

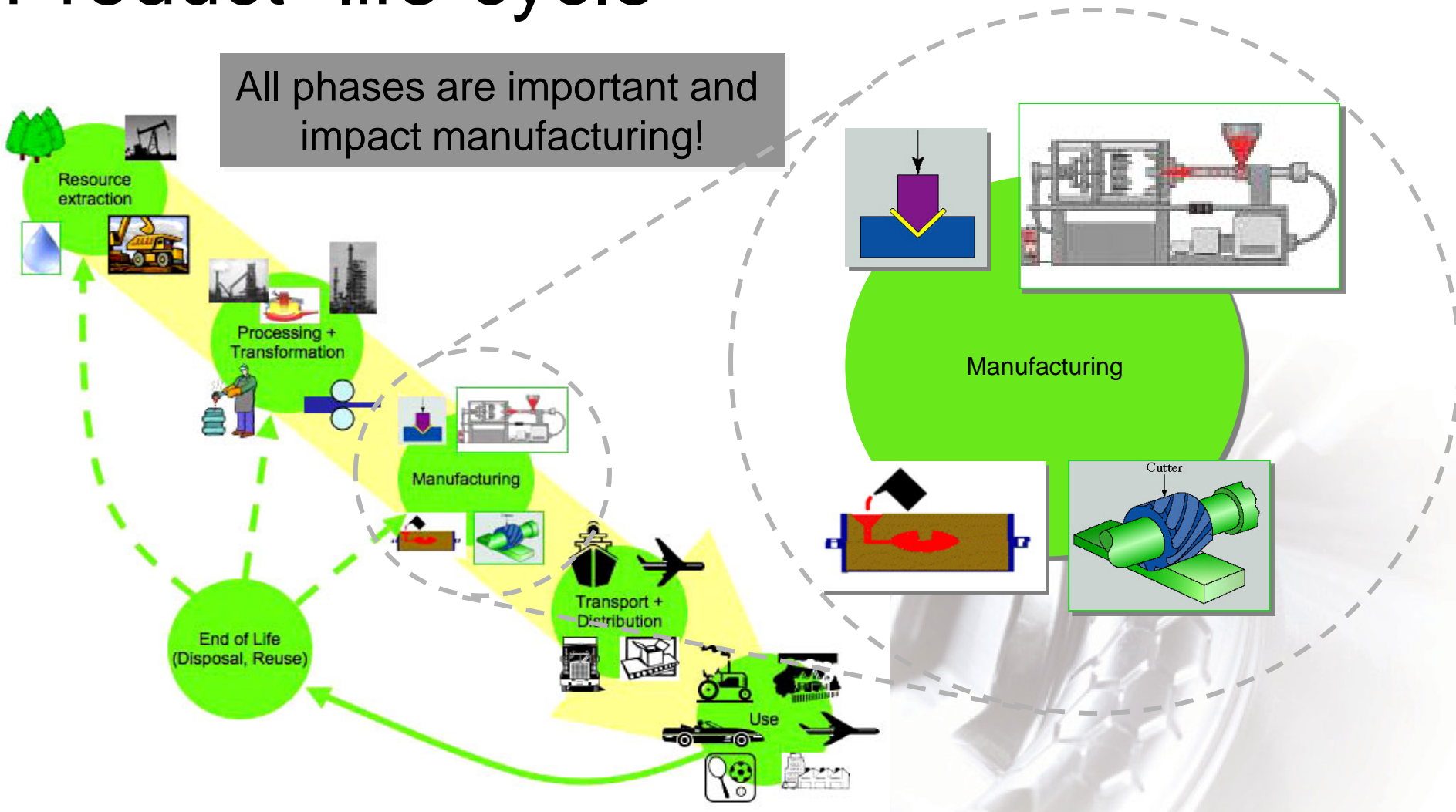


Manufacturing in California

Adam Hansel

Product “life-cycle”

All phases are important and
impact manufacturing!



What is a CNC machine tool?



