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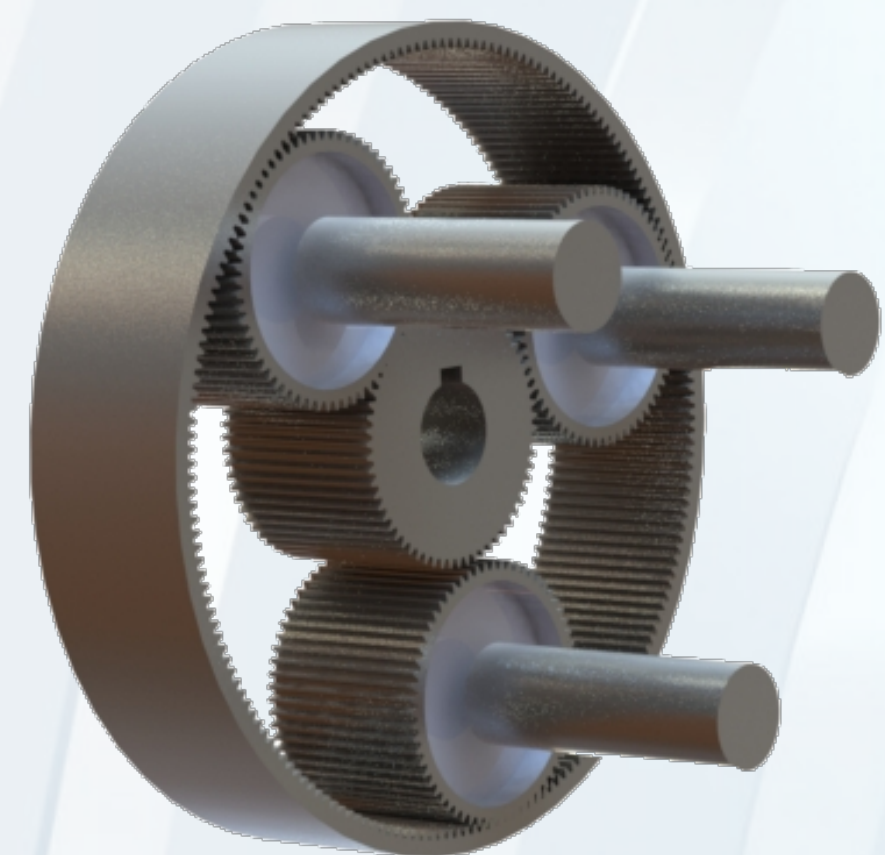
CITY RACING FORMULA STUDENT

