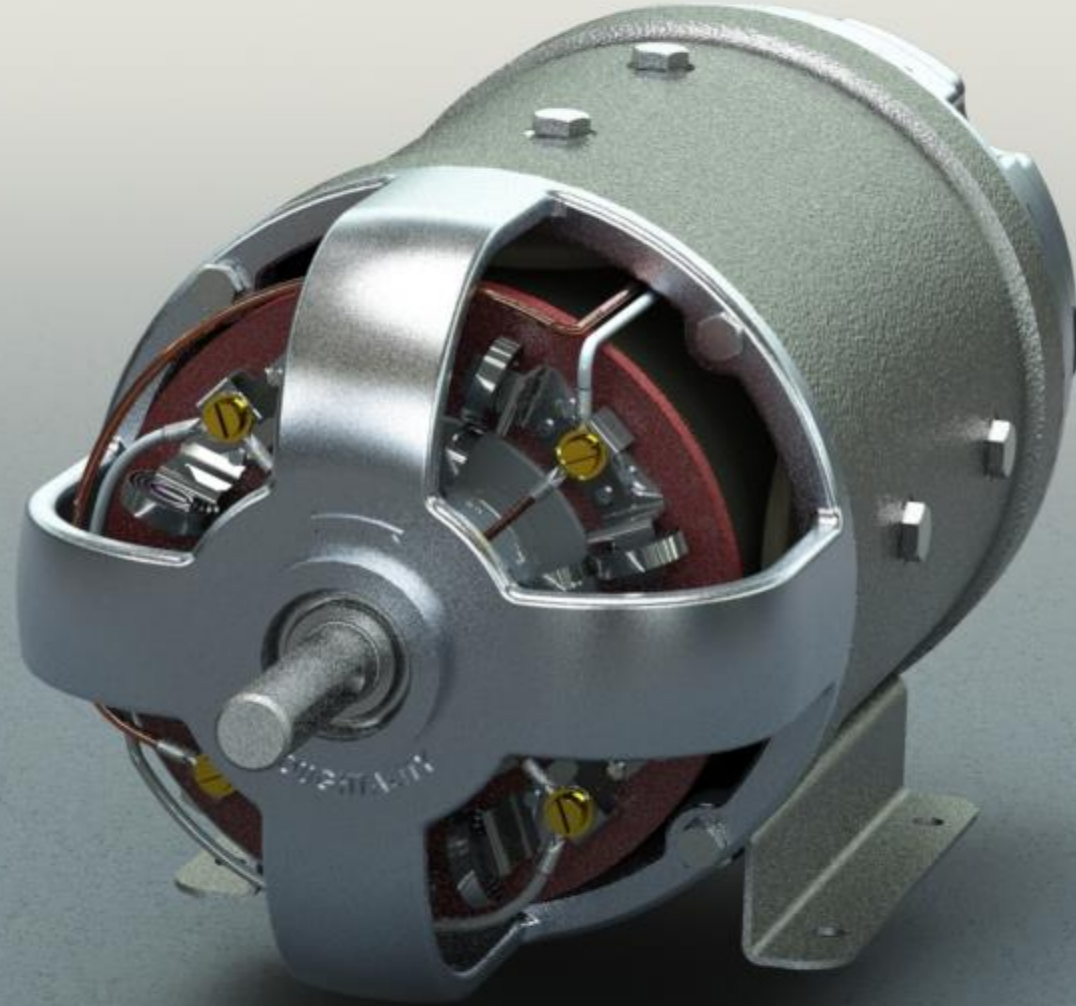




# DIRECT CURRENT MACHINES

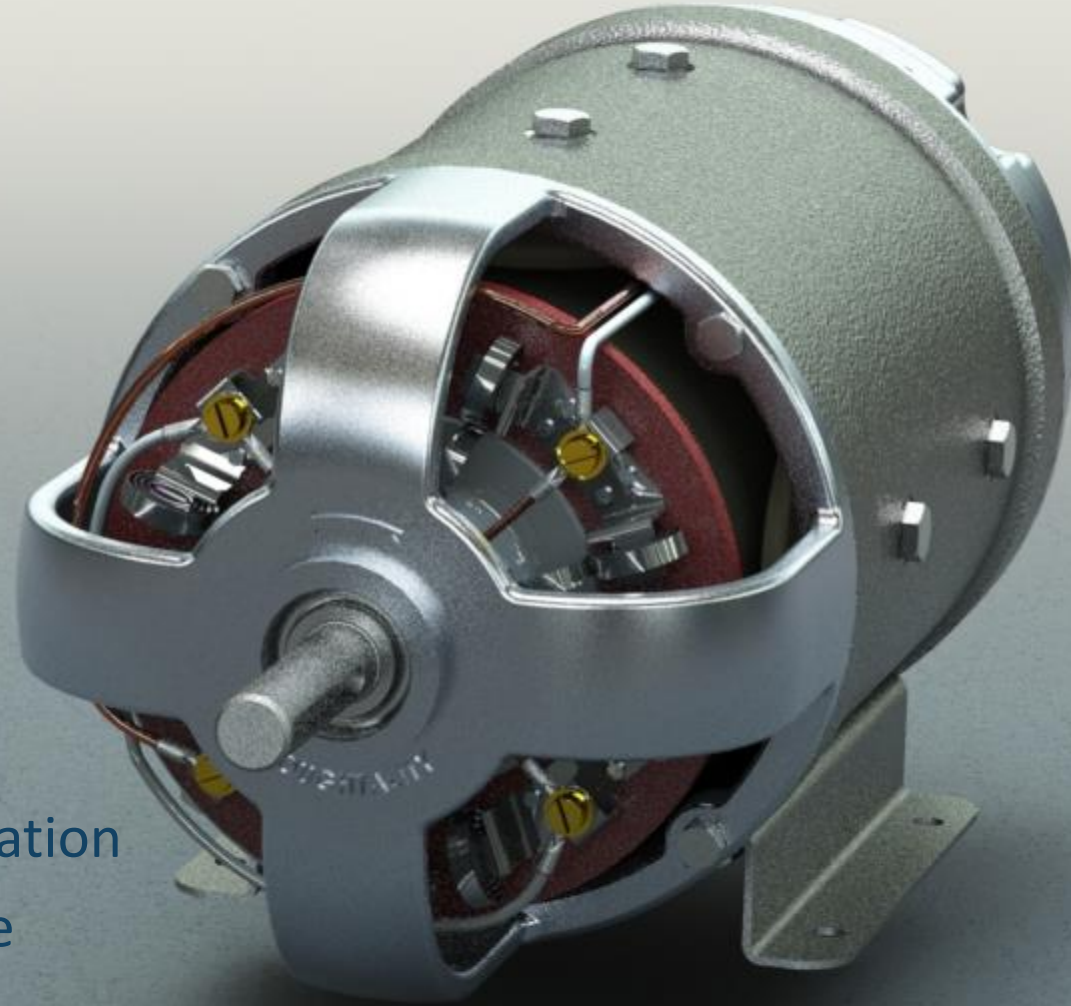
## A NEW TECHNOLOGY

# The Acyclic DC Machine



# The Acyclic DC Machine

- ▶ High power density
- ▶ High current & voltage
- ▶ No sparking
- ▶ No commutator
- ▶ No electronics
- ▶ Acyclic DC generator
- ▶ DC motor
- ▶ Exciters
- ▶ Universal motor application
- ▶ Negligible winding wire wastage



