



Your Gas, Your Power!



E-Finity Distributed Generation
an authorized Capstone distributor
Power to be Independent

Your Gas, Your Power!



- About Capstone
- About E-Finity
- Product Line
- Making power (Applications)
- Capstone Technology
- Factory Support





Turbine Corporation



About Capstone Turbine Corporation

Reliable power when and where you need it.
Clean and simple.

Who is Capstone?



- **American made product**
- Founded 1988 – commercial launch in 1998
- World leader in microturbines
- Headquarters and manufacturing plant in California
- Over 86 distribution partners
- ~9,000 units shipped worldwide
- Over 50,000,000 operating hours



Market Segments



Energy Efficiency



Generate on-site power capture thermal energy from the clean exhaust in CHP and CCHP applications.

Hotels
Large Residential Complexes
Retail Buildings
Office Buildings



Oil, Gas & Other Natural Resources



Produce on-site power for all phases of oil and gas production in both onshore and offshore applications.

Drilling Operations
Flare Gas Reduction
Gas Compression
Mining
Water Conversion



Renewable Energy



Cleanly and efficiently generate onsite power operating on biogas and other waste products to create high-efficiency renewable power and heat.

Farm Digesters
Landfills
Solid Waste Management
Wastewater Treatment
Food Waste



Critical Power Supply



Mission critical businesses have an uninterruptible power source with the world's only microturbine-powered UPS solution.

Data Centers
Telecom
Power Rentals
Hospitals



Transportation



Operate in conjunction with battery packs to provide onboard battery charging and vehicle range extension.

Commercial Trucks
Heavy-duty Vehicles
Supercars
Transit Buses
Delivery Vehicles



Marine



Provide onboard power, vessel range extension and utilize thermal energy for onboard heating and cooling.

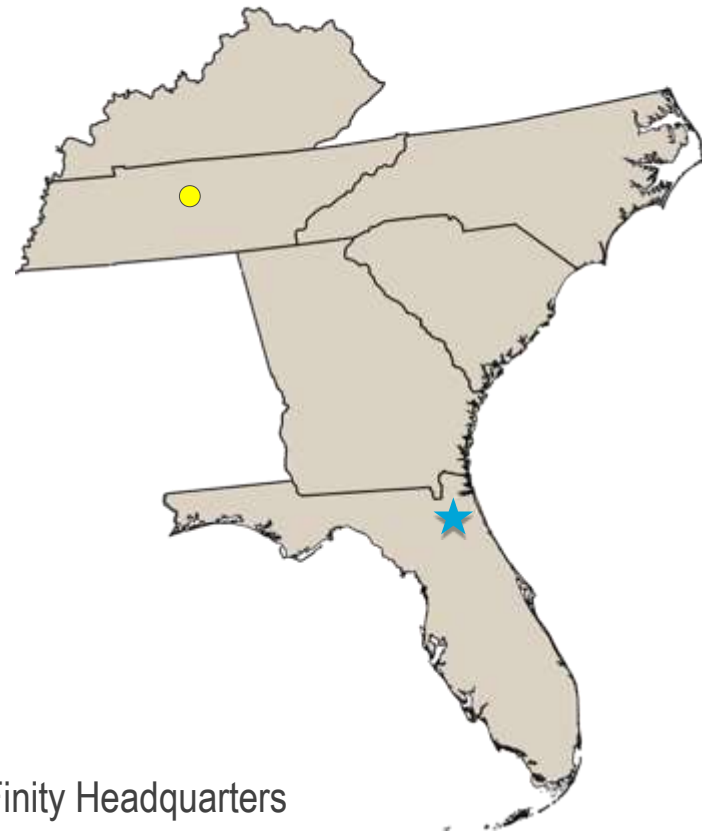
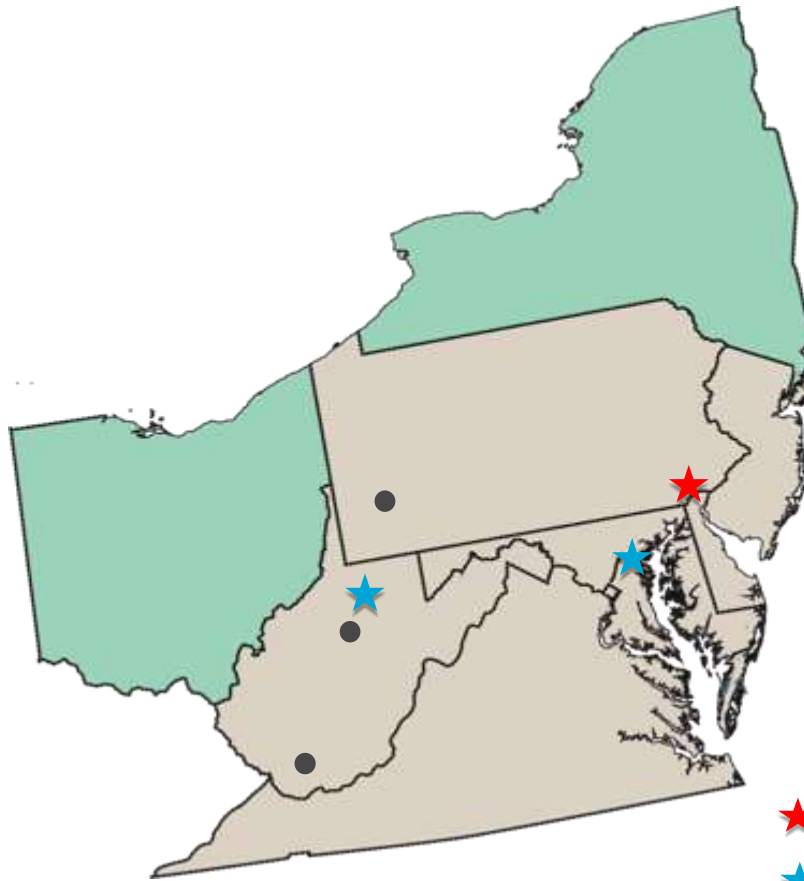
Work Boats
Cargo Ships
Commercial Vessels
Tour Boats







About E-Finity Distributed Generation

Authorized Capstone Distributor,
Mid-Atlantic & Southeastern United States and The Caribbean