1. Controlled by math
2. Precision equipment which creates objects by a subtractive process
3. Basis of manufacturing



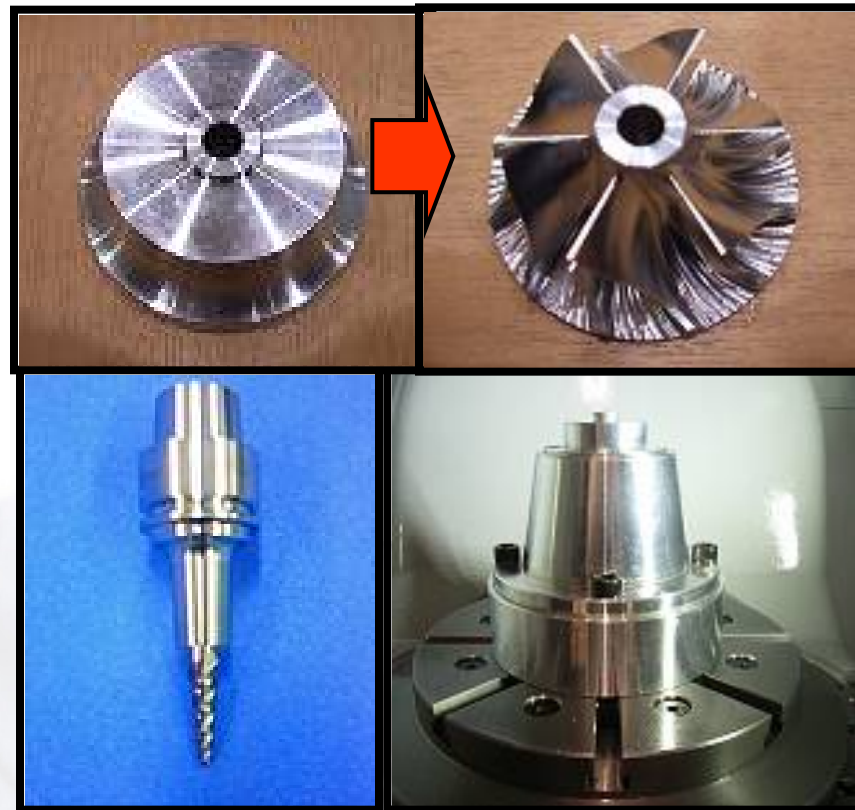
DMG

MORI SEIKI

Small Engine Turbo Cutting

Cycle Time is under 90 seconds!

Process	Rotation (min-1)	Feed rate (mm/min)
Rough Machining	30,000	3,000
Hub surface Finish	30,000	3,000
Wing finish	20,000	3,200



Challenges



CA tax/business environment



Supply chain



Available employees



Incentive packages

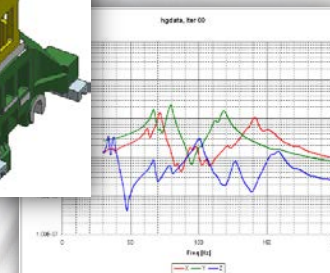
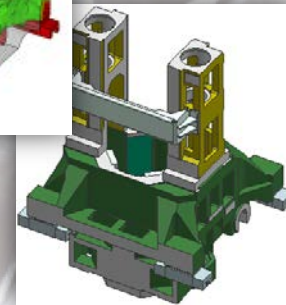
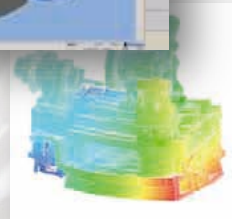
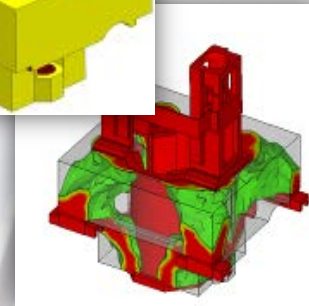
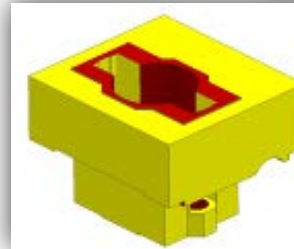
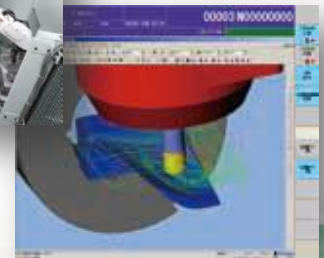


