rot24

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Infinity Turbine LLC

ROT24 Radial Outflow Turbine ROT ORC

This webpage QR code

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Company Name: Infinity Turbine LLC
Product: ROT 24 Turbine Generator Assembly
Working Fluid: Refrigerants, water, and CO2
Working Pressure: Less than 300 psi.
Certification: Experimental. Not ASME certified as is.
Drawings Provided: As is.
Machine: ORC and ROT Radial Outflow Turbine System
Industry: Renewable Energy
Applications: Waste heat to power, utilities, server farms, bitcoin mining, hot geothermal.
High Technology Uses: Converting waste heat to power.
Machine Features: One moving part.
Machine Runs On: Air, and some refrigerants, such as R245. Can be converted to a CO2 turbine with proper engineering enhancements with materials and seals which can withstand ASME coded materials and construction for 2,000 psi or more.
Real World Testing: This turbine has been built and tested with air (15-100 psi) and R245fa under pressure (300 psi or less). Experimental.
Seals: Gruvlok or Victaulic couplings which allow turbine to be mounted to a common shaft generator within one assembly.
Other Applications: Can be run as a expander or extractor.
Bearings: Uses motor bearings.
Systems: This has been used with a 50kW and can be used on larger systems (IT250). Multiple units can be used for larger power outputs.

PDF Version of the webpage (first pages)

ROT24 Radial Outflow Turbine AC Induction Generator Plans and Blueprints

Pricing: Please refer to price list or email Infinity.

IT250 Revenue based on gross sales or savings, not including cost of acquiring waste heat flow or pumps.

Revenue from IT250 (24 hours x 365 days per year x 250 kWh = 2,190,000 kWh per year):
at $.20 per kWh = $438,000 USD per year
at $.40 per kWh = $876,000 USD per year
at $.80 per kWh = $1,752,000 USD per year

IT1000 (1 MW) Revenue based on gross sales or savings, not including cost of acquiring waste heat flow or pumps.

Revenue from IT250 (24 hours x 365 days per year x 1000 kWh = 8,760,000 kWh per year):
at $.20 per kWh = $1,752,000 USD per year
at $.40 per kWh = $3,504,000 USD per year
at $.80 per kWh = $7,008,000 USD per year

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ROT Turbine Design

The ROT Radial Outflow Turbine has a 24 inch diameter. The ROT can drive (depending on pressure) a 50-300 kW generator.

If an induction AC motor generator is used, you will need a grid tie device.

This design is for 300 psi or lower working pressures. With enhanced material design, or vessel strength, and generator designs which can withstand higher temperatures and pressures, you can use higher pressures. The blueprints offered, are only for the turbine (the generator you purchase separately) and assembly of the turbine generator. System plans for a complete ORC Organic Rankine Cycle System are sold separately, and include the evaporator/condenser heat exchangers, feedpump, PLC Control, piping, valves, VFD, frame, and system components.

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Turbine Design

The turbine design is unique in that it uses the generator shaft and bearings for support, and a simple pipe with Gruvlok or Victaulic couplings to seal in the pressure.

The flat end plates (discs) are easily waterjet or machined out of aluminum or stainless steel. If you are using CO2 or water/steam for the working fluid, we suggest more durable bearings that will tolerate the pressurized environment.

You can also use a shaft seal to isolate the turbine section, and put the DC or AC generator outside, which does not require any special bearing lubrication that is tolerant to the inside turbine working fluid.

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Blueprints

While we are focusing on larger designs for our systems, we are offering these blueprints for sale as is, which include a unlimited build license.

We may offer updates from time-to-time, and support is not included with the price.

We offer two versions of this design:

1. Waterjet Version (additive): This version allows you to use a waterjet or plasma cutter to cut individual parts to be bolted to a plate. Similar to aircraft turbines, individual parts are assembled together. More manual labor than version 2 below.

2. Milling Machine Version (depletive): This version has the rotor and stator milled out of a block of metal (low pressure can use aluminum). This is the more time consuming and expensive version since you need a dedicated milling machine.

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Plans Download:

The plans include images of each component in (jpg/png) and .pdf views.

The machine ready files include dwg, dxf, xt and we can provide other files on request from our AutoDesk suite of Cad/Cam software.

The files are provided by download.

The license is for the turbine blueprints only, and does not include any support (optional).

If you would like system blueprints (bill of materials, heat exchangers, pump/motor, frame, piping, etc.) for our Supercritical CO2 or standard R245fa, or R134a, please contact us.

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