM EVOLUTION

01	02	03	04	TODAY
Foundation	CNC platform	Ecosystem expansion	Scale & intelligence	Full platform
In-house geometry kernel and machine-aware calculation core	Multi-axis CNC machining with integrated simulation	Robotics, machine configuration and machine digital twin tools	Cloud infrastructure, advanced machining strategies and AI-assisted workflow	Six products · global deployments · one consistent core

DEVELOPMENT PRINCIPLES

- architecture first · features second
- one consistent data model across product versions
- no dependency on external core release cycles

WHY THIS MATTERS

Your processes, machine configurations and knowledge are preserved across versions. The platform evolves — without forcing teams to rebuild.

Continuous updates — with production stability in mind

ENCY evolves while helping teams keep production workflows stable during evaluation, updates and adoption.

RELEASE MODEL

MAJOR RELEASES
New capabilities and architectural improvements

→ planned in advance with migration guidance

MINOR UPDATES
Regular workflow improvements

→ designed for backward compatibility

PATCHES
Stability and performance updates

→ designed to minimize process disruption

KEY POLICY

No forced migration. Teams can evaluate new versions while keeping active production environments stable.

WHAT IS INCLUDED

- → updates during active subscription
- → 800+ postprocessors available*
- → multi-site data synchronization ENCY Clouds
- → direct access to technical support
- → ENCY Academy training

From implementation — to long-term production use

ENCY adoption is structured around real parts, real machines and real production workflows.

CUSTOMER JOURNEY

01 Guided trial
Real parts, real production workflows, engineering support

→

02 Onboarding
Machine configuration, workflow setup and training

→ first production program prepared during onboarding

→

03 Deployment
Verified processes and machine-aware setup

→ support during initial production use

→

04 Long-term use
Ongoing workflow optimization and platform expansion

WHAT CUSTOMERS HIGHLIGHT

- smoother onboarding
- more efficient training process
- faster path from trial to production use

SUPPORT STRUCTURE

- technical support from manufacturing engineers
- ENCY Academy — structured training
- postprocessor services
- implementation and consulting support

Proven in Practice

ENCY is used in real manufacturing workflows across industries, machine types and production environments.

OPERATIONAL SCALE

WORLDWIDE — active ENCY deployments across manufacturing regions*

→ precision machining, automotive, robotics and hybrid production workflows

PLATFORM CAPABILITY

800+ postprocessors available*

400+ robot models supported*

→ one connected platform foundation across ENCY products

OBSERVED IMPACT INDICATORS

up to ±0.006 mm — observed simulation deviation*

up to 40–60% — reduction observed in selected workflows*

up to 60% — reduction observed in selected robotic workflows*

→ ROI timeline varies by workflow scope and utilization*

KEY INSIGHT

These indicators are not feature-driven. They come from consistent architecture applied across real manufacturing workflows.