ELECTRIC VEHICLE POWERTRAIN

Team Members

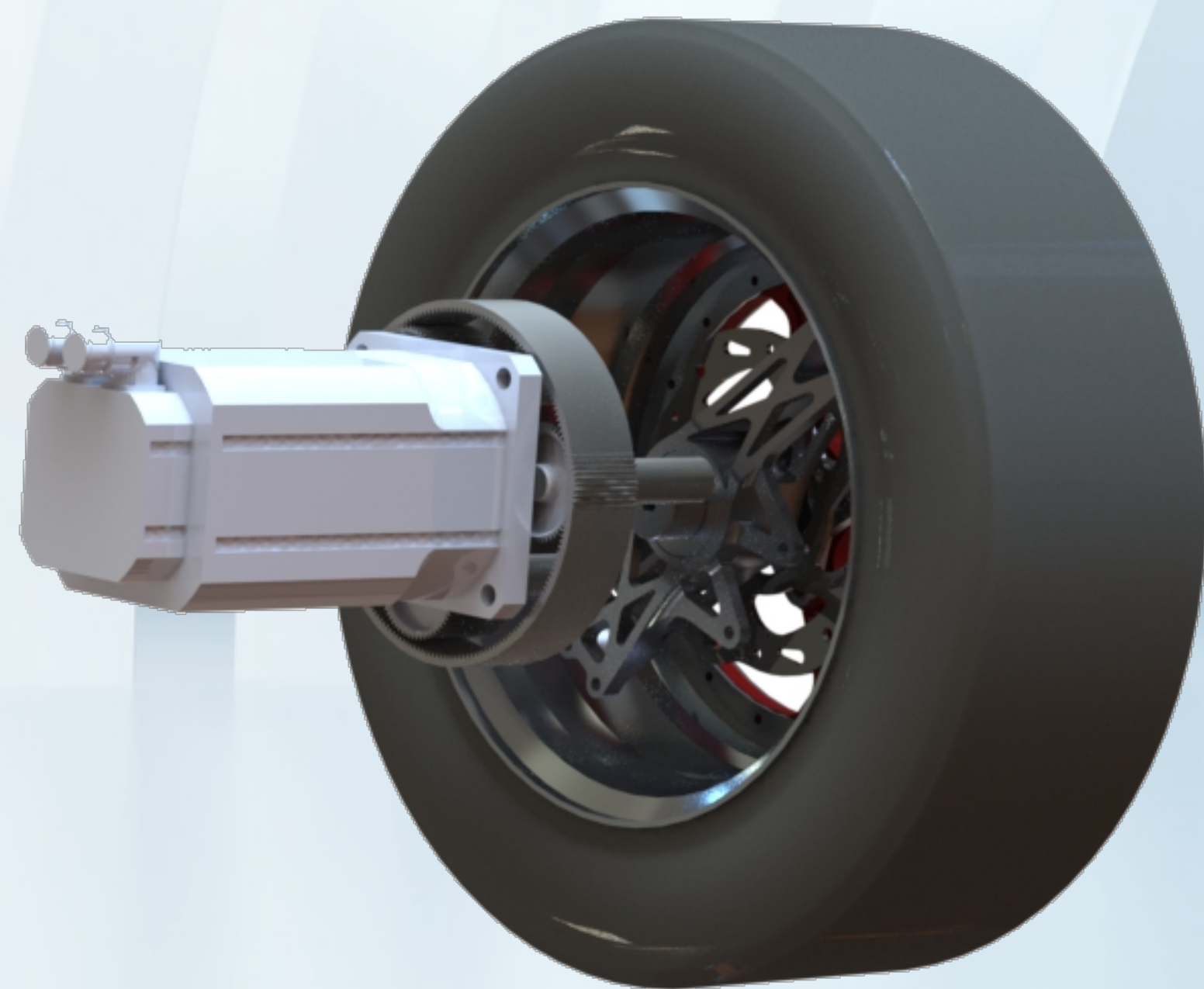
Ahmed Abid Ali - Motors and Transmission System

