news

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Infinity Turbine LLC

News for Waste Heat to Energy and Organic Rankine Cycle

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News for renewable and waste heat to power.

PDF Version of the webpage (first pages)

All Turbine Plans are Introductory Priced at $10,000 USD Each

All turbine and system plans are $10,000 USD. This includes a license to build one set. Unlimited build license packages are available. This allows you to economically build one turbine or system and try before you invest in a unlimited build license.

6/24/2022

About Infinity Turbine LLC

Waste Heat Power: For years we've been hearing requests from customers who would like to use their waste heat to generate power, both on land and marine applications. To meet that demand, we formed Infinity Turbine LLC in 2008 and developed the IT10, the worlds first production 10 kw ORC (Organic Rankine Cycle) waste heat to power generator.

New developments in CO2 Brayton Cycle may allow efficiencies to reach 30-50 percent. This is a huge increase from the legacy ORC process which has a system efficiency (bottoming cycle) of 5-15 percent).

We now offer a CO2 Turbine Development Platform for educators and energy developers.

6/24/2022

Infinity Turbine Introduces ROT12 Experimental Turbine Generator

The ROT12 Radial Outflow Turbine with DC Generator was designed for the IT10 system. It is designed for ORC working fluid such as Honeywell Genetron R245fa.

6/24/2022

NFT Designs For Sale

Infinity is now offering its turbine and system designs as a NFT as a first in the industry to enter its develop turbine development programs as part of the Ethereum blockchain arena.

The program offered by Infinity will initially be their own products, but will rapidly expanding into a clearinghouse of any tech NFT product (development, design, equipment, CO2 credits, and more).

6/24/2022

Bitcoin, Ethereum and Crypto Mining Solutions to Convert Waste Heat into Cooling

Profitable bitcoin mining focusses on lower energy costs while increasing efficiencies to reduce costs to gain access to profit. With the ban on crypto mining and trading in China, there is a huge blockchain vacuum.

A typical bitcoin miner will gross about $8 per day (subtract electrical costs from that) and produces around 10,000 btu of heat from the processors. As you can see, trying to make money using this process will involve deploying multiple miners (many buy buildings or modular storage solutions and fill them with miners).

Infinity Turbine is now introducing the Crypto Mine Shaft, which uses shipping containers to house miner GPUs. Not only can we provide plans to convert shipping containers into miner farms which are scalable, but we can provide cost saving solutions for using the waste heat to provide cooling using our innovative strategies. This gives you a competitive edge over others, since you reduce your power costs.

We are also developing a Filemaker solution which allows you to enter in costs to plan before starting your operation for ROI (payback). This includes variables such as miner speed (to figure out puzzle), electricity costs, cooling costs, and other items (many of which you can add as custom components).

6/24/2022

Standing Wave Turbine

The major achievement of the standing wave turbine is to provide a standing wave (lenticular) combustion chamber which does not have any impact on driving the compressor.

This allows for a propagating 3D combustion zone that is not limited to allow heat restrictions which results in better efficiency and lower fuel flow.

We are purposely limiting details of this project as it is being developed.

Our only customer goals are @elonmusk and @spaceX.

NFT and licensing opportunities will be available.

6/24/2022

Infinity Turbine Maker and Sample Plans Download

Infinity Turbine is offering some of its technology and designs for one-off 3D printing or building for non-commercial use. These include the Tesla Valve, Milling Machine Jig, Electric Motor and Coil Developers Kit, and Magnetic Gear Reduction Coupling Device. Others will be added soon. This gives you some idea of the structure or the Cad/Cam plans we offer for sale.

6/24/2022

Utilizing waste heat from Diesel Generators to make free power.

Taking waste heat from diesel generators can produce free power in a Organic Rankine Cycle (ORC) system. The sources of waste heat are engine cooling (replacing large coolant system fan) and stack exhaust which is normally waste heat to the atmosphere.

The ORC does require a cool liquid condenser flow, but generally can utilize the waste heat from the diesel engine to provide 28 percent savings. Generally a 500 kW diesel or larger are prime candidates for utilizing waste heat to make power. Those savings may be greater than $200,000 USD per year for a 500 kW or larger generator running 24/7.

