

1/22/2025

608-238-6001 [ TEL ]

greg@infinityturbine.com [ Email ]



# fiber-laser- innovation-turbine- milling-by- infinityturbine

**Infinity Turbine  
LLC**

**Revolutionizing Data Center Waste Heat  
Recovery with Desktop Fiber Laser Milling  
for Supercritical CO2 Turbines by Infinity  
Turbine who is Pioneering the Use of Low  
Cost Lasers**

**Structured Data**



**This webpage QR code**

```

<script type= "application/ld+json">
  { "@context": "http://schema.org",
    "@graph": [
      {
        "@type": "Organization",
        "@id": "https://infinityturbine.com/#organization",
        "name": "Infinity Turbine LLC",
        "url": "https://infinityturbine.com",
        "sameAs":
          [ "https://www.youtube.com/channel/UCsobpvy0xqc13uvhA71Cv4w",
            "https://x.com/InfinityTurbine",
            "" ],
        "telephone": "608-238-6001",
        "email": "greg@infinityturbine.com",
        "logo": "https://infinityturbine.com/logo.png"
      },
      {
        "@type": "WebSite",
        "@id": "https://infinityturbine.com",
        "url": "https://infinityturbine.com",
        "name": "Revolutionizing Data Center Waste Heat Recovery with Desktop Fiber Laser Milling for Supercritical CO2 Turbines by Infinity Turbine who is Pioneering the Use of Low Cost Lasers",
        "description": "Infinity Turbine is now Developing Methods to Machine SCO2 Turbines Using Desktop Fiber Laser. Discover how desktop fiber lasers are transforming data center waste heat recovery by finishing and engraving 3D-printed supercritical CO2 turbine parts. Learn how affordable laser milling of rotor and stator foils offers a sustainable, cost-effective alternative to traditional machining, empowering data centers to convert waste heat into power."
      },
      {
        "@type": "NewsArticle",
        "mainEntityOfPage": {
          "@type": "WebPage",
          "@id": "https://infinityturbine.com/fiber-laser-innovation-turbine-milling-by-infinityturbine.html",
          "headline": "Revolutionizing Data Center Waste Heat Recovery with Desktop Fiber Laser Milling for Supercritical CO2 Turbines by Infinity Turbine who is Pioneering the Use of Low Cost Lasers",
          "image": "https://infinityturbine.com/images/infinity-turbine-fiber-laser-engraving-and-milling-turbine-rotor.png",
          "datePublished": "2025-01-22T08:00:00+08:00",
          "dateModified": "2025-01-22T09:20:00+08:00",
          "author": {
            "@type": "Organization",
            "name": "Infinity Turbine LLC",
            "url": "https://infinityturbine.com"
          },
          "publisher": {
            "@type": "Organization",
            "name": "Infinity Turbine LLC",
            "logo": {
              "@type": "ImageObject",
              "url": "https://infinityturbine.com/logo.png"
            }
          }
        }
      }
    ]
  }
}</script>

```

Infinity Turbine is now Developing Methods to Machine SCO2 Turbines Using Desktop Fiber Laser. Discover how desktop fiber lasers are transforming data center waste heat recovery by finishing and engraving 3D-printed supercritical CO2 turbine parts. Learn how affordable laser milling of rotor and stator foils offers a sustainable, cost-effective alternative to traditional machining, empowering data centers to convert waste heat into power.

**PDF Version of the webpage (first pages)**

<https://infinityturbine.com/fiber-laser-innovation-turbine-milling-by-infinityturbine.html>

1/22/2025

1/22/2025

1/22/2025

## Revolutionizing Waste Heat to Power: Finishing 3D Printed Supercritical CO<sub>2</sub> Turbine Parts with Desktop Fiber Lasers

As the global push toward energy efficiency intensifies, innovative methods of converting waste heat into usable energy are gaining traction, especially in sectors like data centers where massive quantities of heat are generated as a byproduct. A promising technology for harnessing this heat involves supercritical CO<sub>2</sub> (sCO<sub>2</sub>) turbines, which convert low-grade heat into power. To make these systems more accessible and cost-effective, a new approach has emerged: using desktop fiber lasers to finish engraving and milling parts for these sCO<sub>2</sub> turbines. This technique is particularly valuable for creating 2D rotor and stator foils, enabling cost-effective manufacturing and paving the way for broader adoption of waste heat recovery in data centers.

