Magnetic system optimization

Multi-space parametric analysis

Mentor: Charles Gigandet and Zack Kuo
Location: Hsinchu, TW
Duration: 6 months

Overview

Magnets can be used to develop numerous applications and functions, such as: force, torque, sensing, locking, keying, etc. Such applications require an optimized use of a combination of expensive rare-Earth materials, classic ferromagnetic materials, smart shapes and proportions to get the best User Experience at the right cost for product development.

Objectives

- Choose/select typical applications to be analysed.
- Identify the physical parameters driving the system.
- Create simulation models and extract the performance vs parameters trends using electromagnetic simulation software.
- Optimize systems for best cost/performance scenarios.
- Verify simulation via experiment.
- Document work in a comprehensive manner (user guide).
- Highlight and understand limitations.
- Make suggestions for future activities or improvements.

Knowledge/Skills

- Open-minded, outspoken and curious personality with out-of-the box thinking abilities.
- Knowledge or experience in DC or AC magnetics:
  - Theoretical/physical understanding of magnetic problems.
  - Experience with electric motors or power generators/converters is a plus.
- Experience with FEM simulation tools.
- Experience in microwave design and theory is a plus.
- Good English spoken and written skills.