Exhaust to Power: With an additional waste heat to thermal oil heat exchanger, you can capture the diesel exhaust from the pipe to supply heat to the Infinity turbine. This is about 40 percent of total fuel savings as shown in chart below.

Coolant to Power: Pipe straight to the Infinity turbine. This is about 32 percent of total fuel savings as shown in chart below.

6/24/2022

Surplus Parts and Systems for Sale

Surplus for sale including full systems, turbines, parts, Swagelok stainless steel fittings, and more...

6/24/2022

Infinity Turbine: Ground Power Unit GPU Lithium Remote Power Generator - Stand Alone Power

Infinity Turbine: Ground Power Unit GPU Lithium Remote Power Generator - Stand Alone Power

Infinity Turbine is developing a home based GPU (ground power unit) that is based on lithium batteries. This cart mounted system is easy to move around to the jobsite, home, mobile, or marine. Hook up your PV panels, wind generator, backup generator, or grid power to charge.

Visit our videos page with link below...

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Ground Power Unit GPU Lithium Remote Power Generator Stand Alone Power

Infinity Turbine: Ground Power Unit GPU Lithium Remote Power Generator - Stand Alone Power

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Xprize

$100 MILLION Prize Purse: XPRIZE Carbon Removal is aimed at tackling the biggest threat facing humanity - fighting climate change and rebalancing Earth’s carbon cycle. Funded by Elon Musk and the Musk Foundation, this $100M competition is the largest incentive prize in history, an extraordinary milestone. Any carbon negative solution is eligible: nature-based, direct air capture, oceans, mineralization, or anything else that achieves net negative emissions, sequesters CO2 durably, and show a sustainable path to achieving low cost at gigatonne scale.

Our Strategy: Harvest CO2 from the most plentiful source, the sea (where CO2 is most concentrated). This is done by a new gas leverage turbine called the Sea Merlin Engine.

6/24/2022

CO2 to Fuels Experimental Developer Platform Processor

The purpose of this platform is to provide experimentation and development of novel gas to liquids (GTL) technologies for the utilization and mitigation of carbon dioxide.

Infinity is now providing experimental platforms for developing modular cart mounted GTL (gas to liquids) fuel processing from CO2. Using Nafion or similar catalysts (available in sheets, tubes, pellets, and more), the inputs are CO2, water, and electricity to make alcohol (ethanol, methanol, and butanol). The selectivity of the output will depend on your formula for the inputs and catalyst.

The Infinity GTL Processor allows you to adjust the flow of CO2, water, and electricity. The platform also allows you to incorporate and modulate in-situ power production, static electricity generation (SEG), and other unique functions.

The processor platform is available in a completed cart or parts in kit form for developers who want to configure their own system.

6/24/2022

CO2 to Rocket Fuel Experimental Developer Platform Processor

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6/24/2022

Supercritical CO2 to treat Nafion for Direct Methanol Fuel Cells

Supercritical carbon dioxide treatment was used to enhance performance of NR212. The microstructure of NR212 membranes was reorganized after the Sc-CO2 treatment. The treated NR212 membranes showed higher proton conductivity than Nafion 117. The treated NR212 membranes showed lower methanol permeability than Nafion 117. Direct Methanol Fuel Cell (DMFC) performance of the treated NR212 membranes was better than Nafion 117 (2012). The Nafion-grafted-polystyrene sulfonic acid (N-g-pssa) exhibits higher ion conductivity and lower methanol permeability than that of Nafion 115. The N-g-pssa membranes are tested as electrolytes in a direct methanol fuel cell. Compared with the as-received NR212 membranes, all the Sc-CO2 treated NR212 membranes show higher proton conductivity and better capacity of barrier to methanol crossover. From Fenton test, it can be found that the Sc-CO2 treated NR212 membranes have better chemical stability than that of NR212 membranes. Therefore, NR212 membranes treated by the Sc-CO2 method may be promising candidate electrolytes for DMFC applications (2020).

6/24/2022

Rocket Fuel from CO2

Infinity is now offering an experimenters platform for those who wish to develop liquid or gas CO2 to plastics and alcohol fuels, including Rocket Fuel. Inputs: CO2, H20, DC electricity, and Nafion or other membrane catalysts.

