

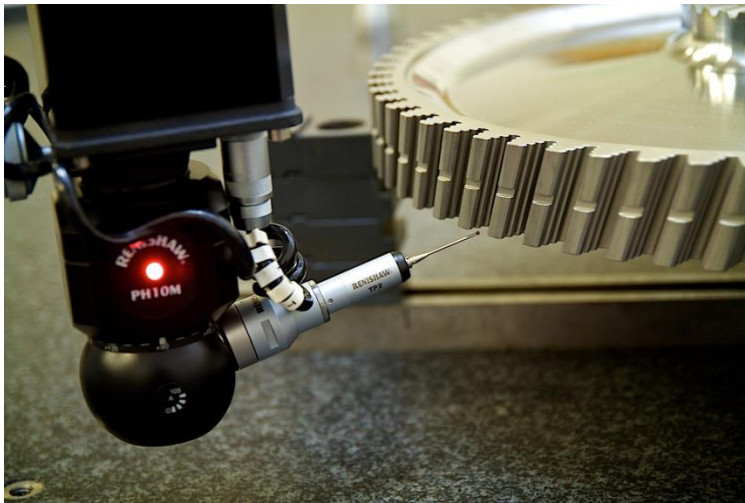
## Advanced Parts Manufacture

### Turbine Care Made Simple

For over 28 years EthosEnergy has been manufacturing gas turbine core engine and package parts in order to offer our customers a reliable and cost effective alternative to OEM manufactured parts.

#### Why APM® Parts:

- New replacement parts for in-service or out of production Industrial Gas Turbine parts
- All APM® standard and configuration parts are fully warranted
- Competitive delivery timescale and a secure alternative supply chain
- An improved or enhanced design compared to the original datum part



#### Improved Manufacturing Process

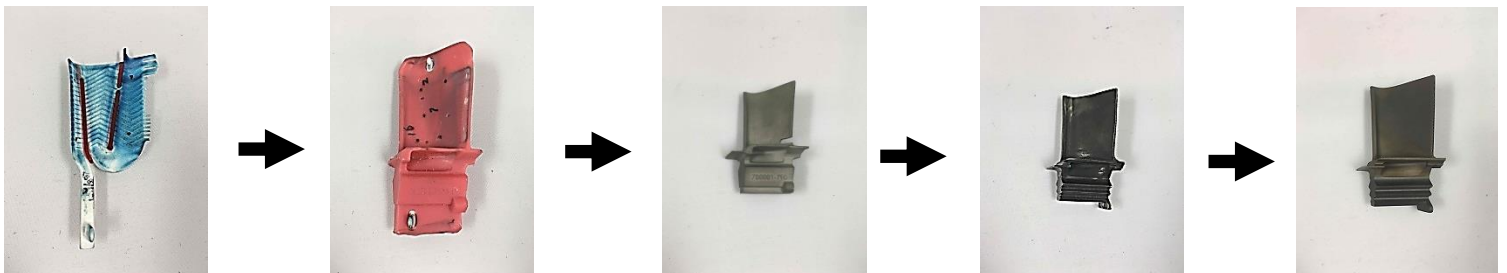
- Ceramic Core Investment Casting
- Single Crystal Blade Casting
- Traditional Machining
- Electric Discharge Machining (EDM)
- Precision Form Grinding
- Thermal Spray Coating
- Metal Electroplating

#### New Product Introduction Process

- Start to Finish Product Development
- Strategic Review and Business Plan
- Sample Part Data Sourced
- Dimensional and Metallurgical Gathering
- 3D Modelling and Drawing
- Tolerance and Mating Study
- Dies, Tools and Fixtures Created
- First Article Manufacture and Validate
- Rigorous Engine Testing incorporating; Performance, Vibrations and Temperature
- Launch Customer
- Optimization and Improvements

#### Engineering and Design Verification

- Forgings
- Castings
- Final Machining
- Fabrication



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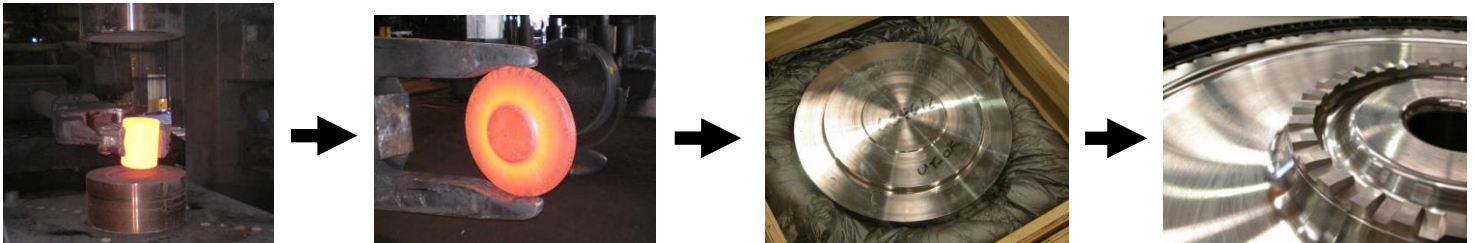
### History

#### Running History

- Over 350,000 EELT parts in service
- Individual APM® hot end components have accumulated over 70,000 hours of trouble free running
- Over 2600 APM® Taurus 60 1<sup>st</sup> Stage nozzles, including 7800/7900 variants installed and running
- First APM® Taurus 60 1<sup>st</sup> stage disc has been in service since March 2009
- First APM® Mars 100 1<sup>st</sup> stage disc delivered June 2011
- Over 71,700 APM® legacy Saturn and Centaur 1<sup>st</sup> and 2<sup>nd</sup> Stage Blades installed and running

#### Expertise

- Over 28 years of component design and manufacture experience
- Unique experience in multiple turbine types and multiple turbine manufacturers, unlike the OEM and independent service providers
- Skilled and qualified teams sharing European and US design/manufacturing expertise, technology and know-how



EthosEnergy is an Independent Service Provider (ISP) for value-add rotating equipment services and solutions to the power, oil & gas, and industrial markets. Globally, these services include facility Operations & Maintenance; design, manufacture and application of engineered components, upgrades and re-rates; repair, overhaul and optimisation of gas turbines and steam turbines, generators, compressors.

EthosEnergy's Centre of Excellence facility for Light Turbines in Houston has over 20 years of experience and is the world's leading alternative supplier of services for Solar sub-12MW gas turbines.



#### **EthosEnergy (Houston Production Facility)**

6225 W. Sam Houston Parkway North  
Houston, TX 77041  
+1(713) 849 8800

[www.ethosenergygroup.com](http://www.ethosenergygroup.com)