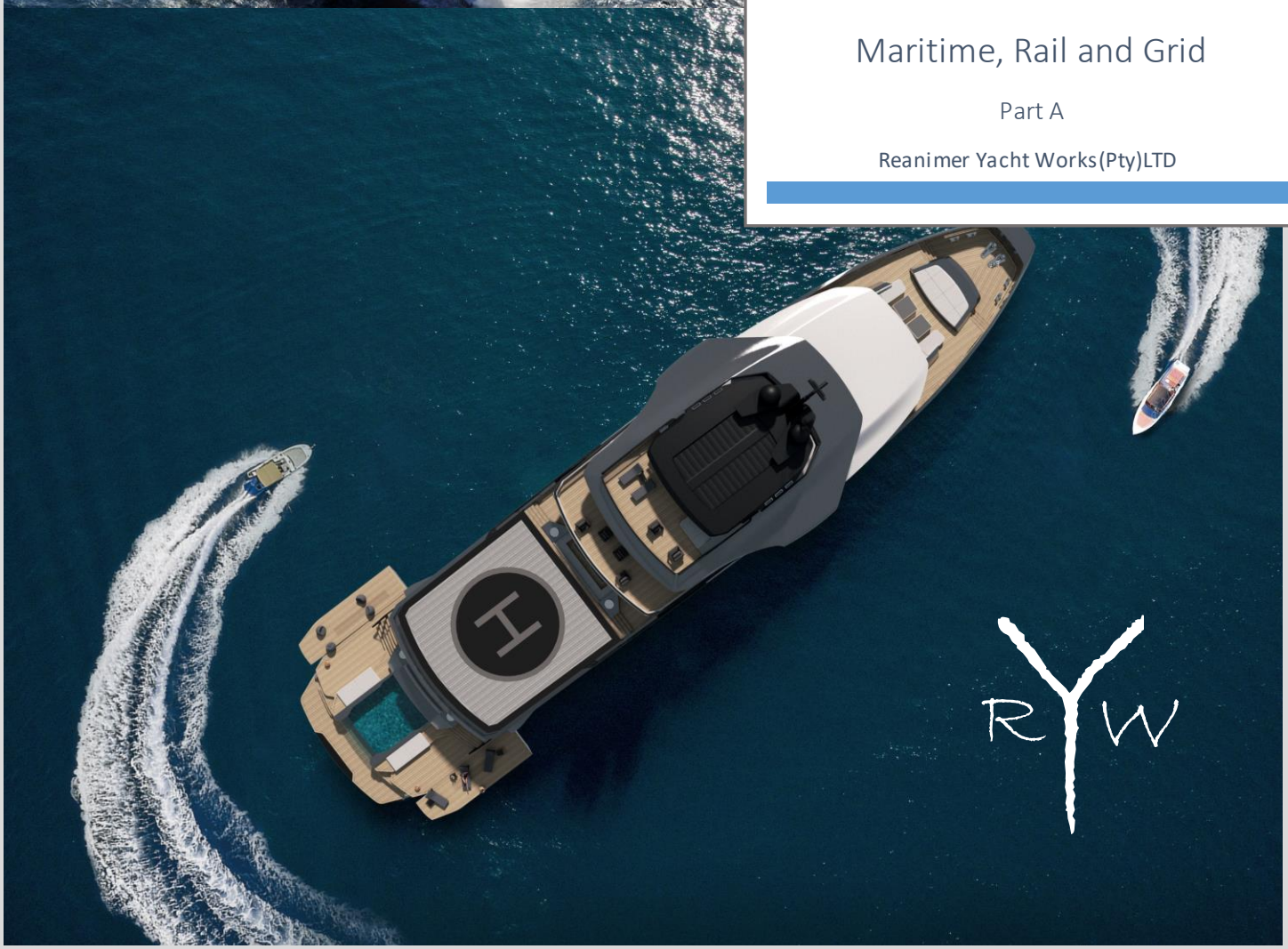
Beyond Emissions Fuel-less Power Generation

