Adaptive Post-Processing™
The Evolution of Machine Simulation

Post-Processing – Simulation – Optimization
Cross-Communicating in a Single Step Process!
The ICAM Legacy

- Over four decades of consistent leadership in the post-processing and NC manufacturing software industry
- Relentless R&D resulting in continual product improvement and innovation
- Unparalleled multi-axes specialization
- Multiple CAM solution expertise
- Enabling customers to remain competitive
  - Production cost reduction
  - NC machining productivity gains
  - Product quality improvement
- Global presence
- Supporting world-class manufacturers
Interfacing CAD-CAM-PLM systems to the world of machine tools

SIEMENS NX
CAM Strategies, Tools, Fixtures etc...

CATIA
CAM Strategies, Tools, Fixtures etc...

Mastercam
CAM Strategies, Tools, Fixtures etc...

Creo
CAM Strategies, Tools, Fixtures etc...

CL File

Post-Processor
Machine Simulation

Adaptive Post-Processing™ & Simulation

G-Code

and More...
Machine Simulation – history

- Toolpath simulation inside CAM system
- G-code simulation ("after-the-fact" / passive simulation)
- G-Code Simulation in CATIA or NX (integrated, but passive simulation)
- ICAM Adaptive Post-Processing™ (active simulation)
- ICAM formal partnerships with the major CAD/CAM systems vendors:
  - Dassault Systèmes O.S.D. partnership: ICAM is pre-installed in **CATIA V5** and **3D Experience**
  - Siemens PLM solution partner – **NX**
  - Mastercam 3rd party solution partner
Q: How often are you facing these issues?

😊 The NC machine scheduled to cut the part is not available
😊 NC programmers struggle to avoid overtravel
😊 NC programmers take a long time optimizing cutting conditions
😊 Your cost of tools is too high

Q: Can you estimate the time you spend looping between CAM toolpath creation, post-processing and G-code simulation and back to CAM toolpath definition?
Traditional Manufacturing process

Traditional vs. ICAM Mfg. Process
Traditional Manufacturing process

1. CAM Toolpath
2. APT
3. Post-processor
4. MCD
5. Machine Simulation
6. Error Report
7. Feed Optim
8. Opt MCD

Too many iterations!

TIME
Traditional Manufacturing process

ICAM Optimized Manufacturing process

Benefits:
- Faster programming time
- Shorter cycle time
- Better part quality
- Improved tool life
- Full flexibility to change target machine

TIME

Traditional vs. ICAM Mfg. Process
The ICAM Post, Optimization & Simulation process allows you to make it all in one step; avoiding multiple modifications

The PLM Manufacturing programmer stays in control using PP Instructions – he is the one who decides!

The ICAM Adaptive Post-Processor™ & Simulation solution automatically simulates each ISO program sent to the CNC machine
The ICAM Adaptive Post-processor™ includes:

- Complete 3D model of the CNC machine to use
- Axes travel ranges, velocities, kinematics, etc.
- 3D workpiece with material removal
- Controller-specific logic

The Post-Processor ADAPTS automatically

- Toolpath linking motions to machine travel limits
- Approach & exit motions to material to cut
- Cutting conditions to tools and material to cut
Adaptive Post & Simulation

- Faster programming time
- Shorter cycle time
- Better part quality
- Improved cutting tool life
- Full flexibility to change target machine without recalculating toolpaths
ICAM Solution suite

- **ICAM solution for CNC machines**
  - ✔️ 5+ axis milling
  - ✔️ Lathes and turning centers
  - ✔️ Mill/turn multi-tasking machines
  - ✔️ Wire EDMs
  - ✔️ Flame, laser, waterjet, etc.

- **ICAM solution for robots**

- **ICAM solution for UHF**
ICAM modules

- ICAM development tools for:
  - Post-processors
  - Virtual Machine creation
  - G Code parser and Controller Emulation
  - ICAM Smart optimization modules:
    - SmartCUT - Remove unnecessary feed motions
    - SmartPATH™ - Avoid overtravel
    - SmartFEED - Optimize cutting feedrate
Development tools

- **CAM-POST** - Post-processor creation for:
  - ✓ CNC machines: Milling, Turning, Mill/Turn, Wire EDM, Waterjet, Laser, Punch-presses, etc.
  - ✓ Robots

- ✓ **CONTROL EMULATOR / VIRTUAL MACHINE**
  - ✓ MCD code parser to be used with DELMIA machine simulation and/or ICAM Virtual Machine

- **ICAM Adaptive Post-Processing™**
  - ✓ Post-processing combined with Control Emulator™ Virtual Machine in a single step process
Adaptive Post-Processing™

- **Adaptive Post-Processing™** post-process, optimize and machine simulate – all in a single step
- Pure ICAM G code simulation (CE/VM) can be used as a complementary tool in the shop floor, so operators can review what the machine will do

- Neutral multi-CAM post-processing, optimization & simulation solution
- Works with CNC machines, robots and UHF-equipped machines
- Single database and UI for post-processing, optimizations and G code machine simulation

- Unique optimization capabilities:
  - Reduce multiple iterations from CAM to Post and G code simulation, back to CAM etc...
  - Automatically force all post-processed programs to go through G code simulation
  - In case of fatal errors (collisions due to major programming errors), the post-processor will not create the tape file, forcing the user to correct the toolpaths in the CAM system
ICAM Technologies Corporation
Thanks for attending!

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