Cost of land

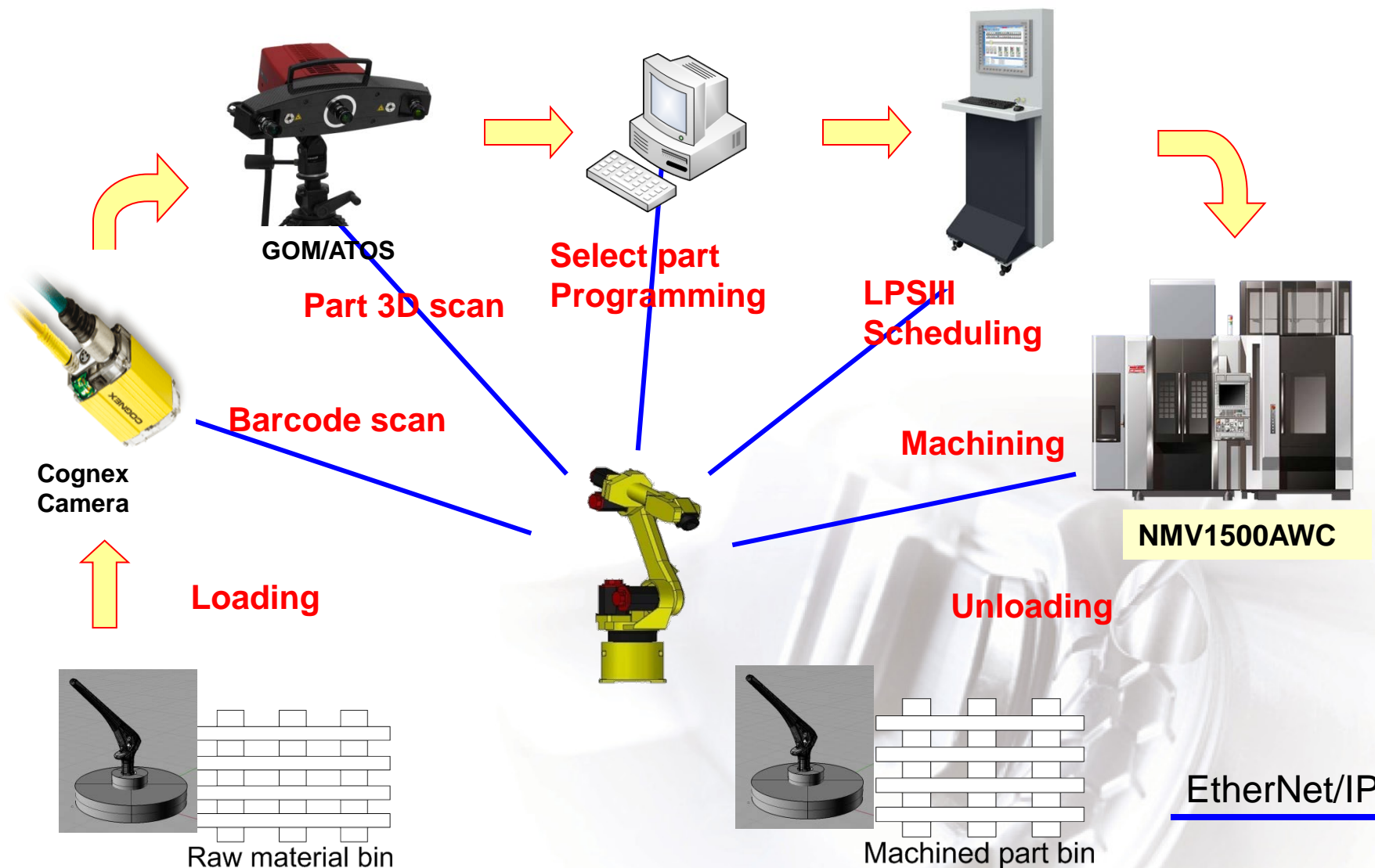
R&D + Production

Development Directions

- Machines
 - Design
 - Custom spec
- Automation
 - Linear pallet pool
 - Communication
 - System integration solutions
- Productivity
 - Post Processing
 - Virtual cutting
 - Program optimization
- Quality
 - Analysis
 - Virtual prototyping

