



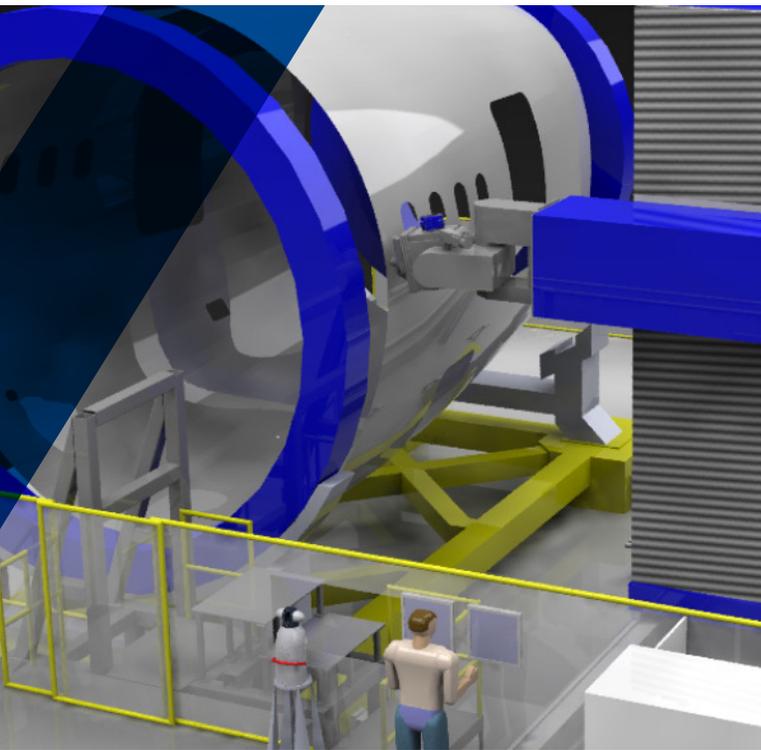
▲ AUTOMATED TRIMMING

PAR's automated trimming systems provide customized, high-tech solutions to maximize your productivity, whether cutting composite parts, metallic components, or other materials. Our advanced waterjet cutting, spindle trimming, and ultrasonic cutting process expertise paired with our system engineering design expertise deliver a fully automated system that provides significant quality and productivity advantages.

PAR's automated trimming systems include many fully integrated capabilities such as scanning to determine as built condition, auto calibration, auto tool change, automated loading systems, and in-process inspection.

BENEFITS OF INTEGRATED AUTOMATED WATERJET, SPINDLE TRIMMING, AND ULTRASONIC CUTTING

- Significantly improves cycle time, reduces costs and improves productivity
- Configurable fixturing eliminates need for different tooling for each part or assembly and accommodates families of parts
- Improves health and safety conditions in a manufacturing environment
- With multi-part loading, different parts can be cut more efficiently by combining common processes
- Integrated process head allows multiple process tools to be integrated into a single end effector or machine
- PaR provides total management of the system for highly reliable operations



TECHNICAL INFORMATION

Methods

- Abrasive waterjet cutting
 - Low process forces, no heat-affected zone, and no tool wear
 - Water pressure, cutting speed, desired finish, nozzle size, orifice size, garnet and horsepower can be adjusted to optimize for your application
- High-speed spindle trimming
 - Precise depth control
 - Works well in set-up's with tight access
 - Regularly used when there is no access to back of part or material or material only needs to be removed to a certain depth
- Ultrasonic cutting
 - Used to cut granola bars to uncured composites and in sculpting honeycomb core materials through knife and rotary disc cutting
 - Virtual elimination of friction allows for low force cutting, clean cuts, and no dust

Features

- Integrated, configurable, and robotic fixtures or rigid dedicated tools
- Automatic tool loading and unloading

Materials

- Composites (Kevlar, carbon fiber prepreg and core)
- Preforms
- Aluminum and Titanium
- Glass and Ceramic

Supporting Technologies

- Scan/measure part to determine as-built condition
- Adjust tool paths to match actual part contours and address part uncertainty
- High pressure intensifiers
- Abrasive collection and delivery systems
- Water level management

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