### Fiber Lasers: A Game-Changer in Finishing Turbine Parts

Fiber lasers, known for their high precision and ability to engrave at micro-levels, have transformed industries from aerospace to jewelry making. In the context of sCO<sub>2</sub> turbines, these lasers bring several advantages:

1. **Enhanced Precision and Detail:** Fiber lasers can engrave with pinpoint accuracy, making them suitable for producing fine features on turbine rotors and stators.
2. **Cost Reduction:** Traditional methods for creating the detailed designs required for sCO<sub>2</sub> turbine parts often involve high-cost CNC milling machines. Fiber lasers, especially desktop models, offer a more affordable alternative, reducing overall manufacturing costs.
3. **Versatility with 3D Printed Parts:** Many turbine parts are now prototyped through 3D printing, which speeds up initial development. Fiber lasers can be used to fine-tune these printed parts, smoothing surfaces and adding intricate details that may not be possible during printing alone.

### Application: Milling and Engraving Rotor and Stator Foils

One of the unique applications of fiber lasers in turbine manufacturing is the engraving and milling of rotor and stator foils. These thin, precisely shaped discs are integral to the efficient operation of sCO<sub>2</sub> turbines. Here's how fiber lasers streamline this process:

- **Efficient Material Removal:** Desktop fiber lasers can efficiently remove small amounts of material, ideal for producing the thin foil designs required for sCO<sub>2</sub> rotor and stator discs. This removes the need for bulky milling machines, reducing the manufacturing footprint and simplifying workflows.
- **Customizable and Rapid Prototyping:** With fiber lasers, rotor and stator designs can be customized and rapidly adjusted without retooling, enabling engineers to experiment with various shapes and patterns to optimize turbine efficiency.
- **Durability and Precision on Stainless Steel:** Stainless steel is a popular material for turbine rotors and stators due to its strength and resistance to high temperatures. Fiber lasers are well-suited to engraving on stainless steel, producing high-quality foils that are durable and accurate.

### Advantages for Data Center Waste Heat Recovery

Fiber laser milling and engraving have the potential to make waste heat recovery solutions more accessible, particularly for data centers looking to offset operational costs. By incorporating sCO<sub>2</sub> turbines into their infrastructure, data centers can transform waste heat into power, effectively creating an energy loop where excess heat becomes a valuable byproduct.

1. **Lowering the Barrier to Entry:** Desktop fiber lasers reduce the need for expensive milling machines, making turbine

## Press Release

Infinity Turbine LLC, a leader in innovative energy solutions, is proud to introduce a breakthrough application of desktop fiber lasers to revolutionize the production of supercritical CO<sub>2</sub> (sCO<sub>2</sub>) turbines. Designed to support data centers in converting waste heat into valuable energy using Cluster Mesh Power Generation, this approach dramatically reduces manufacturing costs, boosts sustainability, and opens new doors for energy-conscious operations in data-heavy industries.

Leveraging high-precision fiber lasers, Infinity Turbine now offers a streamlined and affordable alternative to traditional CNC milling, enabling data centers and manufacturers to finish and engrave complex 3D-printed turbine parts. This laser-based process is especially effective for creating intricate rotor and stator foils—essential components that drive efficiency in sCO<sub>2</sub> turbines. By reducing the reliance on expensive milling machines, Infinity Turbine's solution lowers the barrier to implementing waste heat recovery systems and enhances scalability for data centers of all sizes.

Desktop fiber lasers have the potential to transform how data centers approach energy. By using waste heat as a value-added byproduct, we're helping data centers not only cut operational costs but also significantly reduce their carbon footprint.

Infinity Turbine's fiber laser solution is ideally suited for creating thin, durable foil designs on materials like stainless steel, which are critical for high-efficiency operation in sCO<sub>2</sub> turbines. The ability to mill and engrave with fiber lasers allows for quick customization and adaptation, accelerating the prototyping and production stages and enabling data centers to quickly deploy waste heat recovery systems.

Key Advantages of Infinity Turbine's Fiber Laser Solution for sCO<sub>2</sub> Turbines:

- **Cost Reduction:** Avoids the need for high-cost CNC machines, making sCO<sub>2</sub> turbine production accessible to smaller operations.
- **Enhanced Precision:** Laser milling offers exceptional accuracy, ensuring finely tuned rotor and stator foils for maximum turbine efficiency.
- **Sustainability:** Supports a circular energy model in data centers, converting waste heat into power to reduce energy consumption and greenhouse gas emissions.

With energy efficiency becoming increasingly critical for data-intensive industries, Infinity Turbine's fiber laser solution aligns with the growing demand for sustainable, cost-effective solutions. The process enables data centers to enhance their energy profile, transforming waste into a clean, renewable power source.

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---