Fe-eze Anyafulu - Battery and Battery Management System



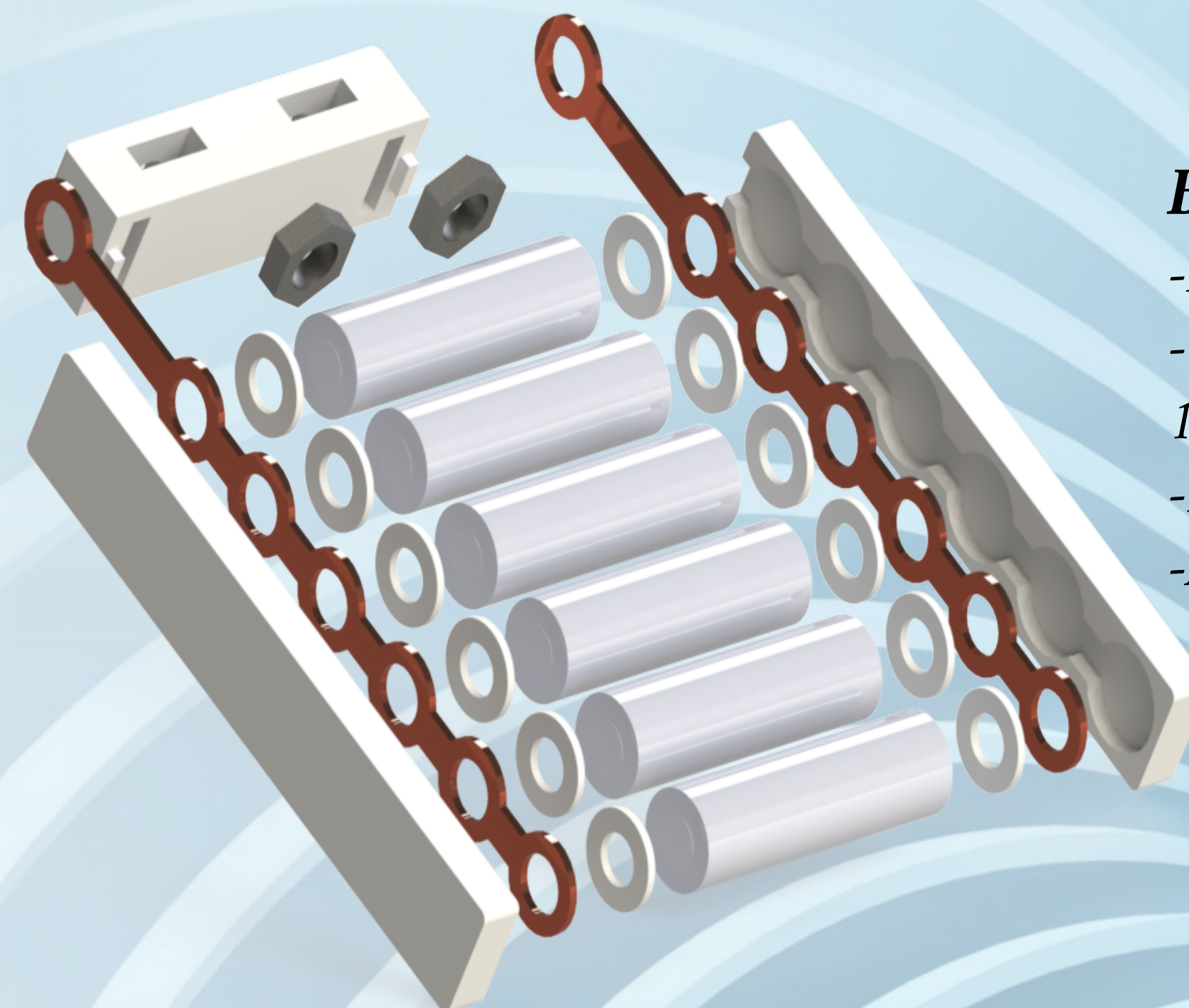
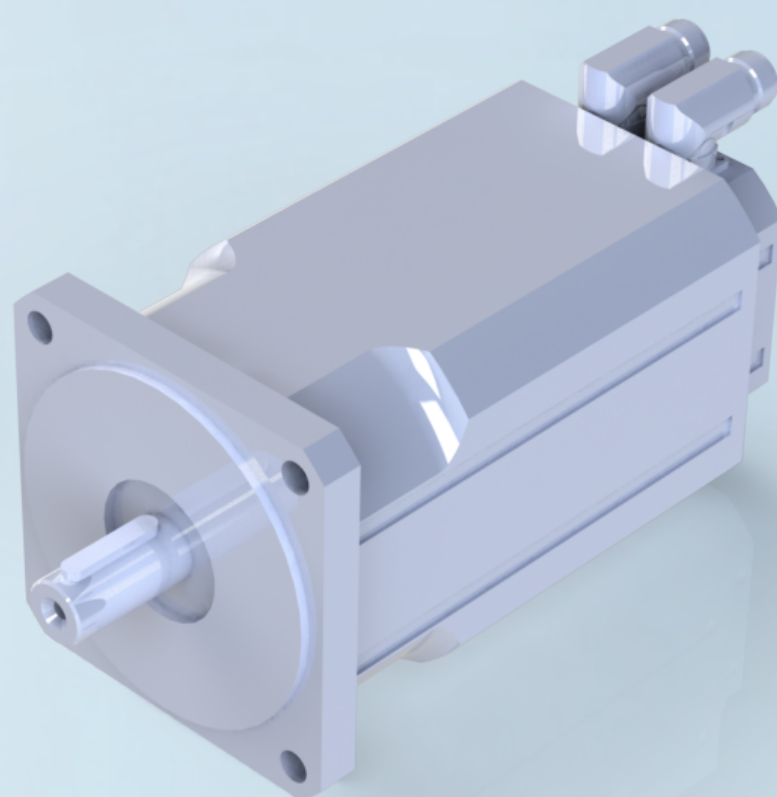
Transmission System

- Epicyclic gear with a drive ratio of 1:4
- Made with Carbon hardened steel
- Design eliminates extra parts which reduces both cost, complexity and weight substantially
- Will use a passive oil bath to lubricate and cool the gears