LIVE CUSTOMER CASES

Powered by ENCY

Published customer stories from ENCY users worldwide

Scan to explore customer cases

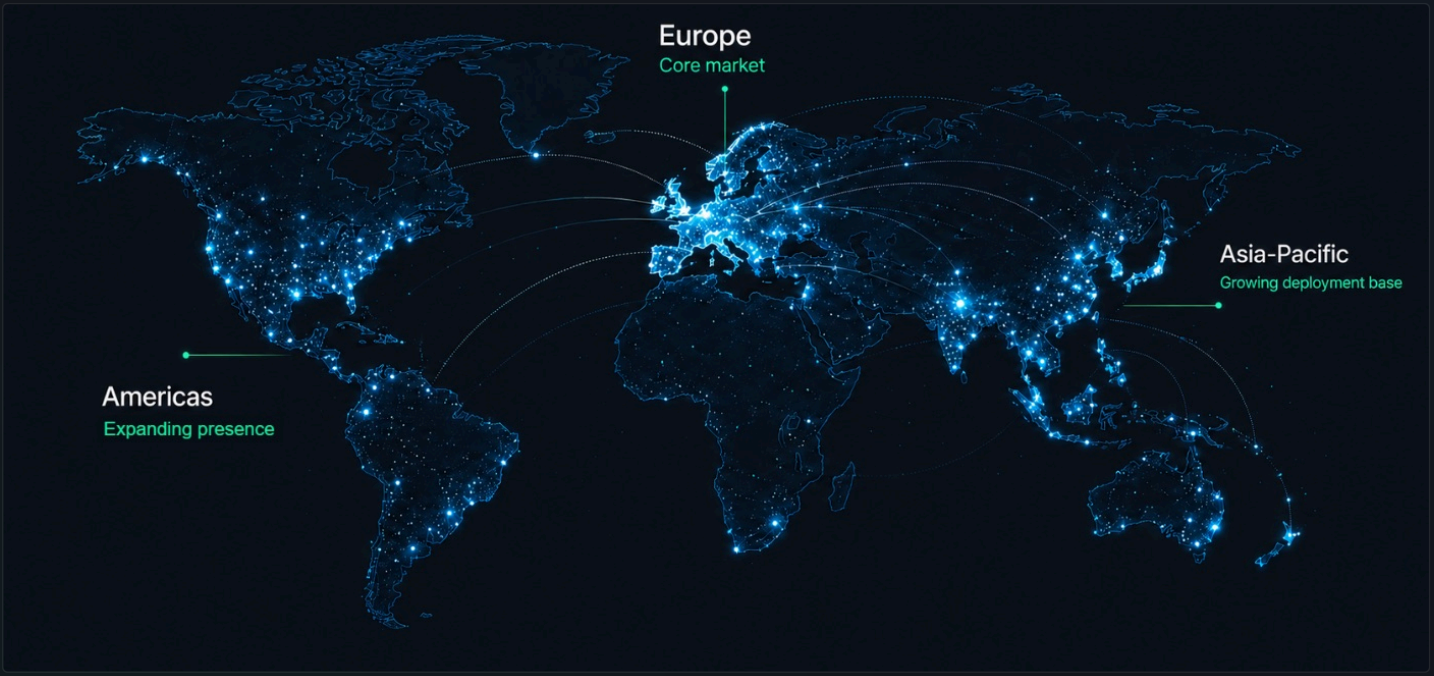
encycam.com/powered-by-ency

Architecture proves its value in production.

30 • GLOBAL PRESENCE & SUPPORT

Global Presence. Local Expertise.

ENCY supports production environments across key manufacturing regions — combining local expertise with global consistency.
Wherever production runs — ENCY supports it.



DEPLOYMENT OVERVIEW

01
Central & Eastern Europe
Core market — precision machining, automotive, aerospace

02
Western Europe
Germany, DACH, Benelux — high-mix, medical, Tier suppliers

03
Asia-Pacific
Robotics, electronics machining, heavy industry

04
Americas
Job shops, aerospace, robotic integrators

GEOGRAPHIC FOOTPRINT

- → Europe — core market
- → Asia-Pacific — growing deployment base
- → Americas — expanding presence

WHERE ENCY IS USED

Aerospace | Automotive | Medical | Heavy equipment

SCALE INDICATORS

WORLDWIDE

Global presence — active deployments across CNC and robotics environments

Support built for manufacturing workflows

ENCY support is delivered by manufacturing-aware engineers — focused on real parts, real machines and real production workflows.

SUPPORT MODEL · FOUR LAYERS

01
CORE SUPPORT

Technical application support

Programming, simulation, postprocessors and machine setup

- CAM and robot programming
- Simulation and verification troubleshooting
- Machine configuration

→ response process defined by support plan

02
PLATFORM LIBRARY

Postprocessors & machine configurations

Machine configurations and postprocessor support across CNC and robotics hardware

800+ postprocessors available*

400+ robot models supported*

- ongoing library updates

→ ready-to-use and customizable machine configurations

03
SELF-SERVICE LAYER

ENCY Academy & documentation

Structured learning paths across ENCY products

- Real workflows and production examples
- Cross-product use cases
- On-demand access

→ available on demand

04
ENTERPRISE SUPPORT

Professional services

Hands-on support for implementation, rollout and workflow customization

- On-site implementation support
- Workflow customization
- Large-scale deployment support

→ implementation support from trial to production use

WHAT THIS ENABLES

→ More efficient issue resolution

→ Practical, production-level support

→ Less dependency on disconnected external support

A Connected Ecosystem

ENCY connects technology partners, hardware ecosystems and implementation expertise — validated on real production environments.

01
MACHINE & CONTROLLER ECOSYSTEM

Validated against real hardware

Fanuc · Siemens · Heidenhain · Mitsubishi · DMG Mori · Mazak · Haas · Okuma

02
ROBOT ECOSYSTEM

400+ validated robot models

KUKA · ABB · Yaskawa · Universal Robots · Stäubli · Kawasaki

03
TOOLING ECOSYSTEM

Integrated tooling data and strategies

Sandvik · Kennametal · Iscar · Walter · Seco

WHAT THIS ENABLES

- → Local implementation expertise
- → Industry-specific knowledge
- → Validated real-hardware compatibility

From deployment to optimization

ENCY supports the full lifecycle — from setup to full-scale production.