Fuel-Less Torque Generators

Maritime, Rail and Grid

Part A

Reanimer Yacht Works(Pty)LTD



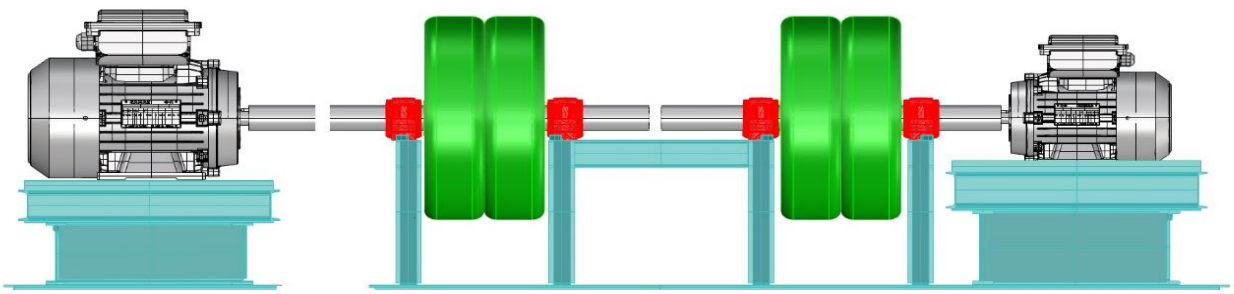


Introduction

Fuel-less Torque Generator Technology

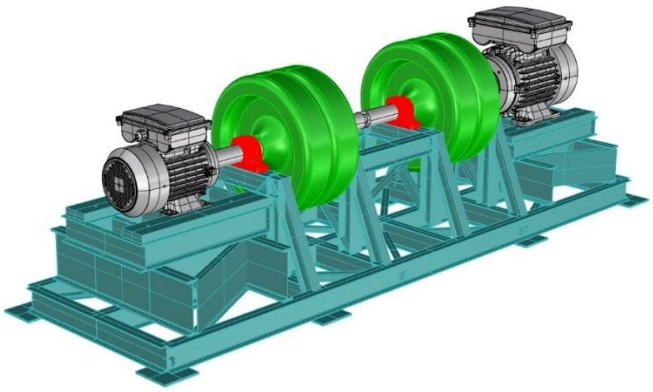
A Fuel-less torque generator or FTG is an assembly of off the shelf parts, slightly adjusted, that work together to provide constant electric power at a design voltage, amps and kw. The system uses electric power to generate electric power by manipulating the characteristics of electric motors and alternators to bring this about. Flywheels assist in the harmonizing and stability of the system when under load offering a longer life time to the motors. The system uses self-generated power to power itself with roughly a 3:1 gross generated to user output ratio. The power generating program is fuel-less so no inputs, whether fuel or other external sources of energy so also no costs are involved once the system is started.

- ZERO Fuel Inputs of any sorts. Fuel-Less Power production.
- Start and forget continuous power generating technology.
- Constant uninterrupted power production for 70k to 100k hours before 1st service.
- A FTG is an open system of parts so a Fuel-less Torque Generator has an indefinite life time.
- Null Emission. No inputs – Null outputs. Full Electric only.
- Can be installed anywhere: Ships, warehouses, underground, FTG is Altitude free, latitude free.
- Scalable
- 690vac and 400vac currently available.
- Any number of any size generator can be included into a local land based installation or national grid. Efficiencies are biased towards a larger but within road transport convenient generator sizes.
- Marine is limited to vessel requirements but will include two or more generators with dedicated Hotel provision.
- Different size generators are available.
- Adoption is as per a Purchase - Lease arrangement. Naval on separate arrangements
- Long service life
  - Bearings Life Span 70K to 100K hours with auto lube systems
  - Motors Life Span 25-year
  - Flywheels Life time
  - Drives 15 years.
- Standard with Remote Control and Monitoring.
- Low installation costs.
- Readily available open market Trade and Operator skills sets.
- Small geo foot print to Kwh generation:
- Land based application - Scalable
  1Mwh requires 29.7m2 and is comprised of Two 40ft containers stacked.
- Marine- Scalable
  A 4Mwh power supply requires 120m2 +36m2 for electronics which is much the same now as likable Diesel Electric engine arrangements. Still much space left over from unused diesel tanks.



Technology efficiencies vs batt, solar, wind.

- Technology is free from renewable limitations, such as sun for solar and wind for wind. Also technology does not require storage to overcome for lack of sun or lack of wind to be self-sustaining.
- Technology is self-sustaining and can without compromise accommodate continuous uninterrupted power. It is input free.
- Installation is not limited to location as per renewables and can be installed just about anywhere, warehouses, underground, old coal power stations, bunkers etc.
- Small or low manning portfolio to maintain and monitor a multiple FTG installation that can be monitored and controlled remotely as well.
- Remote control is associated with each FTG and as collective.
- Can be started and stopped remotely.



Technology pointers

Maritime.

- Competitive adoption costs with large diesel.
- ZERO Gas Emissions or associated noise onboard.
- Extended range and endurance.
- No environmental threat in event of grounding, beaching or collision.
- Start and forget technology.
- Immediately available on demand power to propulsion. No penalty for higher speed.
- Fixed draught. More allocation for goods and cargoes.
- Low maintenance and readily available skill sets to operation and maintenance.
- No Bunkering or fuel costs.

Land Based or Grid.

- Unlimited site installation.
- Continuous power production regardless of climate or weather conditions.
- Void of Renewable Power limitations
- Low cost installation
- Very competitive base load Cost/KWh
- Small foot print for high output.
- Easy and very low installation, maintenance and servicing.
- Non-specialized parts and appliances.

Servicing and maintenance (based on continuous operation)

First major service:	Main Bearing replacement	70 000 to 100 000 hours
Maintenance Regime	Lube replacement/refill	Every 10 000 hours
Second Major Service	Integrity evaluation of drives	15 Years
Third Major Service	Integrity evaluation of Motors	25 years

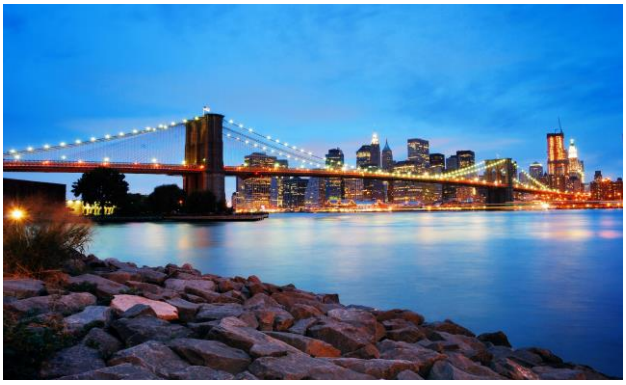
Applicable market segments.

Maritime

- Large Yachts
- Offshore
- Commercial shipping Segment
- Ports
- Naval

Land Based Entities

- Parastatals
- Large Commercial & industrial complexes
- Ports and Harbors
- Cities, Towns and large residential estates.
- Power utilities
- Remote areas and Islands
- Rail - This Part in development.



Certification authority

Bureau Veritas are the Partnered Certification Authority.

Return on Investment

Land based adoption without Finance expect a 1 to 2 year break even. Will vary from area to area.

Marine application would be subject to vessels use. FTG are much a replacement of Diesel technologies wrt to costs coming in marginally higher than a diesl optiom and in such ROI is subject to vessels engagement. With Lease fees costs are well below diesel tech costs/kw. Service plan option also available.