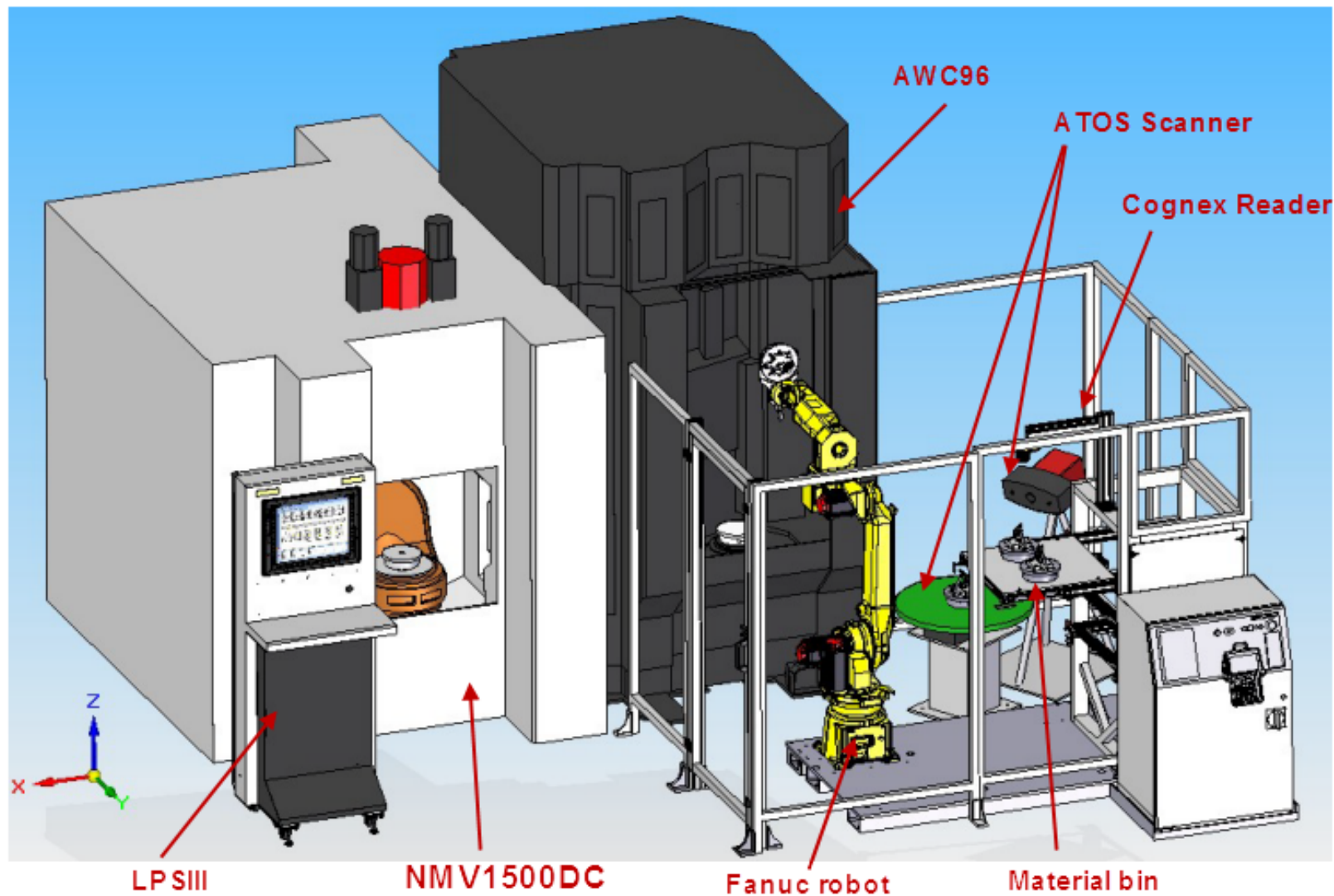


Highly Flexible Mfg

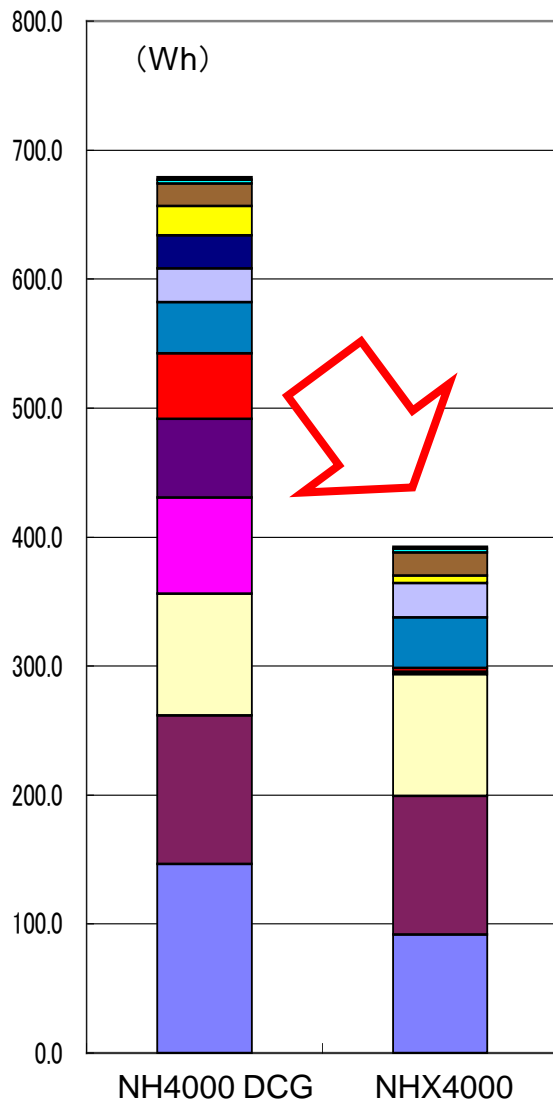


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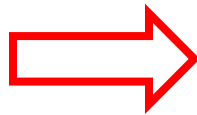
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Energy Savings (NHX4000)



Power consumption simulation and comparison with the conventional machine



Power consumption is reduced by approx. 40%