E-Finity Locations

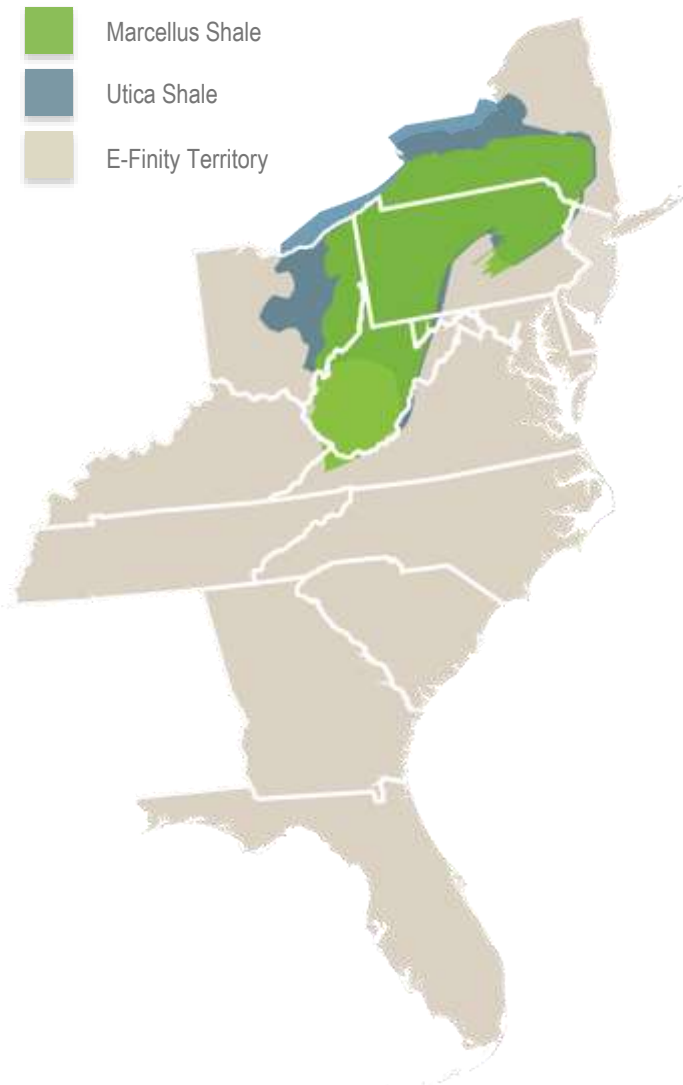


-  E-Finity Headquarters
-  Sales Office
-  Service Hub
-  Planned Service Hub

E-Finity Fleet



- World's Largest Capstone Distributor
- Microturbine fleet powers over 200 oil and gas locations throughout the Marcellus and Utica Shale region
- E-Finity supports over 650 Capstone units with a total combined generating capacity over 65 MW

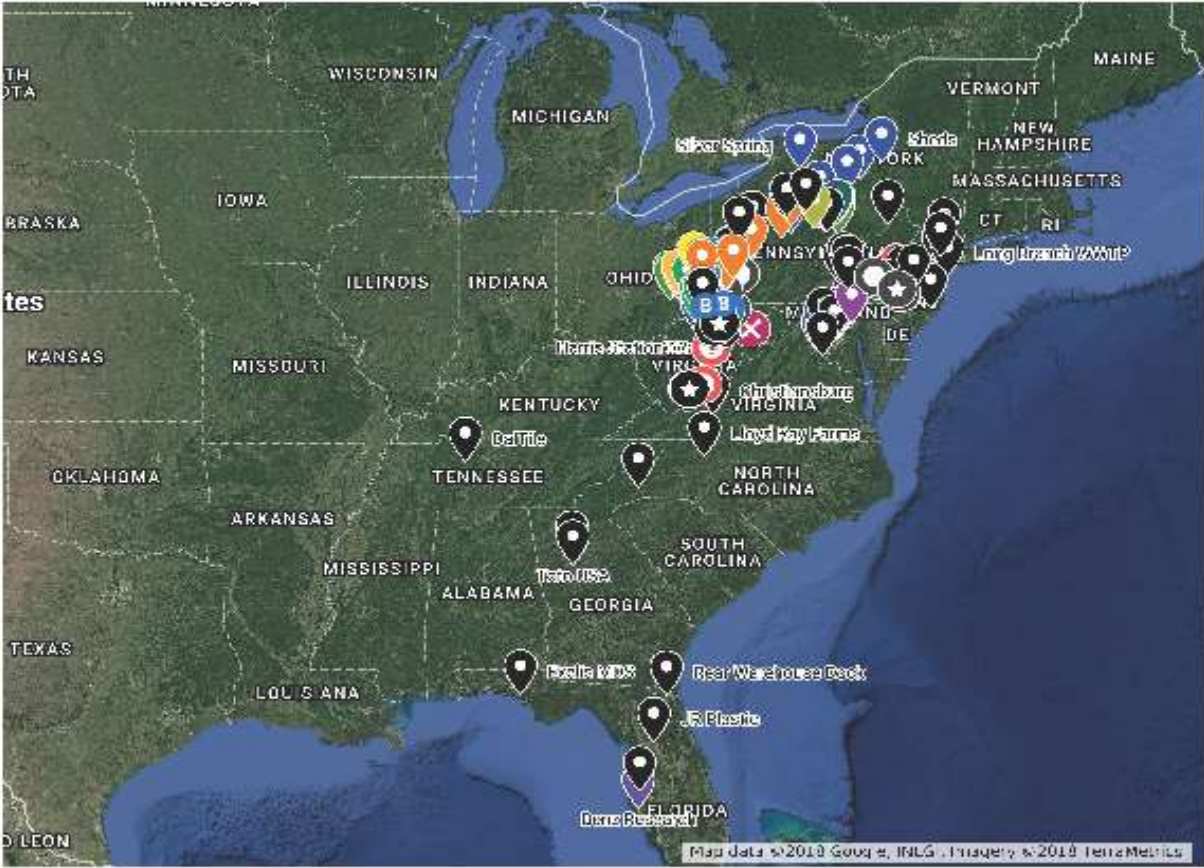




EDG Sites

Sites

- EQT
- Dominion Transmission Inc.
- Veolia Bus Company
- Antero Resources
- Williams Ohio Valley
- Midstream, LLC
- Blue Racer Midstream, LLC
- Anadarko Petroleum
- Consol
- E-Finity Distributed Generation
- Chevron
- Consol - CNX
- Crestwood Midstream
- Partners LP
- E2 Energy
- MVP
- National Fuel Gas
- XTO
- Benz Research
- Brandywine Realty Trust
- Canaan Valley Institute
- Carrollburg Condominium
- Other / No value



E-Finity DG Services



- Conceptual Design Support
- System sizing
- Energy Analyses
- Application Engineering
- Project Economics
- Financing
- Controls Integration
- After Sales Support





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Product Line Overview

Broad Product Offering



Features



Only one moving part



Patented air bearing technology



Stand-alone or grid connect



Wide fuel range



High power density



Advanced combustion controls



Clean waste heat



Remote monitoring

Benefits

Longer service intervals, low operating cost

No lubricants or coolants needed

Multiple applications and industries

Operates on gaseous, renewable and liquid fuels

Compact footprint, small modular design

Low emissions, no exhaust aftertreatment

Thermal energy for cogeneration/trigeneration

View performance and diagnostics 24/7

C1000S Series Turbine



C1000S - Modular Solution



- Operates as a single scalable genset
- Stable combustion from idle to 100% load
- Catastrophic failure is limited to a 200kW engine
- Built in N+1 Redundancy
- Available in 600kW and 800kW Models