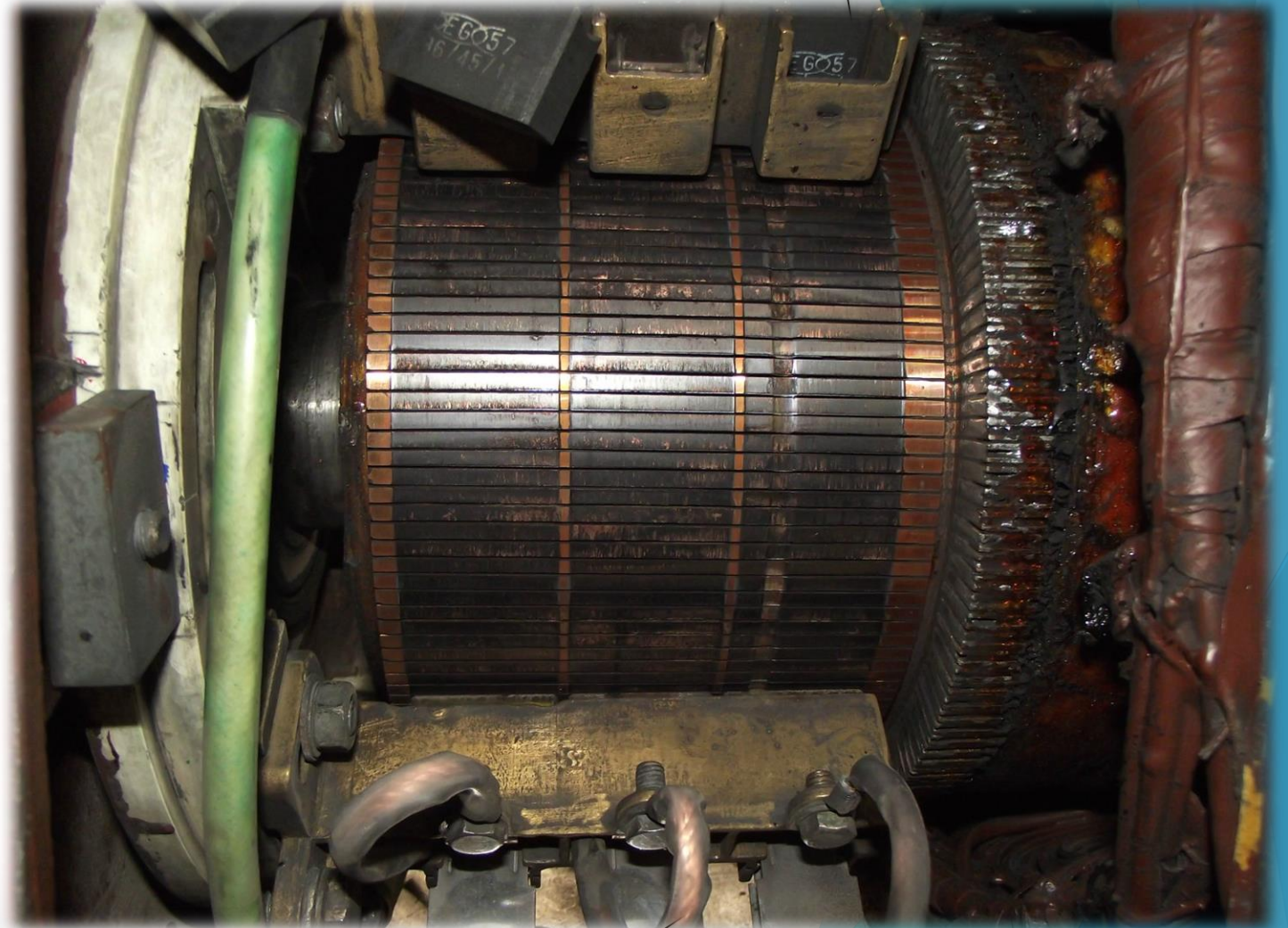
# Main Advantages over existing technology

The heart of this new technology is the method of current transfer primarily for DC motors and DC generators. It also includes a novel armature for motors and generators.

This new technology offers two methods of current transfer:

1. Carbon brushes type.
2. Non-brush type.

Carbon brush type is suitable for smaller units while non-brush type is more for medium and large units.