Comparison using a gear pump (aluminum)

- Cycle time 315 sec.
- Recess, M36TAP, reaming process
- ATC: 6 times, APC: 1 time



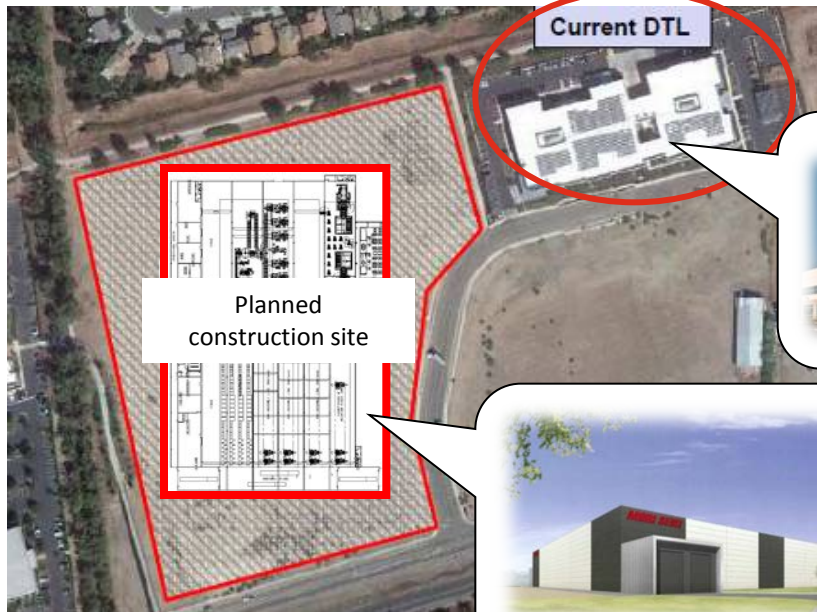
Reduced power consumption

- An accumulator for the hydraulic unit
- Fan cooler used instead of oil controller
- Energy-saving coolant pump
- LED lighting

Location: Davis, California
Start of operation: July 2012
Factory area: 200,000 sq.ft
Production models: NHX series