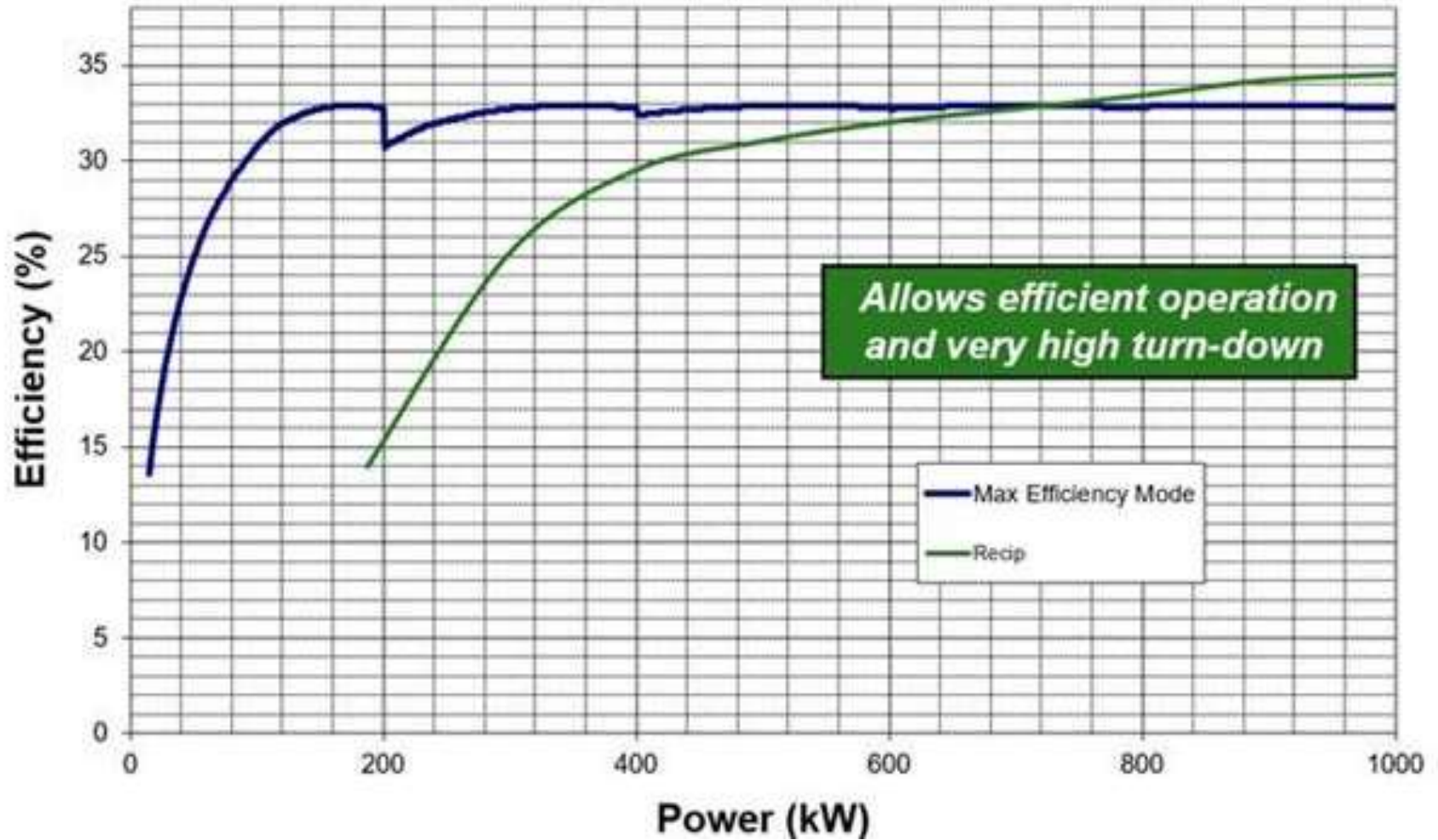
C1000S Series 1 Megawatt Microturbine



- One electrical connection; one fuel connection
- Perform maintenance on one turbine while all other units continue to operate



Part Load Efficiency



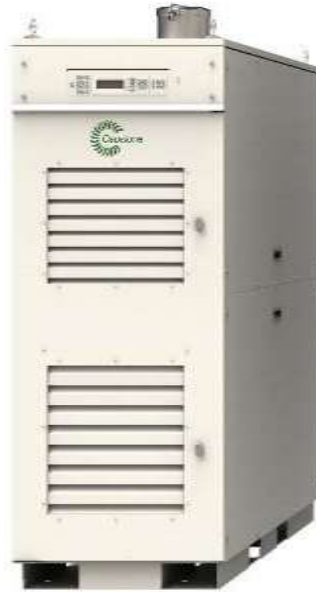
C30, C65 & C200S



- Units can be installed in an array
- Scalable platform for multi-phase projects



C30



C65



C200



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Making Power for You

Why a Microturbine?



- **Application Advantages**

- Extreme Low Emissions
- Continuous part load operation
- Fast transient response
- Long maintenance intervals



- **Operational Advantages**

- Low maintenance
- Lack of oil change / waste
- No additives required
- Quiet and no vibrations

- **Integration Advantages**

- No cooling water system
- No sound attenuation
- No vibration dampers
- No heavy base / skid
- No oil leak precautions
- No exhaust after treatment
- No synchronization panel
- No complex control panel
- Simple Heat Recovery

Why Capstone?



- Reduced Energy Costs
 - High efficiency using Natural Gas already onsite
- Avoided Capital Costs
 - Avoid Utility charges to bring in lines and Right-of-Way Purchases for poles
- Protection of Revenue Streams
 - Not relying on unstable utility grid
- Less Exposure to Electric Rate Increases
 - Over past 10 years rates have risen 4% per year in US on average

No Powerlines
No Problem

Environmental Benefits



- CHP can fit with your environmental goals

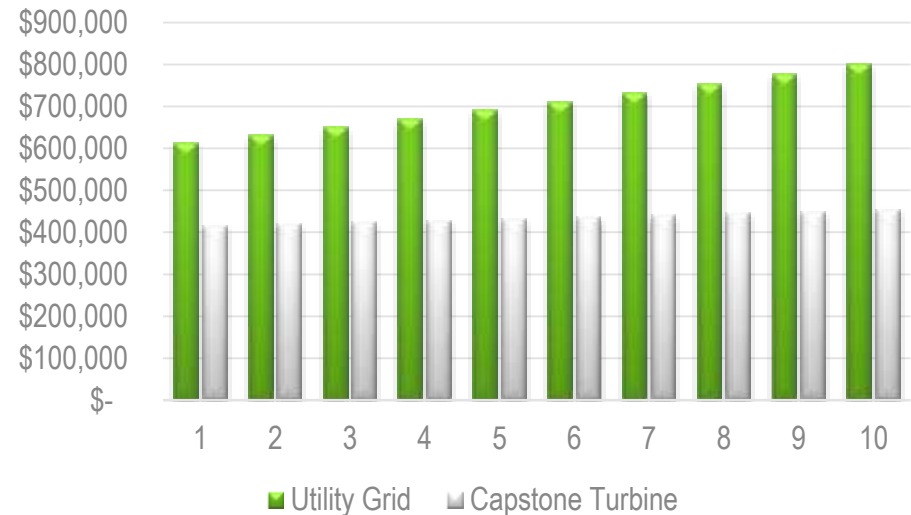
Category	Reduction vs Traditional ⁽¹⁾
Greenhouse Gas (CO ₂)	28%
Criteria Pollutants (NO _x)	94%
Energy (Fuel in MMBTU/year)	29%
Equivalent Cars Removed ⁽²⁾	575
<p>(1) Based on 50% Heating/50% Cooling. Capstone MT heat recovery uses double effect absorption chiller for cooling. Traditional assumes average US Power Plant (Source: EPA) for electricity, electric chiller with COP of 3, and 80% efficient boiler.</p> <p>(2) Assumes 1MW project operating 8,500 hours per year. US EPA data for “equivalent” car emissions and fuel consumption.</p>	

