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Flux Focusing Axial Magnetic Gear

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Flux Focusing Axial Magnetic Gear



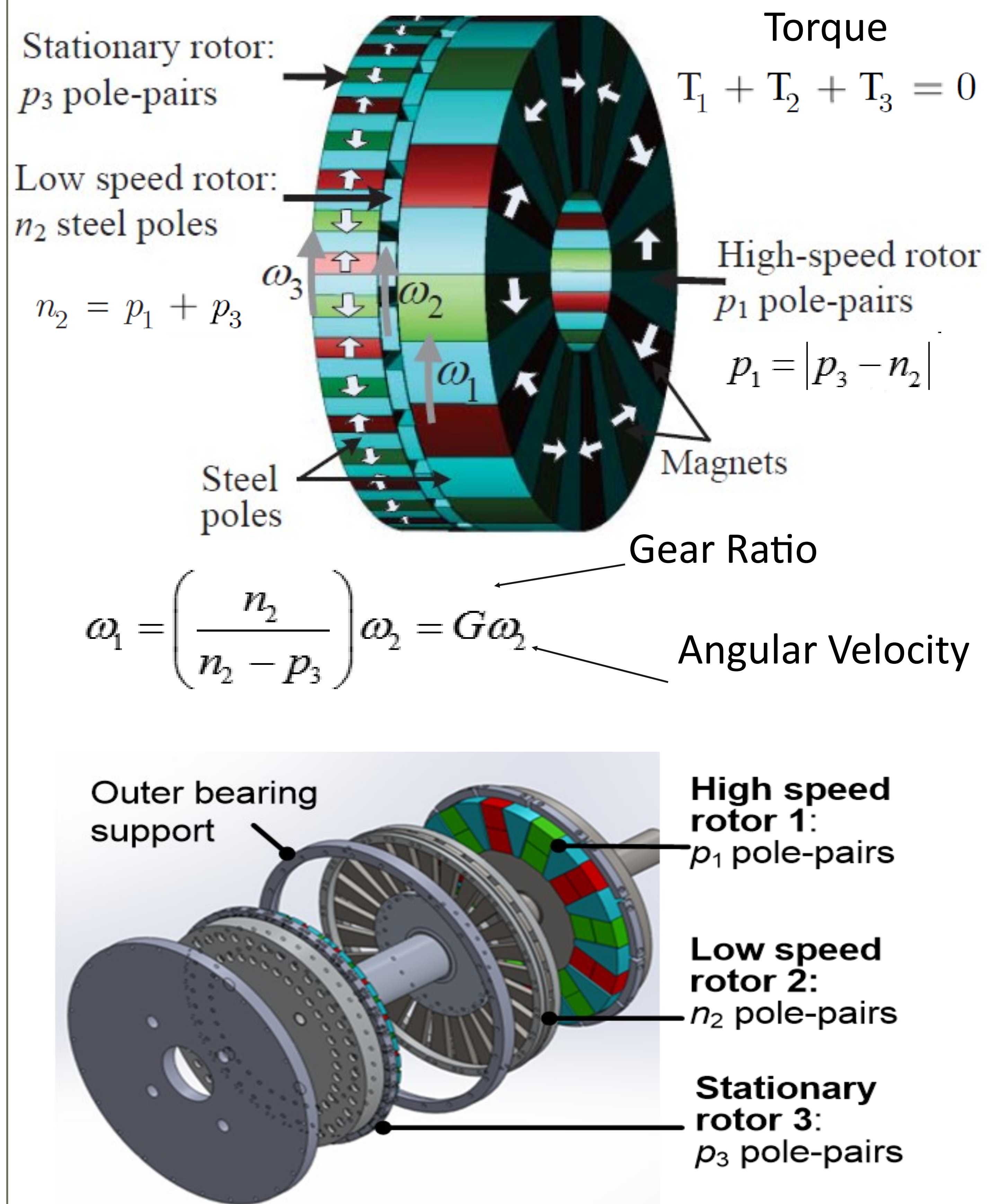
Robert J. Rutherford, Jonathan Z. Bird

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Introduction

Gear reduction and power transmission is achieved through a mechanical gear. These gears require maintenance, cause vibration, and have no overload protection. Magnetic gears (MGs) are innovative solution to these drawbacks. The flux focusing axial magnetic gear (FFAMG) was assembled for future testing of power transmission applications.

