



Manufacturing Process Models

Simulate Real-world Manufacturing Processes with Physics-based Process Models and Deterministic Routings Based on 3D CAD Models.

Overview

aPriori's physics-based manufacturing process models address common manufacturing processes and deterministic routings to identify the lowest cost production method. Manufacturing Process Models allow engineering, manufacturing and purchasing professionals to explore cost saving production alternatives down to the machine level. Unlock manufacturability and sustainability insights early in design stages to make innovative changes and reduce engineering change orders (ECOs).

Manufacturing Process Groups

Enhanced with Sustainability Insights

Enhanced with Design for Manufacturing (DFM) Capabilities



Additive Manufacturing

- Direct Metal Laser Sintering
- Material Jetting
- Powder Metal
- Selective Laser Sintering
- Stereolithography



Assembly

- Adhesive Bonding
- Mechanical Fastening
- Sealing
- Threaded Insert
- Welding



Casting & Forging

- Closed Die Forging
- Die Casting
- Investment Casting
- Ring Rolled Forging
- Sand Casting



Composites

- Automated Fiber Placement
- Automated Tape Layup
- Hand Layup



Electronics

- PCB Fabrication
- PCB Assembly
- Wire Harness Assembly



Heat & Surface Treatment

- Aging, Stress Relief
- Anodize, Black Oxide
- Degreasing
- Electroplating
- Painting
- Powder Coat Cart
- Surface Hardening
- Through Hardening



Machining

- Machining of Casting, Forging, Additive, and Fabricated parts
- Milling, Turning, Grinding, Gear Making
- Multi-Spindle Machining
- Stock Machining



Metal Fabrication

- Bar & Tube
- Extrusions
- Hard & Soft Tooled
- Stamping & Die Stamping
- Sheetmetal Hydroforming
- Sheetmetal Roll Forming
- Sheetmetal Stretch Forming
- Sheetmetal Transfer Die



Plastics

- Injection Molding
 - » Assembly Molding
 - » Assembly Plastic Molding
- Reaction Injection Molding
- Roto and Blow Molding
- Structural Foam Molding
- SMC Compression Molding
- Sheet Plastic
- Thermoforming

*Not all models are illustrated above

** Design guidance and sustainability insights not available to all processes yet

Unlock value in your digital twins with automated manufacturing insights that include:

Product Cost Management

- Should cost
- Make vs. buy

Sustainability

- CO₂e footprint
- Design for Sustainability

Manufacturing Optimization

- Machine selection
- Process routing

Design Guidance

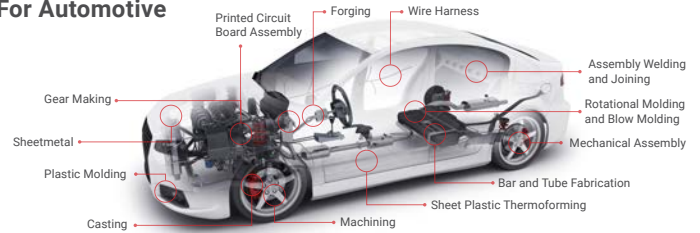
- Design for Manufacturability (DFM)
- Design to Cost (DTC)

Process Models for Selected Industries

Reduce Engineering Change Orders

Aluminum extrusion fabrication, roto and blow molding manufacturing process models assist cross-functional teams in reaching success with pre-production vehicle builds early, reducing engineering change orders. [Learn More](#)

For Automotive



Achieve Target With Ease

Adapt to large project scope and streamline product development process by quickly locating parts that could be made more cost-effectively through different manufacturing processes. Automatically analyze and identify cost drivers for large sheet metal parts. [Learn More](#)

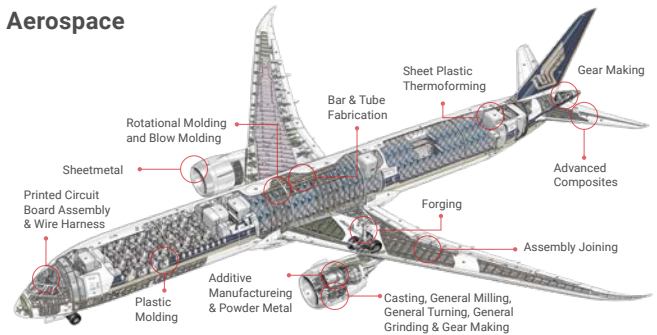
For Industrial Equipment



Manufacture Next Generation Aircraft

Design next generation airframe, engine and interior components with accurate manufacturing process models. Optimize for aerospace industry, the process models help improve manufacturing calculation, optimizing performance/weight ratio to reduce fuel consumption and lower total cost of ownership. [Learn More](#)

For Aerospace



Speed Up Design-to-Market

Gain early visibility into the cost impact of design decisions with dedicated Manufacturing Process Models in PCB, PCBA and Wire harness. Achieve faster aggregation and analysis of data across product lines and business units. [Learn More](#)

For Consumer Electronics



PCB Assemblies



Wire Harness

WANT TO LEARN MORE?

[CLICK HERE](#) to schedule a demo of the aPriori Manufacturing Insights Platform.

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