Economic Benefits



- 1 MW Capstone vs Utility Grid
 - Grid Power \$.07 /kWh
 - Natural Gas \$2.5 /MMBtu
 - 10 year service contract
- Return on Investment
 - \$1.7 million Investment
 - \$2.7 million Cumulative Savings
 - 29% IRR
- Incentives
 - 10% ITC
 - 1 year depreciation
 - Avoided capital cost of back up generator and utility

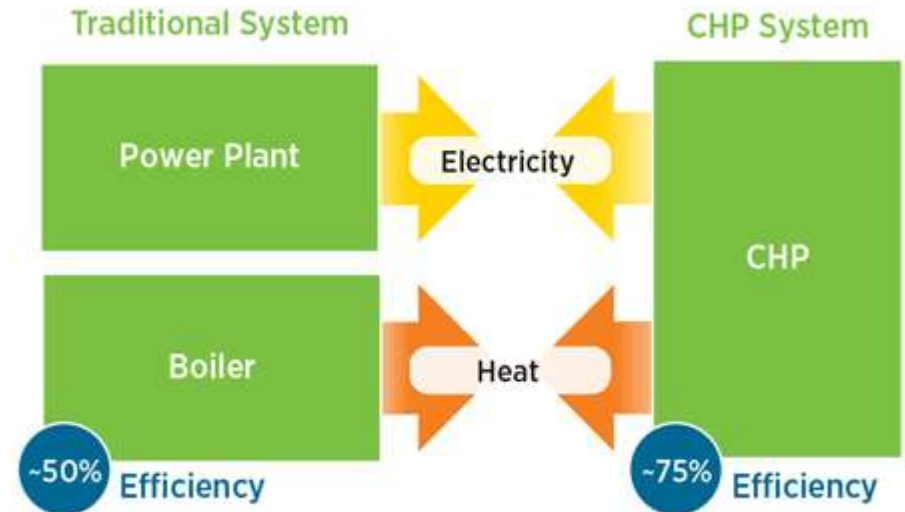
1 MW Capstone vs Utility Grid
10 years



What is CHP



- Form of distributed generation (DG)
- Located at or near facility
- Provides electric load to building
- Uses thermal energy for:
 - Space heating / cooling
 - Process heating / cooling
 - Refrigeration / dehumidification



Applications in the Gas Industry



Capstone Systems are used in:

- Exploration
- Gathering (midstream)
- Transmission & storage
- Metering & regulation
- Water pumping
- Processing stations



Lowering Electric Bills



Capstone Systems are used to reduce the electric bill

- All electric office building, with server and A/C units
- Reduce maximum power bill 75%
- Reduce winter bills by 100%
- Gas is Free because they are the gas company



Hope Gas Company Office, Clarksburg, WV

Gathering & Dehydration Facilities



- Provides Prime Power to Critical Infrastructure
- Capstone is a proven technology providing standalone power to pipelines and drilling operations in the oil and gas industry throughout the world



Janus Compressor Station
Pine, WV

Meeting Demand in the Industry



- Generate power from high BTU gas
- Low emissions
- Microturbines onsite in weeks
- Replacing the power company with Natural Gas



Combined Heat & Power

- Use waste heat from Microturbine for heating
- Increase ROI
- Use of CHP increasing overall efficiency of the facility



Meeting Demand for Patient Care

Capstone CHP Systems are used in:

- Hospitals
- Nursing Homes
- Long Term Care



Kaiser Vacaville, Vacaville, CA



Masonic Village, Elizabeth Town PA



Memorial Sloan Kettering, NY, NY

CHP Benefits to Hospitals



- Reduces energy costs
- Increases energy efficiency, helps manage costs, maintains jobs, etc.
- Reduces risk of electric grid disruptions & enhances energy reliability
- Provides stability in the face of uncertain electricity prices

Other Industry Applications

Capstone CHP Systems are used in:

- Hospitality
- Mixed Use Facilities
- Universities
- Data Centers
- Manufacturing



Hilton Hotel Philadelphia, PA



PSECU, Harrisburg, PA



FMC Tower, Philadelphia, PA



Hilton Hotel – Philadelphia, PA

- (3) C65 ICHP Turbines
- 365 Room hotel
- Turbines provided hot water for heating, pool, spa, cooking, and domestic

Output

- EPA Award Winner
- Customer left Philadelphia Steam loop
- Under a 3 year payback





FMC Tower – Philadelphia, PA

- (2) C65 ICHP Turbines
- 800 MBH of hot water for building
- Brandywine Realty Property

Results

- Utilizes PGW “CHP” Gas Rate
- MicroTurbines were selected for LEED credits
- LEED Silver Building
- Started in February 2017





Messiah College – Mechanicsburg, PA

- 1000 kW Power
- Trigeneration Site
- Cain Heat Exchanger and Broad Absorption Chiller



Messiah College, Mechanicsburg, PA

Results

- Provides building hot & chilled water to three buildings
- PP&L net metering site
- System provides backup power to Student Center



Data Center



PSECU – Harrisburg, PA

- C800 MicroTurbine
- 800 kW of Electricity
- Hot Water & Chilled Water Produced
- Backup power to data center in grid failure

Benefits

- Payback is exceeding the original model
- System helped client achieve LEED Gold status
- Has provided backup power to site multiple times since installation



Manufacturing

Phoenix Contact – Harrisburg, PA

- 1000 kW Power
- 5,000 MBH of hot water
- 300-ton exhaust fired absorption chiller

Results

- Backup power to the entire facility
- 3,130 tons of carbon savings per year
- Won PA Governor's award in 2015