Typical sparking problems on existing commutator technology

# Main Advantages over existing technology

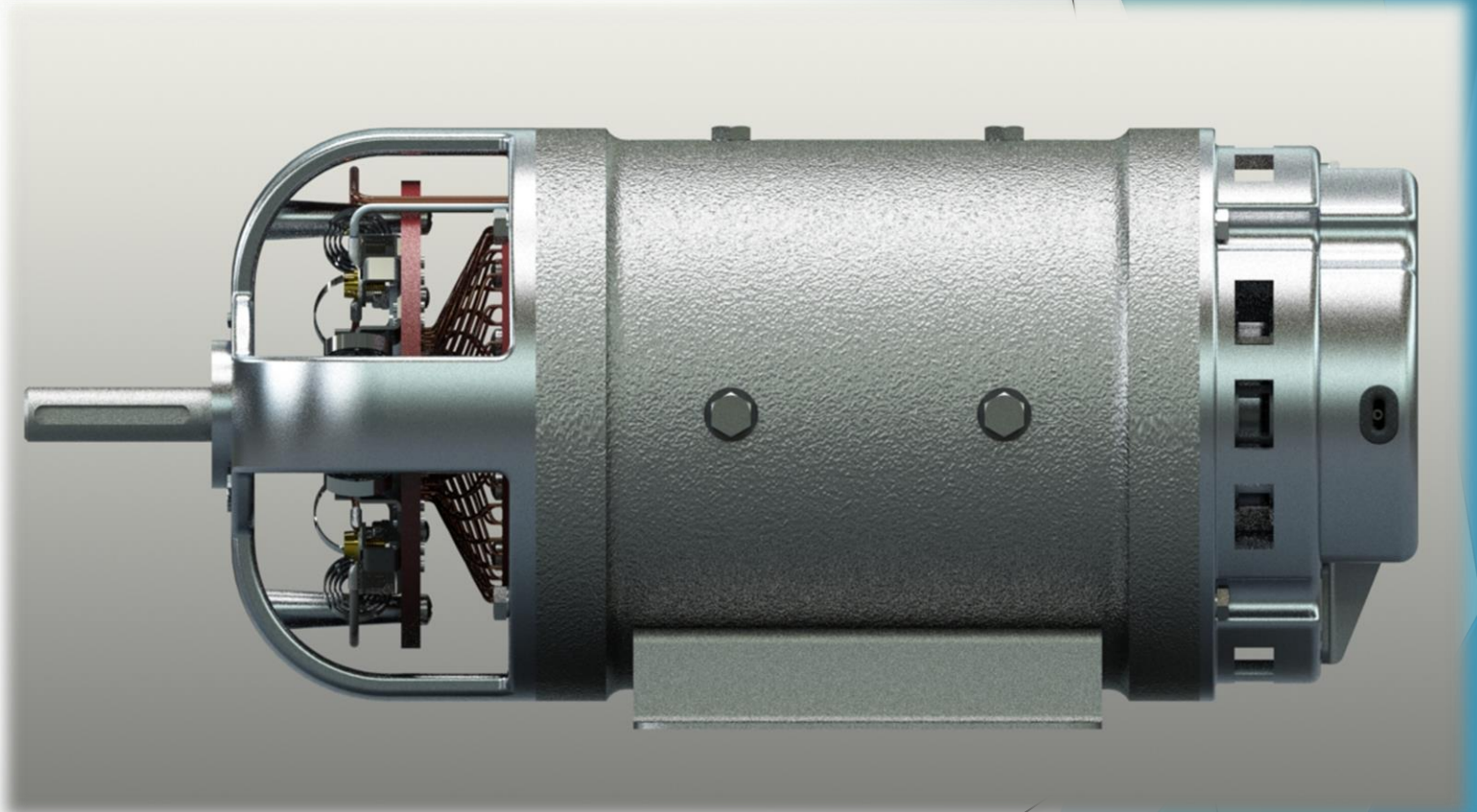
## 1. The Brush Type Interface

The principal difference between this type of brush interface and a commutator type is both morphological and topological.