DEPLOYMENT JOURNEY

01 — Implementation
Platform setup aligned with production processes.

02 — Integration
Adaptation to machines, teams and processes.

03 — Optimization
Continuous improvement based on real production data.

WHAT THIS ENABLES

- → Faster time to production
- → Reduced deployment risk
- → Measurable performance improvements

RESULT

From first implementation to full-scale production — supported at every stage.

A platform is only as strong as the system that supports it.

31 • ROADMAP & VISION

Building the future of manufacturing systems

Manufacturing is moving toward automation, integration and system-level intelligence. ENCY is built for that future.

PLATFORM DIRECTION

AUTOMATION	Assisted programming	→ Repeatable automation	→ Autonomous cells
AI	Support tool	→ System-level decision layer	
OPENNESS	Integrations	→ Platform ecosystem	
SCALE	Single machine	→ Multi-site systems	

Automation — from assistance to autonomy

Same platform. Same data model. Increasing autonomy.

HORIZON TIMELINE

01 NOW

AI assists. Engineers decide.

Suggestions and guardrails for manual workflows.

02 NEXT

Repeatable parts → automated workflows.

Programmed once, reused across part families and sites.

03 LATER

Adaptive programming from real machine data.

Programs adjust to conditions, tool wear and feedback loops.

04 LONG-TERM

Lights-out CNC and robot cells with exception control.

Engineers manage exceptions — not key-by-key operations.

WHY THIS IS POSSIBLE

- → Machine-aware computation
- → Shared CNC + robot platform
- → Digital twin per machine
- → AI integrated into workflow

AI As Part Of The System

AI reduces routine decisions — not engineering responsibility.