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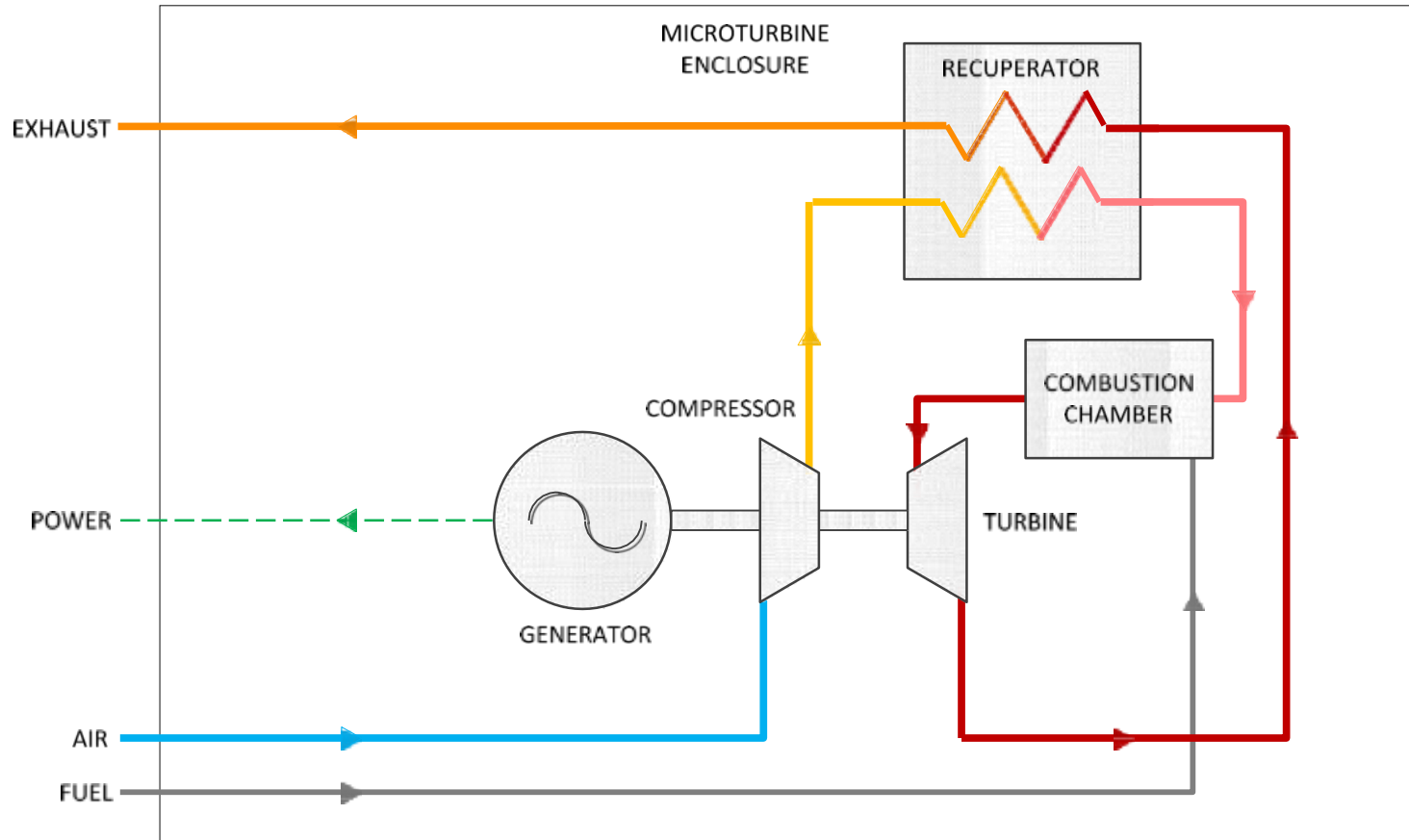


The Capstone Technology

What is a Microturbine?



Single Stage Combustion Turbine Generator (Brayton Cycle)