There is no sparking or armature coil shorting

Sparking is a cardinal problem in existing commutator technology

Easily adaptable to existing motors and generators with only the armature wound and terminated differently. This also applies to universal motors with only the winding and brush gear modified



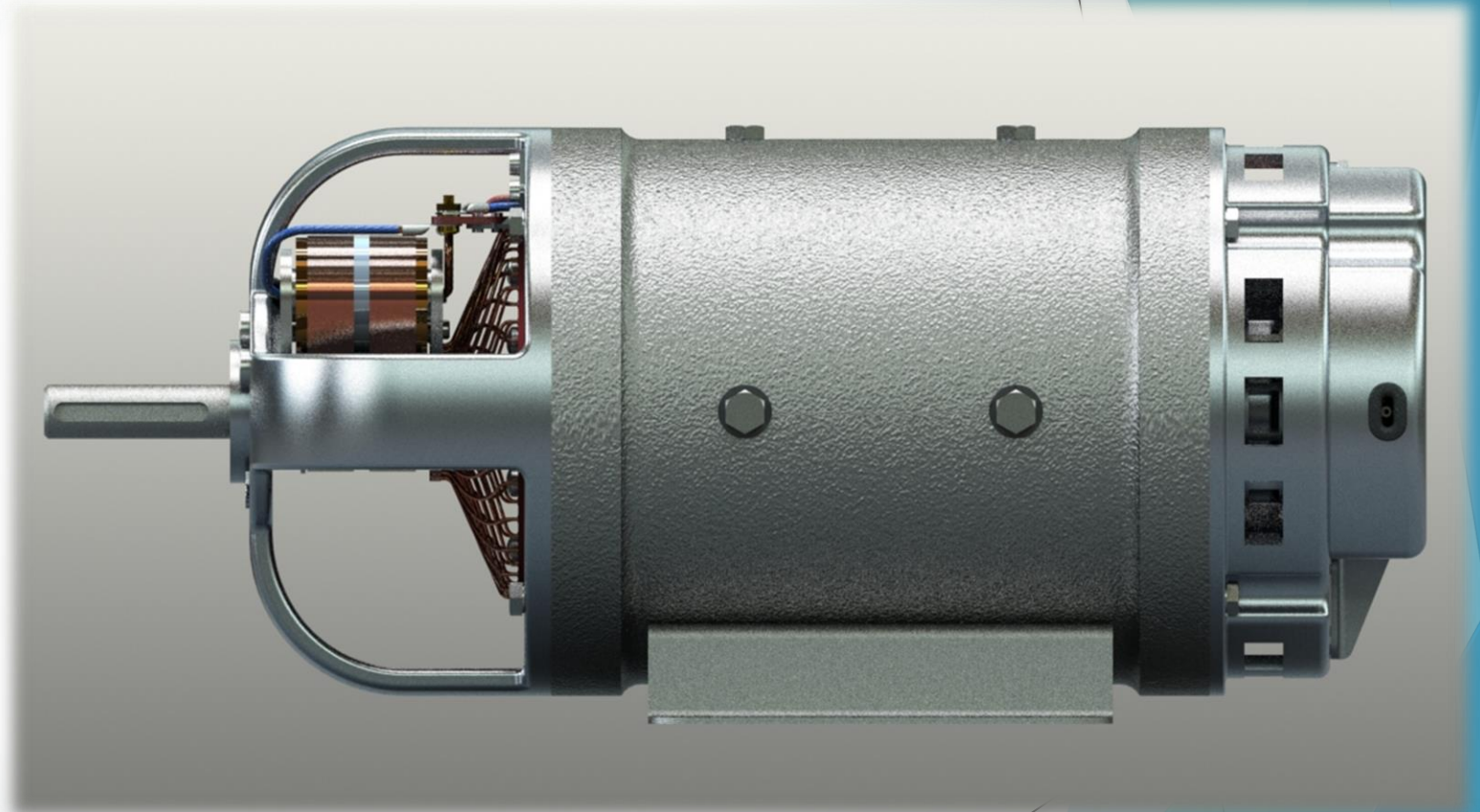
# Main Advantages over existing technology