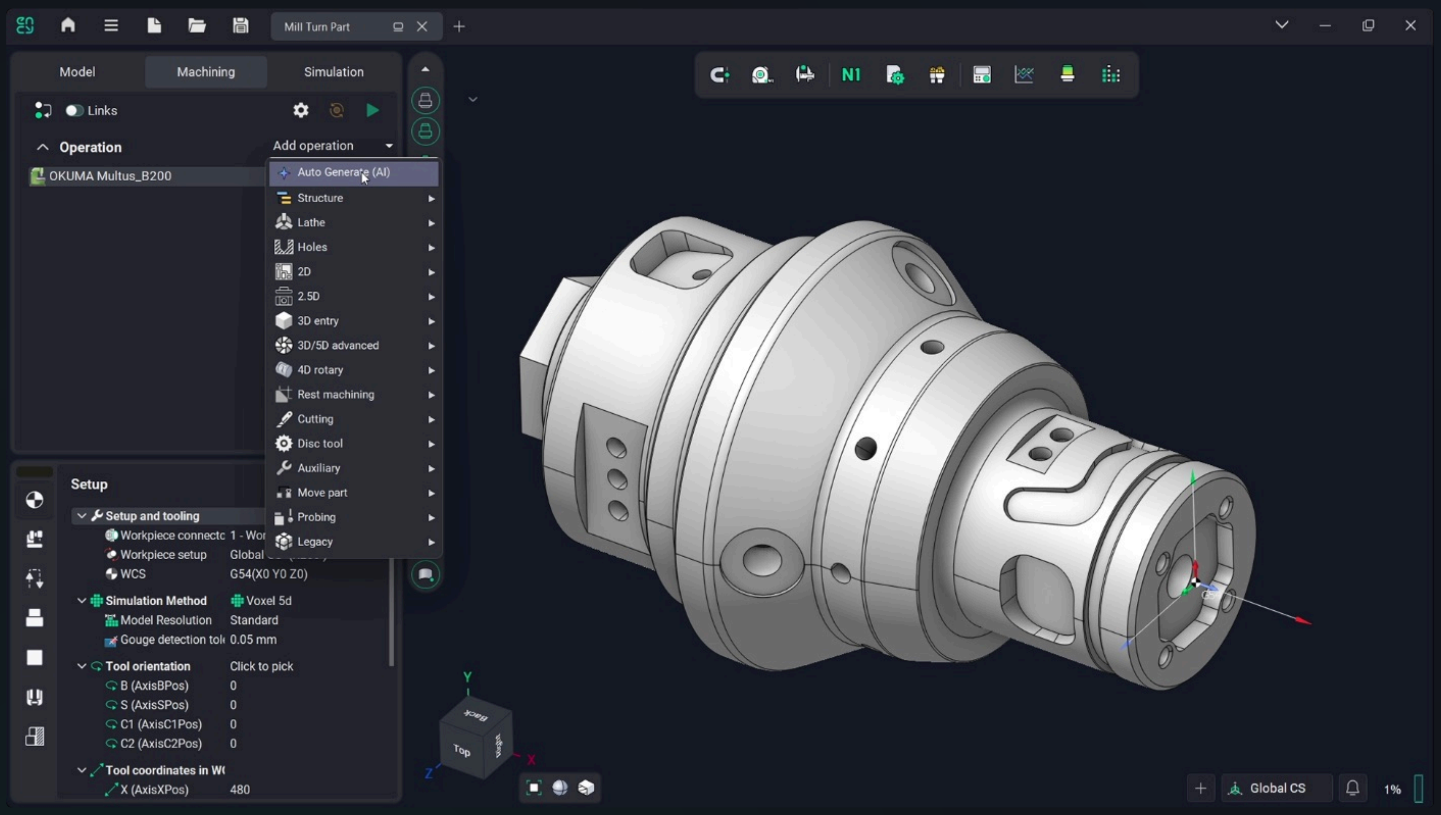
WHAT IT DOES TODAY

- Suggests strategies
- Recommends parameters
- Explains G-code
- Assists planning

→

WHERE IT IS GOING

- → Predictive simulation
- → Adaptive optimization
- → Cross-job learning
- → Repeat-part automation



AI assists. Engineering decides.

Open — Without Fragmentation

ENCY integrates with external systems without fragmenting the core workflow.

DIRECTION

01
API-first platform
Every capability exposed as a programmable interface.

02
ERP / MES connectivity
Bidirectional data flow with systems of record.

03
Ecosystem extensions
Third-party modules built on the same data model.

04
Cloud-native deployment
Scaled across sites, regions and teams — by design.

ANCHOR

The core workflow remains one system and one data model. Integrations extend it — they do not split it.

Integrations extend the platform. They do not define it.

Long-Term View

Manufacturing software is a long-term decision. ENCY is designed for the long arc — not the next release cycle.

ENCY IS DESIGNED TO

01
Scale without complexity

02
Adapt to new production processes

03
Support CNC + robotics convergence

04
Integrate AI safely

THE PLATFORM BET

Architecture compounds.

→ Every new capability builds on the same core.

→ So does your investment.

Direction is set by architecture — not by promises.

32 • ACADEMY & ENABLEMENT

From First Model To Production-Ready Engineer

ENCY Academy turns learning into production capability — not training overhead, but faster time to productivity.

NOT

Training as overhead — courses, certifications, time away from production.

→

THE GOAL

Faster time to productivity — engineers deliver real production work sooner.

WHAT IT PROVIDES

01
Structured learning paths
Sequenced by role and product — engineer, operator, programmer.

02
Real production workflows
Examples drawn from shop-floor reality — not synthetic demos.

03
Cross-product knowledge
CAD/CAM, Robot and Platform are taught through one shared model.

04
On-demand access
Available 24/7 — learning fits production schedules, not the other way around.

Learning Model

Four progressive levels — from understanding the system to mastering its configuration. Same platform logic helps reduce learning fragmentation across CNC, robotics and verification.

FOUR LEVELS

01
BEGINNER
Understand the system
First model. Core workflow. Mental model of the platform.

02
INTERMEDIATE
Apply to production
Real parts. Real machines. End-to-end production practice on the shop floor.

03
ADVANCED
Optimize production processes
Cycle time, tool life and quality — tuned at the process level.

04
EXPERT
Master system-level configuration
Postprocessors, simulation and multi-machine logic — full architectural control.

ONE KEY ADVANTAGE

Same system → same logic → one learning curve across CNC, robotics and verification.

CAD/CAM ↔ Robot ↔ Verification ↔ Platform

What This Changes

Enablement compounds: **faster onboarding, consistent processes, less dependence on senior experts and easier scaling.**