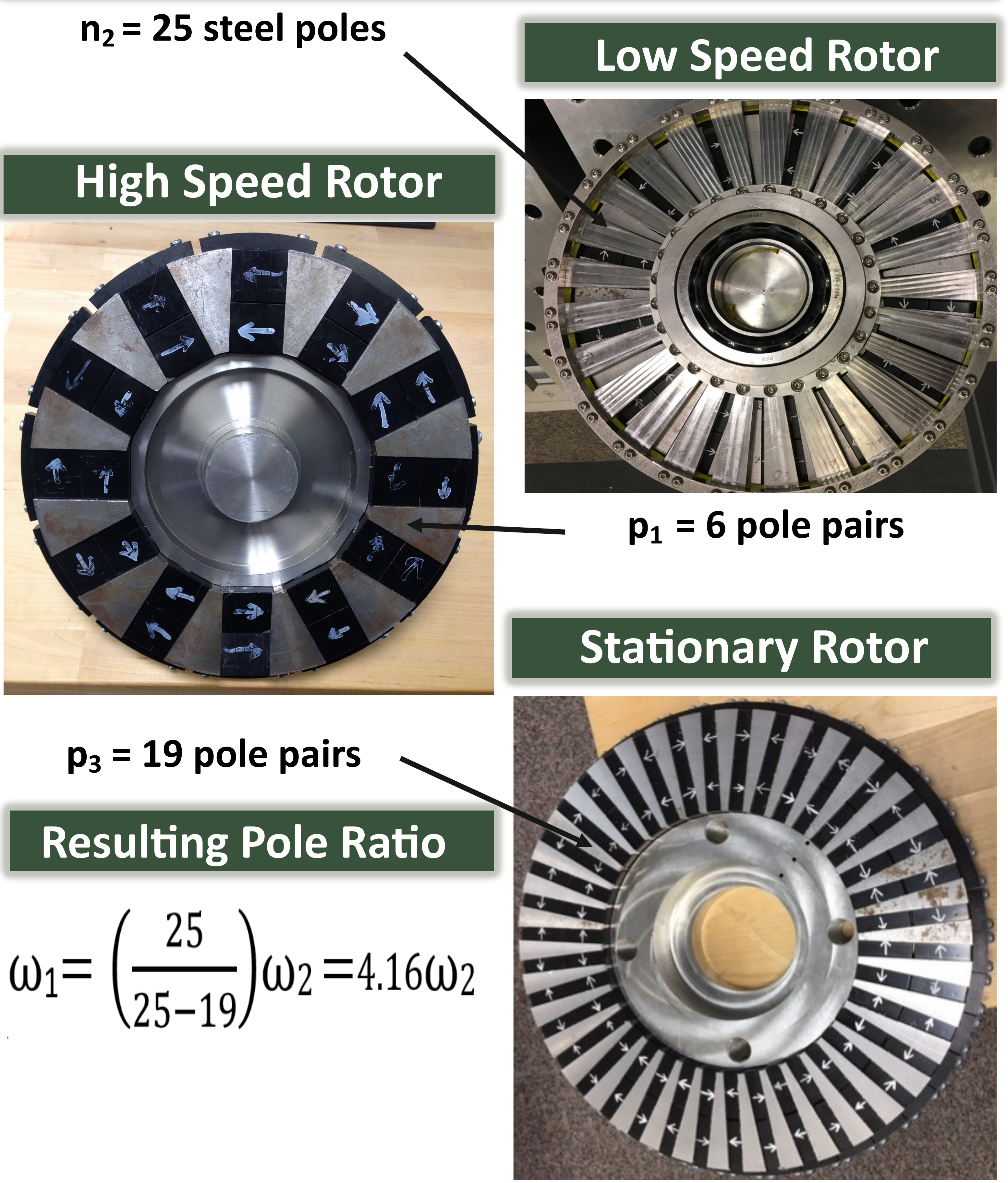
Concept and Design



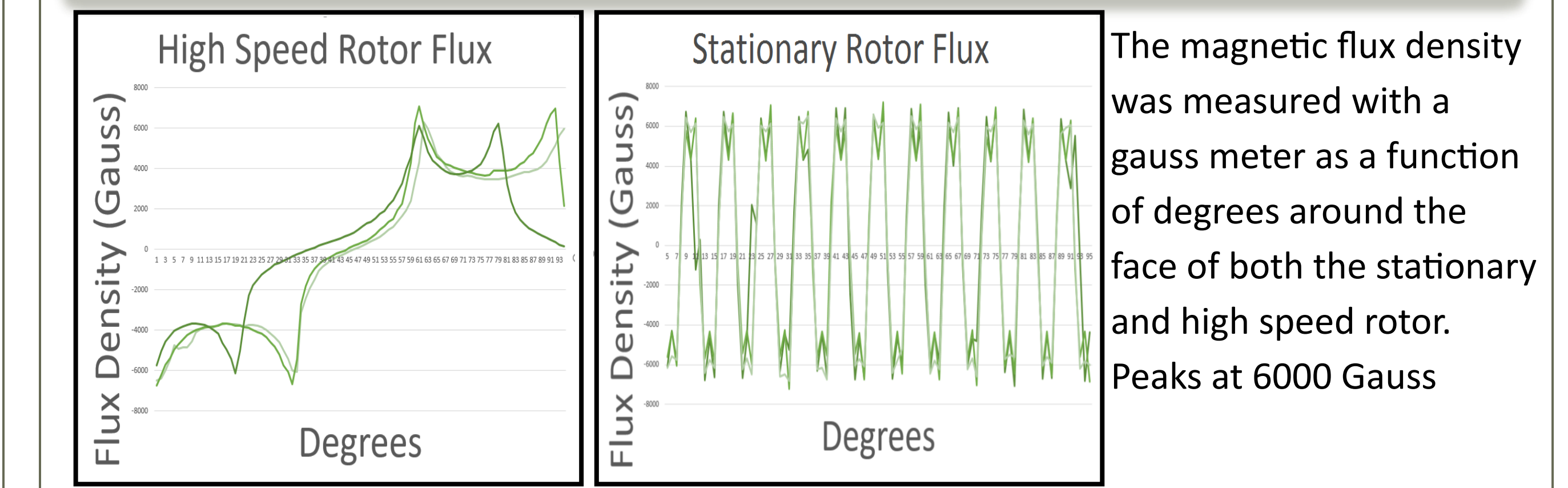
Theory of the Magnetic Gear (MG)

Mechanical gears are used to transmit power by converting low speed, high torque rotary motion into high speed, low torque rotary motion, or vice versa, through a gear ratio. The innovative FFAMG uses a ratio of magnetic poles to accomplish the same power transmission.

Mechanical Assembly



Measured Data



Conclusion

The FFAMG was assembled successfully, magnetic flux density measurements were gathered and procedures for testing and continuing research developed.

Future Testing Setup

1. Prime Mover
2. Torque Transducer
3. Low Speed Rotor
4. High Speed Rotor
5. Torque Transducer
6. Load
7. Variable Freq Drive