## 1. Non-Brush Type Interface

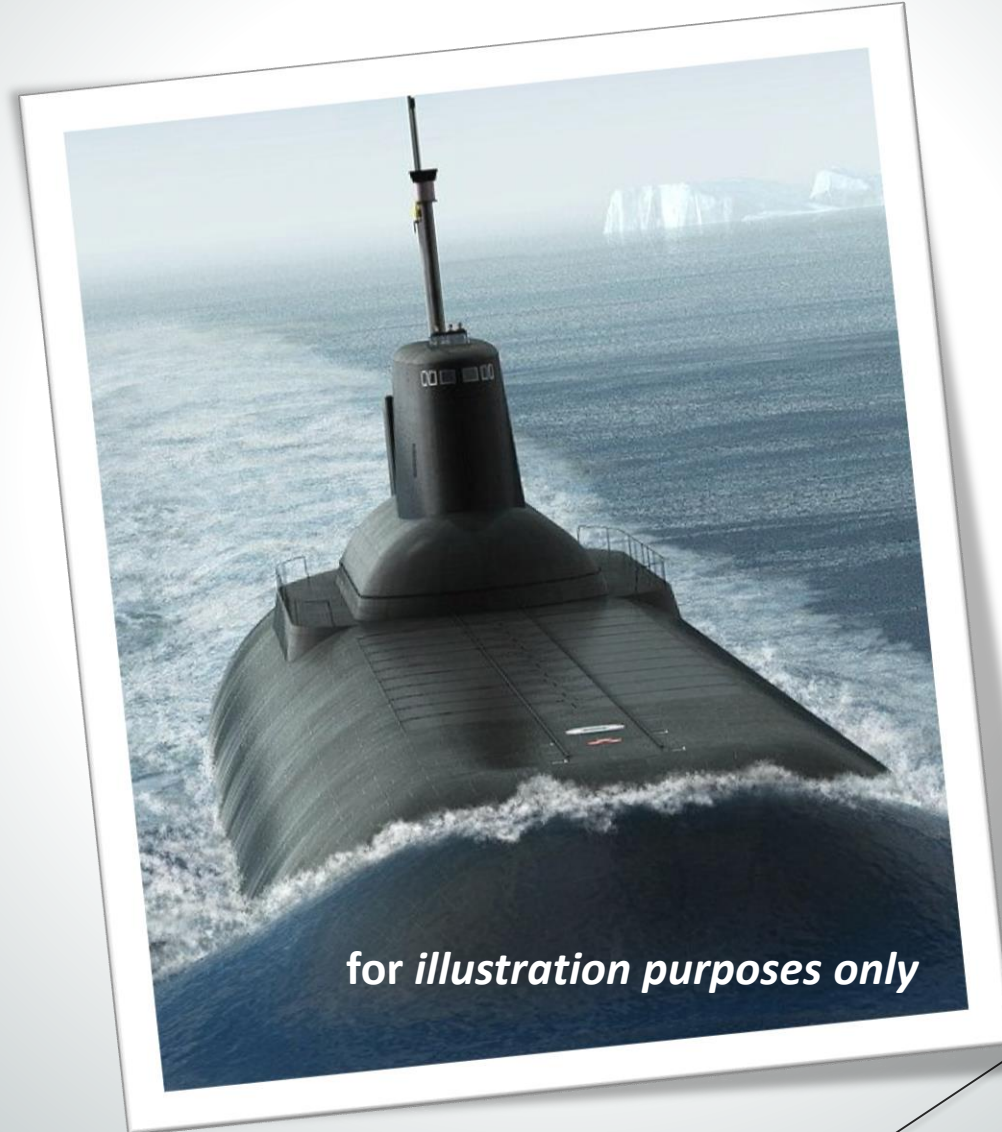
Medium and larger motors and generators may use non-brush type interface.

