



## ESCO Cleveland

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**ESCO Turbine Technologies** has the strength and agility to exceed customers' shifting expectations in a continuously changing business environment. With facilities in North America, Mexico and Europe, ESCO specializes in challenging production that requires exotic alloys and complex geometries.

### Markets

#### Industrial Gas Turbines

- Equiaxed blades, solid and cored
- Solid and cored DS and SC blades
- Small vanes and nozzle segments

#### Aerospace

- Small equiaxed blades
- DS and SC blades
- Equiaxed shrouds
- DS and SC BOAS and shrouds
- Vane segments
- Vane and nozzle rings

### Capabilities

#### Wax Injection

- State-of-the-Art MPI and Tempcraft wax injection presses provide repeatable process parameters

#### Robotic Shelling

- Kawasaki Robot with VA-Tech producer unit provides repeatable mold consistency

#### Casting

- Equiaxed, DS and SC capabilities

#### Dimensional Inspection

- Three LK machines with LK Studio & LK CAMIO software, and with Digigraph data analysis software

#### X-Ray

- 2 350 KV units

#### Vacuum Heat Treat

- All thermal processing (HIP and/or Heat Treat) is performed by customer-approved subcontractors.

#### Non-Destructive testing

- In-house FPI and X-Ray inspection

#### Destructive testing

- Metallurgical testing for porosity%, IGA, IGO, ICO, alloy depletion, carbide studies, nitride layer, metal/mold reaction, weld evaluation, etc.



### Customers

ESCO Cleveland is an approved source for such customers as:

- Rolls-Royce Corp
- GE Transportation (Aircraft Engines)
- Honeywell Engines
- Pratt & Whitney
- Wood Group
- Pratt Whitney Power Systems
- Turbine Blading
- Rolls-Royce ESI
- Power Systems Manufacturing

### Quality Standards

#### Certifications

- AS 9001:B and ISO 9001
- NADCAP
  - AS7110 - Welding / Brazing
  - AS7108 - Chemical Processing
  - AS7101 - Materials Testing
  - AS7114 - Non-destructive Testing (Radiography, Fluorescent Penetrant)
- ISO/IEC 17025 - General requirements for the competencies of testing and calibration laboratories

### Typical Products

#### Aerospace

- Equiaxed, DS and SC blades
- Vane rings
- Diffuser and nozzle rings

#### Industrial Gas Turbines

- Solid and cored blades and vanes
- DS blades
- Equiaxed blades