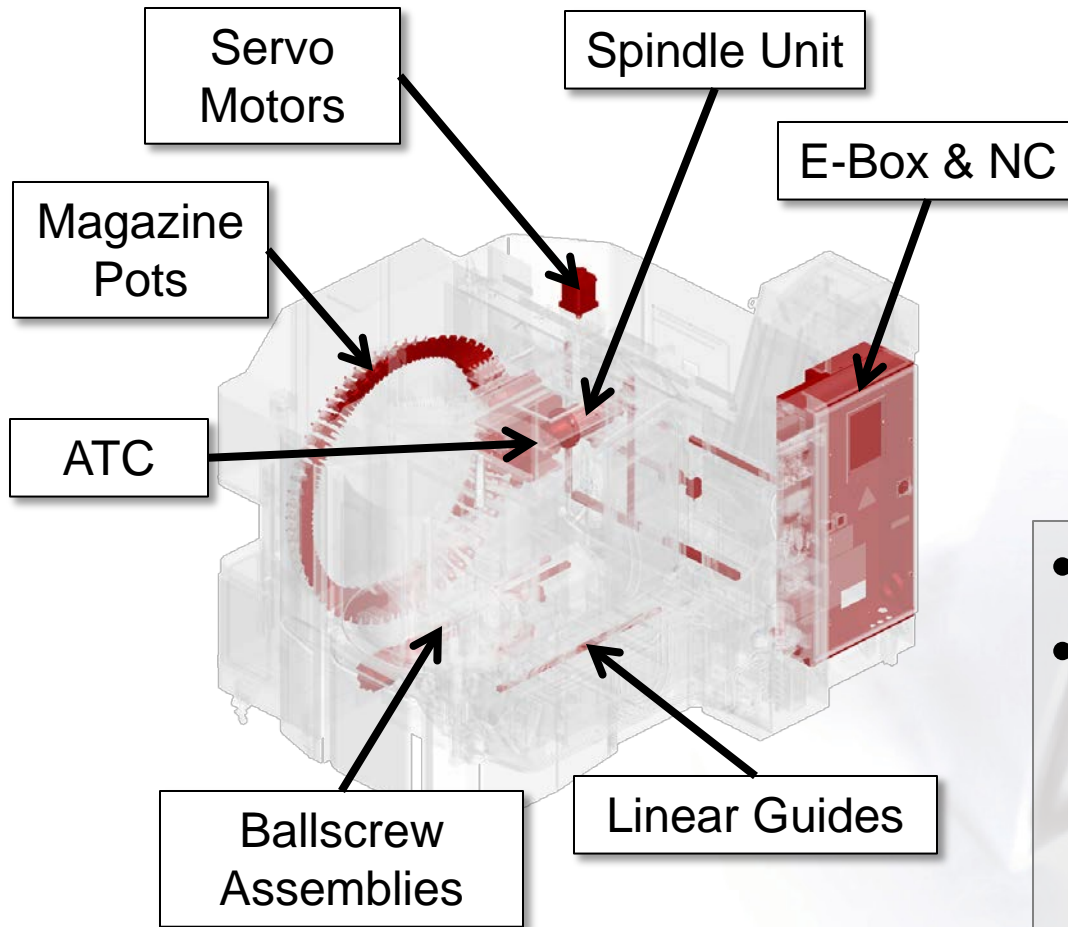
NHX4000



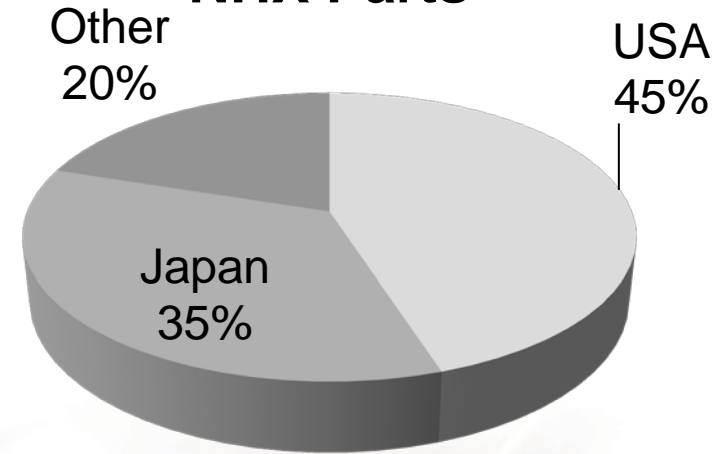
DTL



NHX4000 - Made with USA Parts



NHX Parts



- Key Parts from Japan
- Local Procurement of NHX4000
 - 30% is already secured
 - 45% is target



- Begin hiring in 11/2011
- In Davis
- Iga
- 15 machines

Training

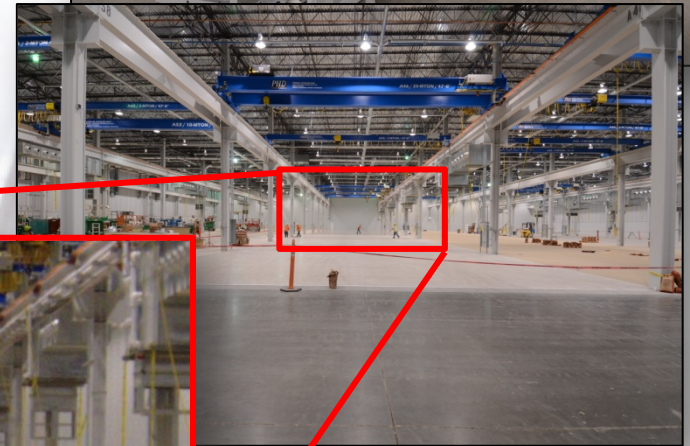


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Internal Construction

- All 3 Pallet Pool systems are in progress
- NHX6300, NHX10000 & Gantry currently being installed
- Assembly floor being finished





What We Needed



- **Manufacturing Equipment Sales Tax Exemption**
 - **Skilled Workers**
- 

Dream



Reality

