# Development of an Integrated Modular Motor Drive (IMMD) System

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## Introduction

Conventional motor drive systems vs.
* increased volume and weight

- electric traction and aerospace where power density is critical
- Electromagnetic interference (EMI) problems

integrated directly to the motor back-end
Modularization divided into several parts

## Motivation

Motivation behind integration
Motivation behind modularization
Advantages of IMMDs
Critical applications

power density of the overall system can be enhanced
fault tolerance
voltage stress
heat dissipation

## Challenges

Fitting into a small volume
Subject to vibration & temperature
WBG devices: address
Parasitic problems
Careful layout design

## DC link capacitor optimization

Large volume/cost
Model
Algorithm
Effect of Interleaving
Results

## IMMD Design

Fractional slot machines
Frameless motor
Modular PCB
GaN
Master/slave

## Conclusion

Here are my conclusions

## References

Fitting into a small volume
Subject to vibration & temperature