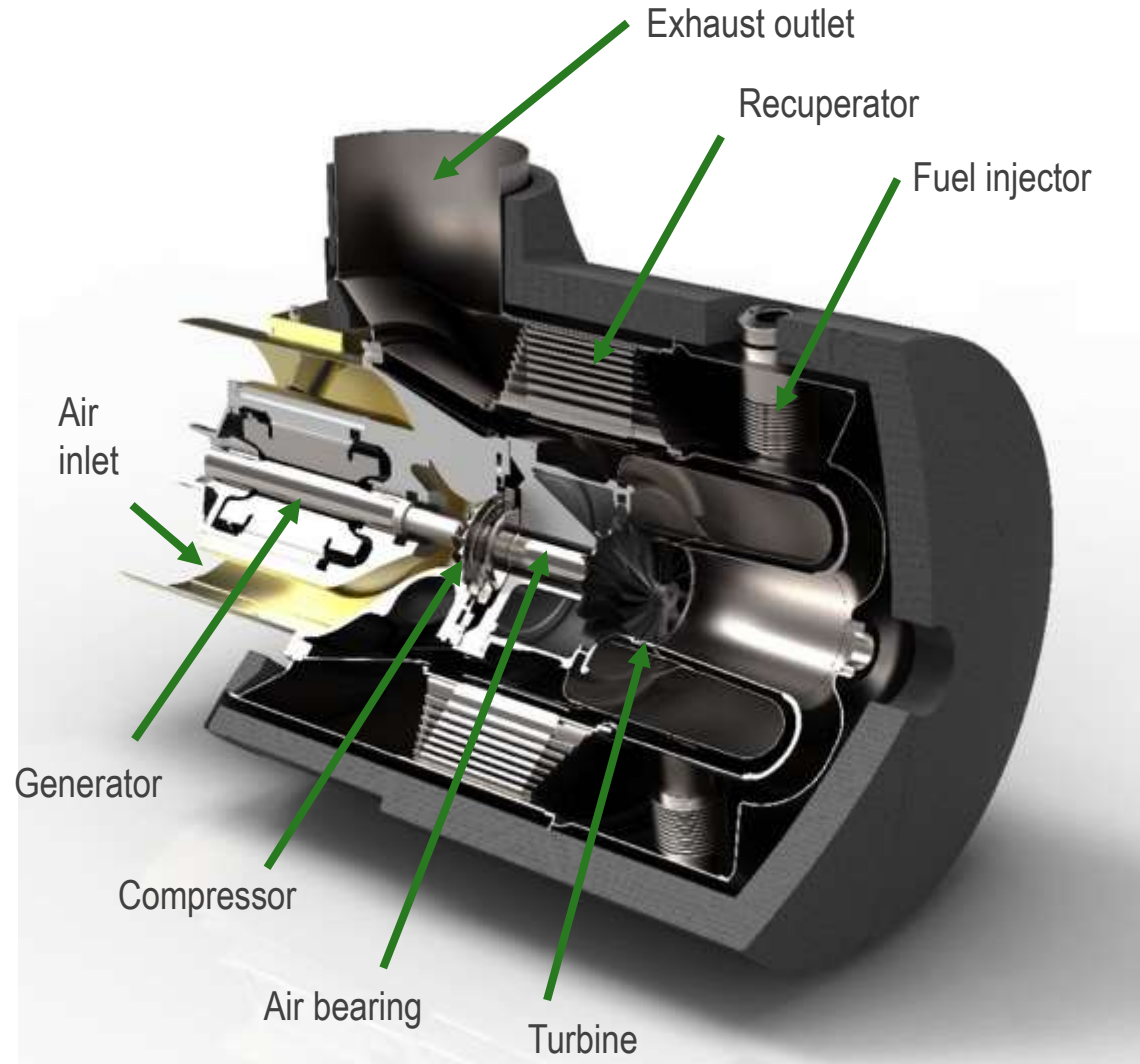


Rotor Shaft

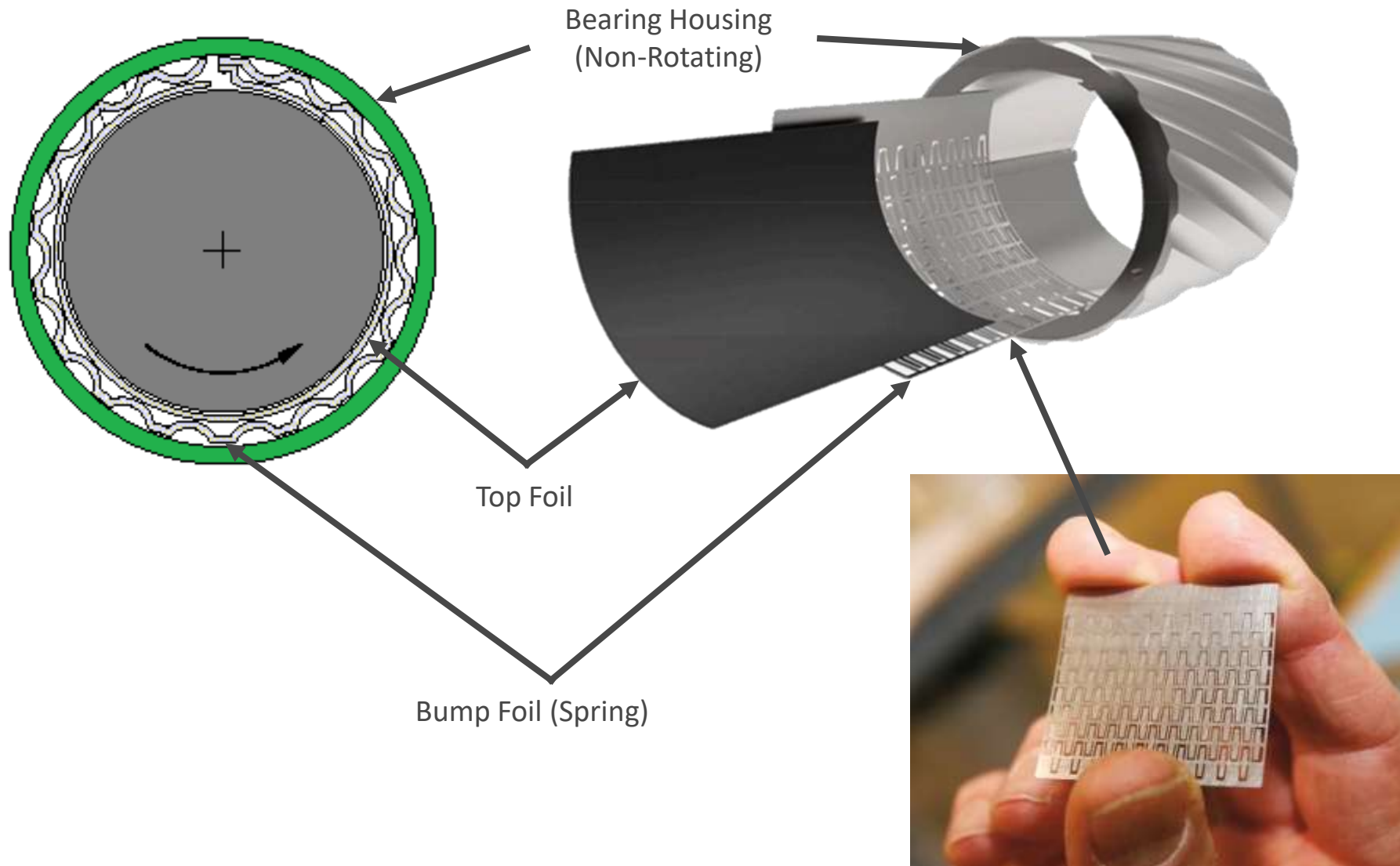


The Capstone Turbine

- Single stage design
- Recuperated
- Single moving part
- No lubrication
- Air cooled
- Low emissions < 9 ppm NOx