There is, again, no sparking.

There is virtually no friction losses when compared to brushes and commutators.



# Main Advantages over existing technology



IN  
MARITIME

# Main Advantages over existing technology

This technology does not use exotic materials or method of manufacture other than that in existing machines.

This technology takes advantage of two additional features:

- ▶ In the form of a DC generator, this technology conveniently lends itself for an acyclic voltage output. The two only known devices able to produce pure DC current are the homopolar generator (impractical, with all its short comings) and a battery cell. For example, this is a desirable stealth property for marine vessels as there is no electronic signature as in AC current distribution.
- ▶ In addition, very high current transfer is possible with high enough voltage to counteract potential drop due to current transfer mechanisms and other factors. This technology, therefore, is in direct competition to homopolar motors whose shortcomings such as size, speed and cost are well known. Maritime vessel propulsion units need not have cryogenics or superconducting magnet circuits.





# Main Advantages over existing technology



X-57 'Maxwell'  
NASA electric research plane –  
*for illustration purposes only*

IN  
AVIATION  
&  
AEROSPACE

# Main Advantages over existing technology

The aviation industry is a particularly demanding environment to design for the next generation of more efficient propulsion. The illustrated sketch is just one of many designs for a fixed wing light aircraft that are underway. An electric drive must be able to handle extremes of temperature, moisture and be ultra-reliable. A new generation of planes and drones will have an internal generator for improved reliability, consumption and safety.

The Acyclic DC motor fulfils these requirements

1. No electronics
2. Very high power to weight ratio
3. Extra emergency power for short periods
4. Simple DC supply from Generator to Motors
5. Reduced complexity of wiring looms
6. Significantly reduced noise and vibration
7. Improved aerodynamics due to the small form factor of the motor.
8. Lower fuel consumption due to optimised combustion using internal engine.
9. Both radial and axial flux machines are feasible.



# Main Advantages over existing technology

- ▶ A comprehensive 100 page presentation is available explaining this technology in detail.
- ▶ A 45 page patent specification is also available.
- ▶ Also available are supporting technical documentation (including calculations) in addition to the patent specification (referenced). 3D CAD models & drawings are used for this presentation are also available.

An Acyclic DC Generator has been proposed and shown in detail in order to describe this technology (see annexure at the end of this presentation).

This technology can be readily applied to:

1. New designs that will compete with existing technology
2. Existing DC machines
3. Exciters
4. Universal Motors.



# Notes

Parts of this presentation might seem ambiguous as certain sensitive terms have been omitted, as instructed by the patent attorney.

This presentation is a summary of a larger presentation and is intended as a guideline for R & D component development as well as prototyping.

# Information on Proposals

This proposal has been made for a buying party who may be interested in purchasing this technology.

An offer may lead to any of the following forms:

- ▶ A non exclusive licence.
- ▶ An exclusive licence.
- ▶ A complete buyout.
- ▶ Consideration of any other proposal that an interested buying party may favour.

In the case of a buying party wanting to further investigate purchasing this technology, the following steps are proposed:

- ▶ We supply the buying party with a detailed description and patent documentation.
- ▶ A Memorandum of Understanding may be drafted and presented to the buying party for review.
- ▶ The buying party may draft their own Memorandum of Understanding for our consideration.

*It is appreciated that the buying party may have their own metrics and methodologies in vetting technologies appropriate for them and that evaluating patents is costly both in terms of time and finance. With this in mind no unreasonable propositions or requests will be made.*

# ANNEXURE

An example DC (acyclic) generator has been proposed by the author and is illustrated in this presentation.

It is used in the comprehensive presentation and does not conform to any particular standard, size or application.

The rendered complete model is presented in great detail with various cross sections, subassemblies and components with the sole purpose of describing the patent/technology.

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Cape Town, South Africa

Contact link: <http://thoughtality.com/contact-us/>