6/24/2022

Converting CO2 to Fuel Grade Ethanol, Methanol, and Butanol using a Reverse Fuel Cell

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6/24/2022

Radial Outflow 1MW Turbine AC Induction Generator Plans and Blueprints

Infinity Turbine now has available blueprints for a 1 megawatt ORC radial outflow turbine.

6/24/2022

Vacuum Dry Kiln for drying Lumber

Infinity Turbine with Global Energy are developing DIY plans and kits for kiln vacuum drying lumber. I invented the Global Container Kiln back in 1990 by converting standard shipping containers into dry kilns for the small sawmills. Infinity Turbine has specialized in developing simple pressure vessels and systems with it's renewable waste heat turbine generators back in 2008, and has extensive experience in pressure vessels. It's a natural fit.

Why a vacuum kiln ? Lumber prices are crazy. Homebuilders cannot find quality lumber (supplies are limited), and have turned to buying a portable sawmill, which produces green lumber. For building, that lumber needs to be dried. This is also true for cabinet makers, and other wood craft business.

Our container kiln was a standard dry kiln and could KD (kiln dry) hardwoods in 30 days. That's too long for most.

A vacuum kiln is the answer. Smaller chambers can dry in 3 days or less.

6/24/2022

Silver Nanoparticle Production $14 per gram from botanical sources

Spinning Disc Reactor for Nanoparticle Production to make $24 million per year

For the full review, please download our pdf: 20190425-infinity-supercritical-sdr-nanoparticle-review (see link below).

Spinning Disc Reactors, or SDRs, are a very new type of processing unit that has had new applications discovered every year.

A big field of interest as of lately has been process intensification which is a design approach that focuses on smaller, cleaner, safer, and more energy efficient processes. One design that has received considerable attention as of late has been the spinning disc reactor (SDR). Its basic design includes one or more liquid streams being flowed onto a quickly rotating disc.

The centrifugal acceleration from the rotation creates a very thin liquid film which significantly heightens the mass transfer and micro-mixing ability of the liquid streams. It also is a continuous feed reactor which can be applied to many processes that have relied on large volume and high residence time designs like batch or continuously stirred tank reactors (CSTR).

While the SDR can be used for many different processes, it excels greatly in a specific few. These include processes that rely on precipitation and uniformly mixed reactants. These traits allow for SDRs to be used in the bottom-up production of nanoparticles, where particles are created through nucleations and subsequently crystal growth. This is where batch reactors and CSTRs aren't as easily applied due to their high volumes and lack of sufficient mixing ability. "Top-down" processing where bulk material is ground down into nanoparticles is typically avoided when trying to achieve nanoparticles of a certain size and narrow size distribution due to the lack of control over the process.

In 2010, the global market for quantum dots was low, sitting at $67 million [27]. It was projected to have an amazing 59.3% compound annual growth rate, which was mostly realized and by 2016 it has become a $610 million global market (with the estimated CAGR it was predicted to reach $670 million by 2015) [28]. The current growth rate is estimated at 41.3% now for 2016 to 2021, predicting the global market to reach $3.4 billion by 2021 [28].

Both silver and titanium dioxide nanoparticles have a realized and open market to enter with predicted growth and new applications coming out consistently. The cost to produce the materials is rather low and the production ability seems high enough, especially with silver, that a company could actively pursue using an SDR to produce the nanoparticles with success. Since the proof of concept and idea is already detailed, there would be a low cost of entry into these markets as well. The revenue from such could be used to support R and D into quantum dots or pharmaceutical nanoparticles.

Strategy: (prices updated on 5 January 2021)

Silver Nano Particles Production at $14.25/gram Sell Price ($285/20/ml):

[Note: these are 2017 figures. For 2021 double the figures below.] If silver nanoparticles of 99% purity or higher can be produced anywhere in the range of 10 nm – 40 nm, they can be sold at a wholesale price of $3+ a gram ($6/gram in 2021). To undercut the market to allow for entry I assumed a price of $2 a gram ($4/gram in 2021). This comes out to be about $24 million a year in revenue for 2017 ($48 million in 2021). As seen in Table 15, this comes out to about $12 million a year in profit for 2017 ($24 million a year for 2021). Referencing Section 2.21, a producer with the production rate would have a 1.56 percent market share of the global market.