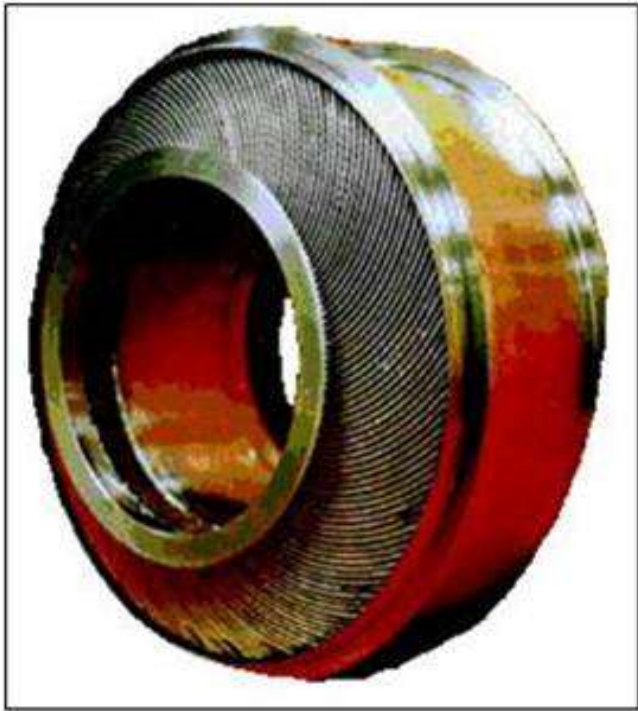


Air Bearing Technology

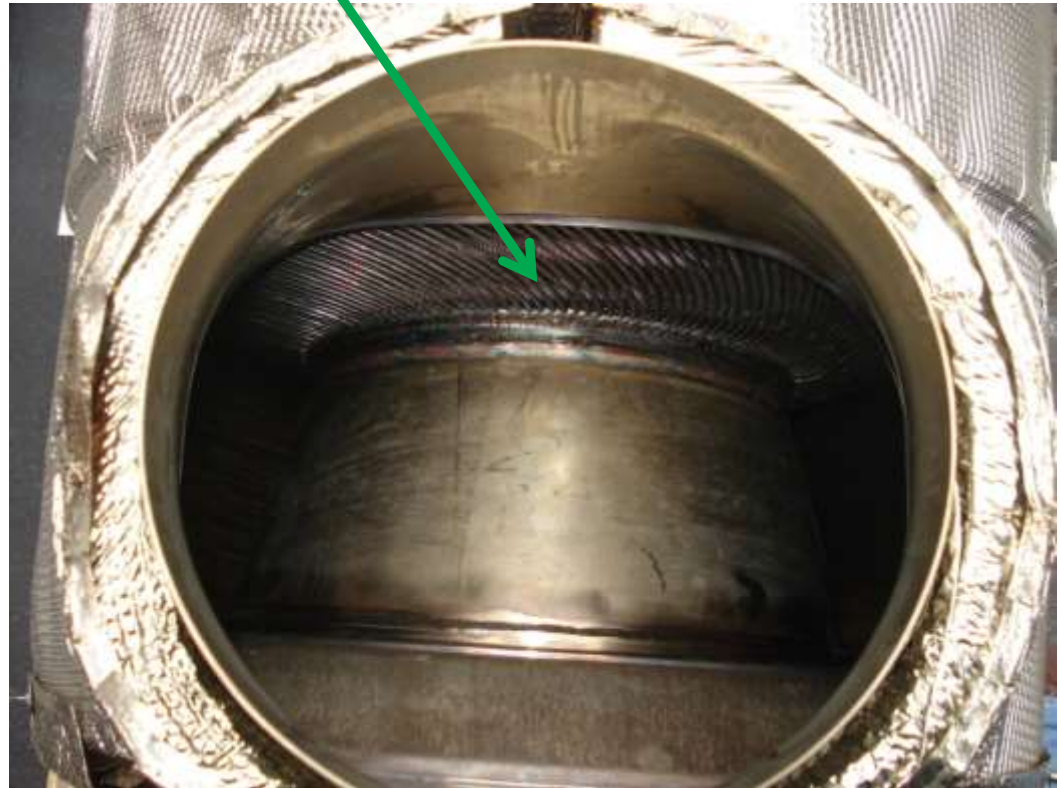


Recuperator

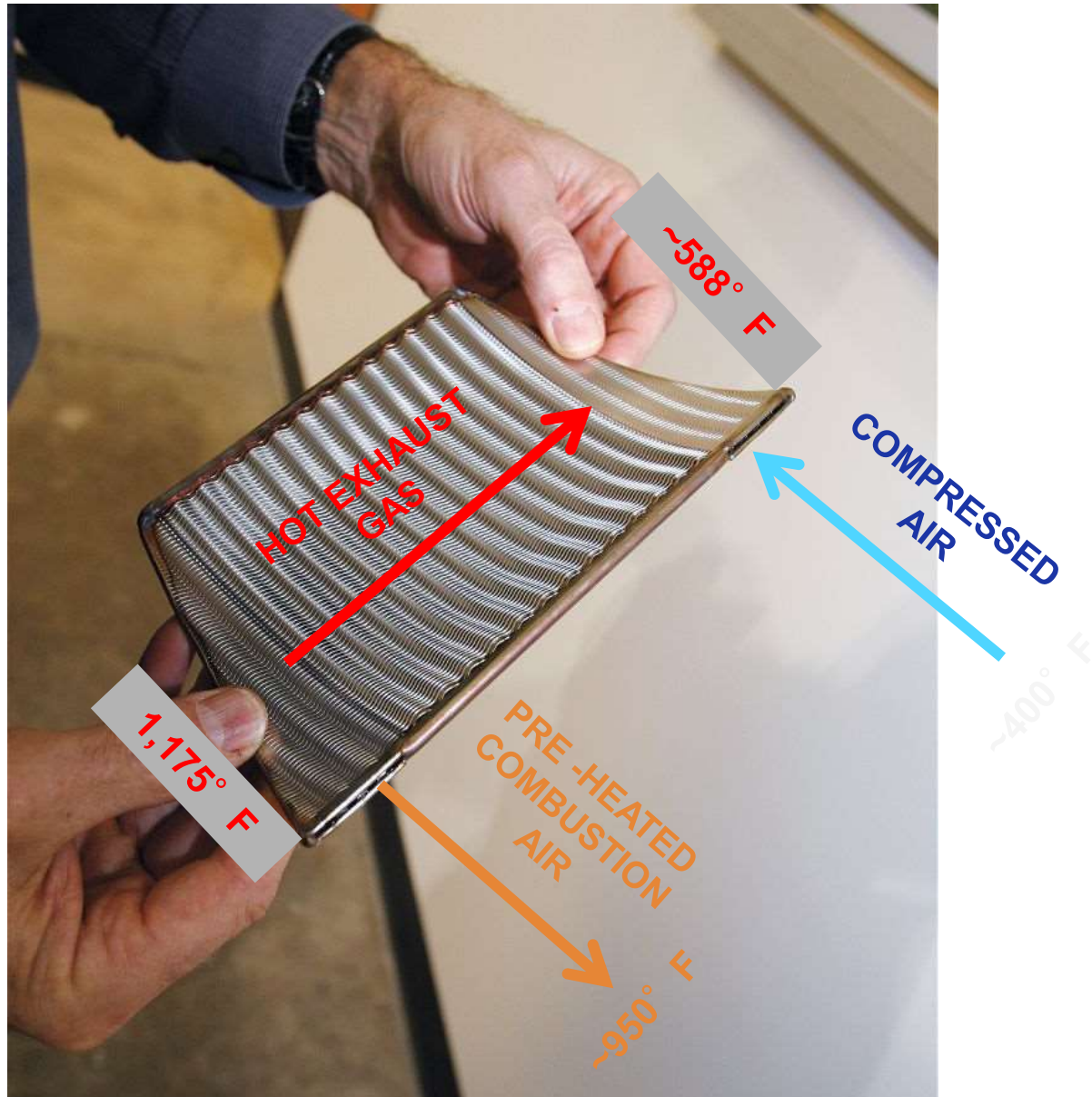
- Preheats Combustion Air
- Increases fuel efficiency by more than 50%
- Consists of foil cells in an annular design