01
Faster onboarding
New engineers ship production work within weeks, not quarters.

02
Consistent workflows
Same model, same logic — across sites, teams and disciplines.

03
Less dependence on senior experts
Knowledge is codified — senior engineers focus on harder work.

04
Easier scaling of teams
Add headcount without losing process quality or speed.

KEY PRINCIPLE

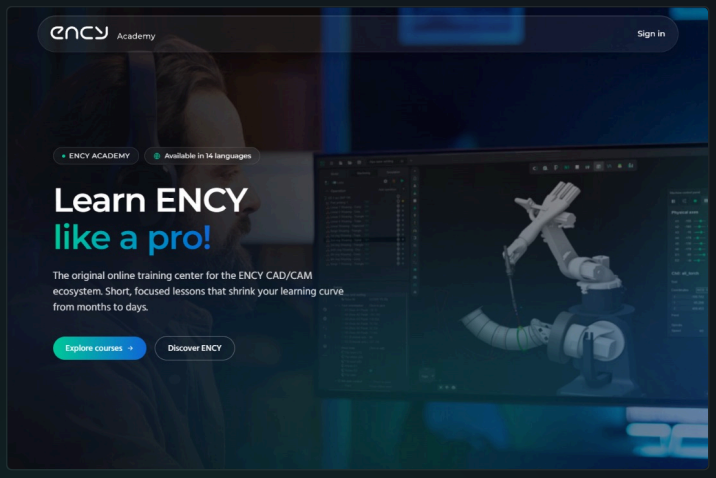
Training is not overhead — it is a production multiplier.

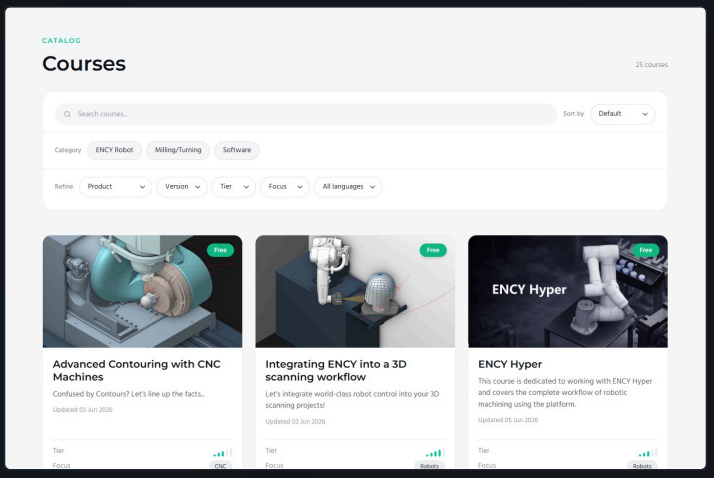
RESULT

Faster learning → Faster production impact

ENCY Academy

One platform logic. **Structured paths, real production processes, on-demand access** — across CNC, ro





FORMAT

On-demand · structured · cross-product

AUDIENCE

Engineers · programmers · operators · integrators

SCOPE

CAD/CAM · Robot · Verification · Platform

A platform is only as strong as the engineers who can run it.

33 • CLOSING

Go beyond CAD/CAM

From programming to simulation, verification and production — ENCY X connects the workflow around the machine.

FROM

- Multiple tools
- Disconnected workflows
- Manual validation

→

TO

- → One ENCY X platform
- → Continuous workflow
- → Predictable output

WHAT ENCY IS

ENCY X is a machine-aware manufacturing platform built as one system — not assembled from disconnected tools.

WHAT MAKES IT DIFFERENT

- → Machine-aware from the start
- → Simulation = execution
- → CNC, robotics and NC-code verification unified
- → One data model across ENCY products and workflows

WHAT THIS DELIVERS

- → Fewer iterations
- → Faster programming
- → Predictable production
- → Scalable operations

The Decision

This is not a tool upgrade. It is a transition from fragmented tools to one ENCY X workflow.

YOUR STARTING POINT — START WHERE YOUR CONSTRAINTS ARE

01
OPTIMIZE PROGRAMMING
CAD/CAM
Reduce programming time and rework in existing CNC operations.

02
ADD ROBOTICS
Robot
Bring robot programming into the platform engineers already use.

03
SCALE OPERATIONS
Platform
Standardize data, simulation, NC-code verification and collaboration across sites.

04
REPLACE LEGACY
Full transition
Move from fragmented toolchains to one connected ENCY X platform.

The Formula of CAD/CAM in Action

See how ENCY X connects CNC machining, robot programming, NC-code verification, cloud collaboration and production in one workflow.

Start with ENCY. Scale with ENCY X.

CHOOSE YOUR NEXT STEP

01 Download ENCY trial

02 Validate your own workflows in ENCY

03 Talk to an ENCY expert

04 Plan a production pilot

DOWNLOAD ENCY TRIAL

encycam.com/download/

Scan the QR code or visit the link to download ENCY and start evaluating your own CNC, robot and NC-code workflows.

Trial download | CNC workflows | Robot workflows | NC-code verification

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