Recuperator Fins

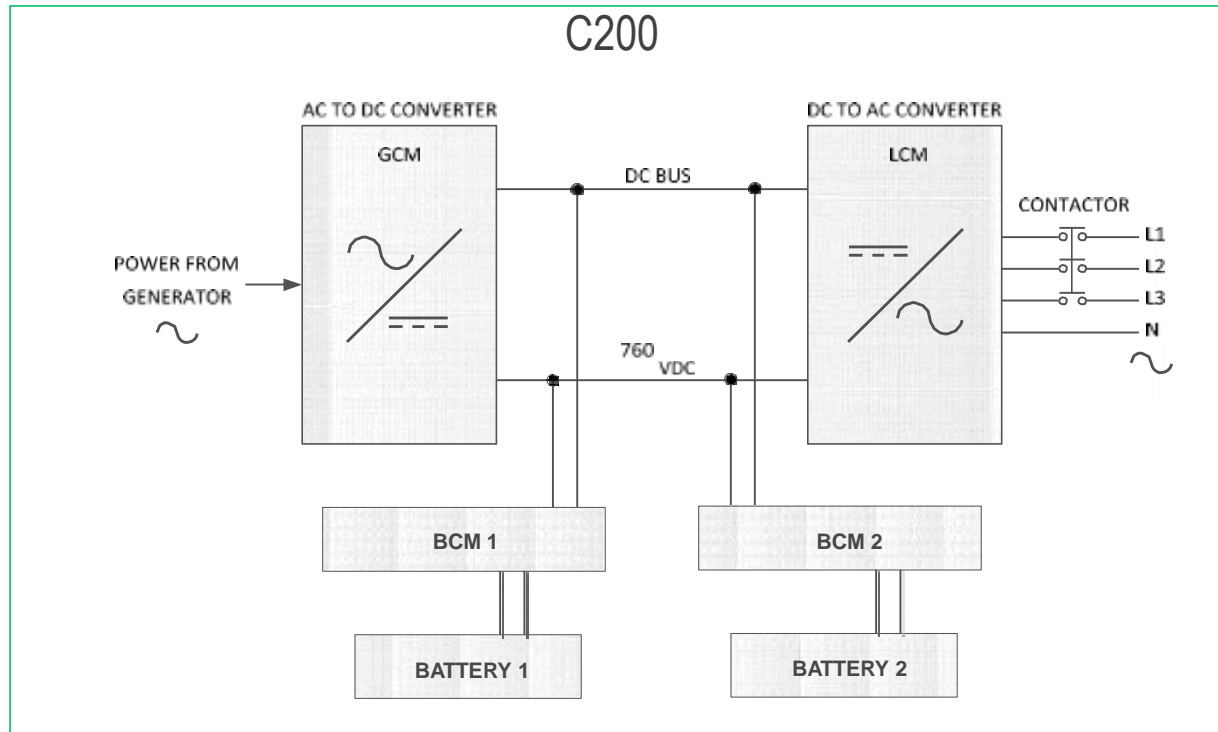


Recuperator Cell Close-Up



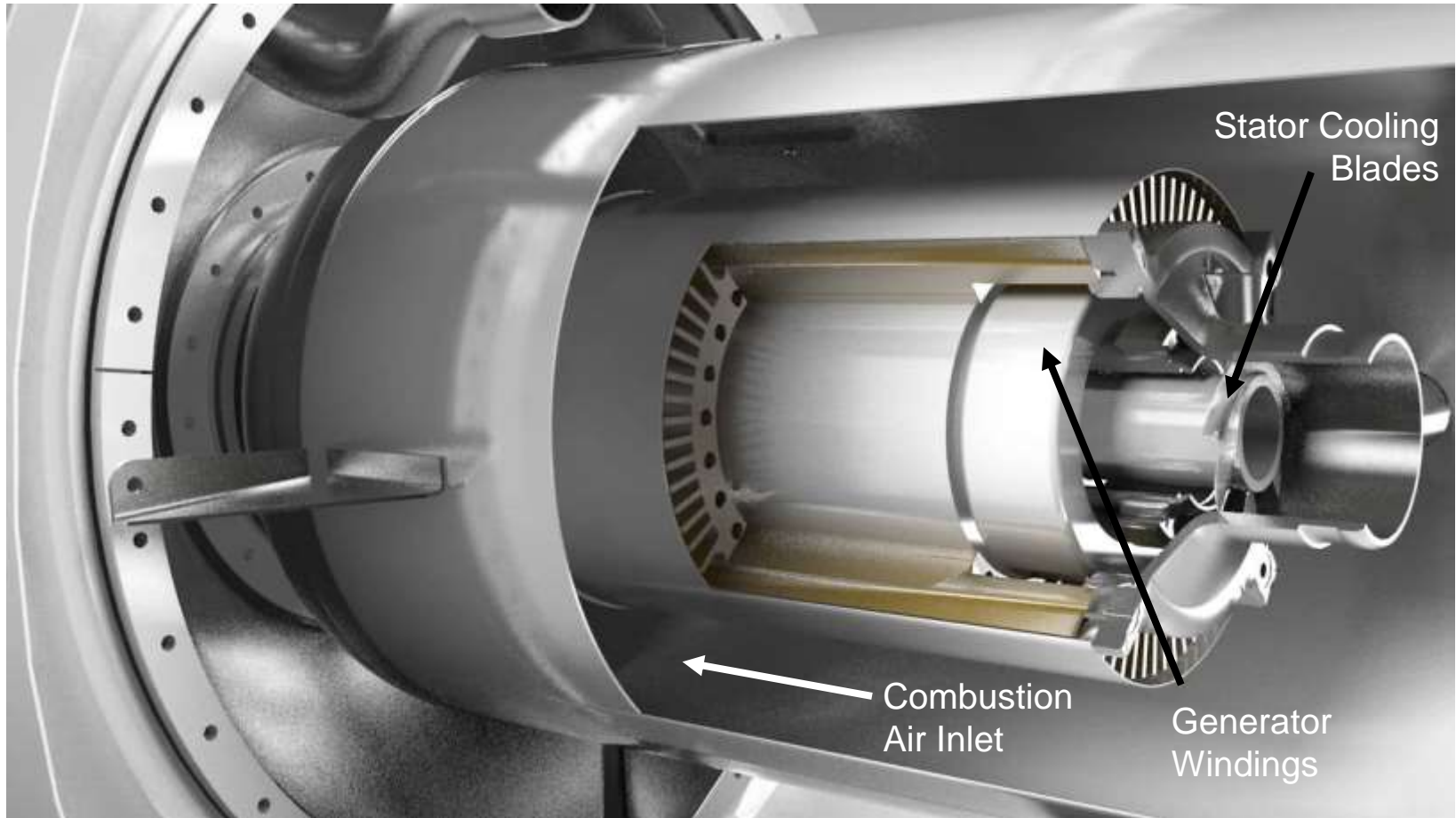


STAND ALONE



- Inverter-based technology
- Superior turndown ability
- Batteries utilized to support step loading

C200 Generator Close-Up



Power with Ultra Low Emissions



- Low emission design
- Ultra-low NO_x
 - Less than 5ppm
 - .05 g/hb-br
- No additional catalysis requirement





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Factory Support Services

Capstone Preventative Maintenance

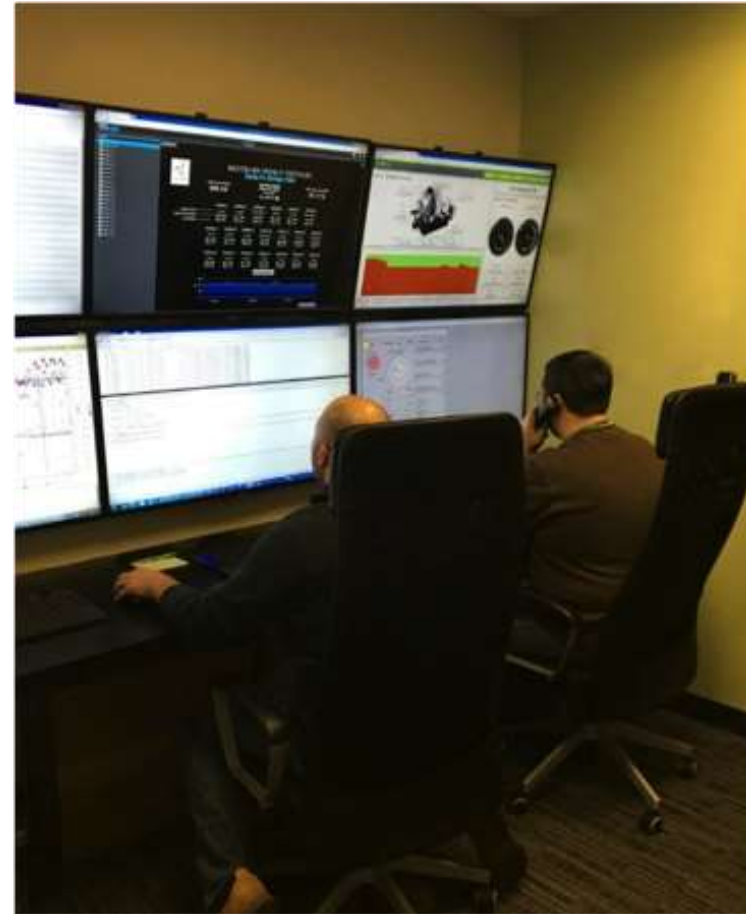


Every 8,000 Hours	Engine Air Filter	Replace
	Electronics Air Filters	Clean
	Igniter	Replace
Every 20,000 Hours	Injectors	Replace
	Battery Pack	Replace
	Combustion Liner	Inspect/Replace
Every 40,000 Hours	Engine	Replace Powerhead & Combustion Liner

- Average of 6 hours of planned Maintenance per Year
- E-Finity will guarantee cost of planned and unplanned maintenance

Remote Monitoring

- Web access to sites
- Data logging
- Alarming
- Remote trouble shooting
- Less down time



Factory Protection Plans



- “No surprises” service costs – includes all scheduled and unscheduled parts and labor
- E-Finity stocks ALL parts
- Remote monitoring and diagnostics
- 5, 9, and 15 year options available
- Supported by 24x7 remote monitoring





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