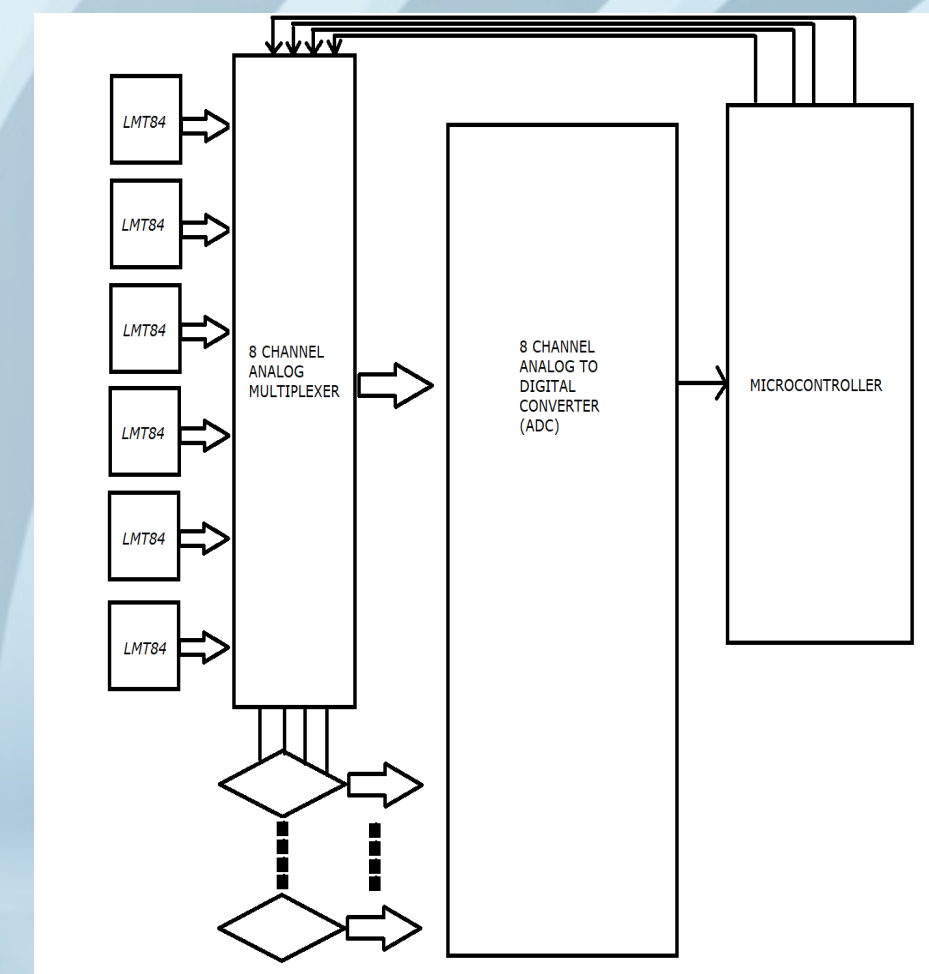
Motor

- Four in wheel drive system which uses AC synchronous servomotors
- Peak torque 60Nm and maximum speed is 9000rpm
- Motor output fed directly into an epicyclic gear system
- Water cooling of the motor will be implemented to control temperature
- 10.6kg per motor
- Uses EnDat encoder for motor feedback



Battery Module

- Made up of six Sanyo 20700A cells + accessoires
- 3.6V Voltage / 18.6A Current (at 1C discharge or 180A max. continuous)
- Design makes for easy assembly
- Allows complete disassembly



Battery Management System

- Measures the Voltage and temperature of each cell
- Performs automatic balancing during charge and discharge
- Hybrid BMS combines the advantages of distributed and central topologies
- In house production means it can be produced cheaper and is fully customized for the CRE18 Vehicle

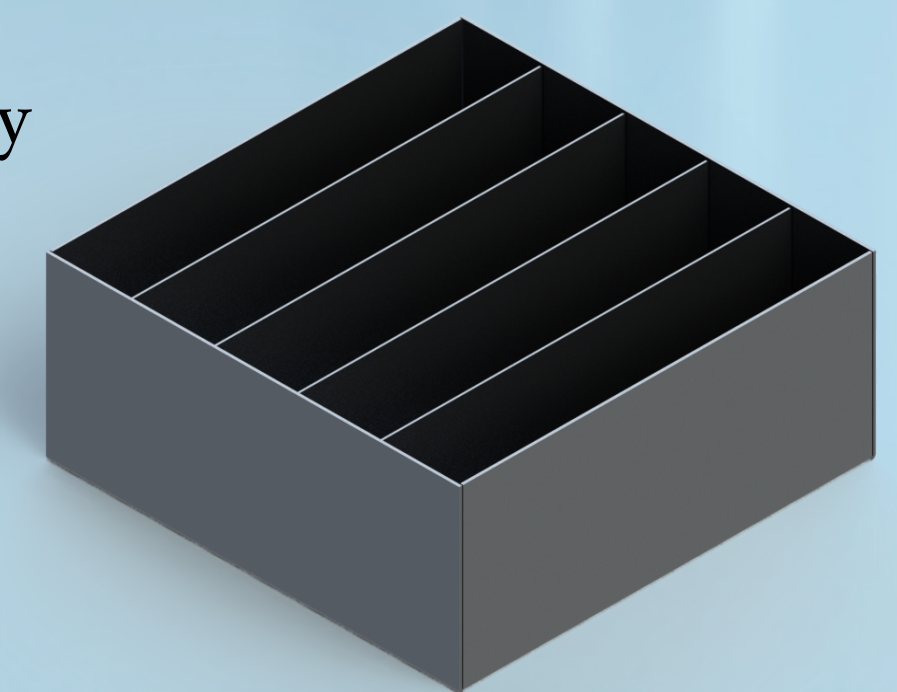
90 Battery Modules fit into an IP67 sealed battery enclosure for a total of 540 Cells

Full battery pack specs

Voltage - 324V

Current - 18.6A (at 1C Discharge, 180A Max. Continuous discharge)

Nominal Power - 6.026kW/4.338MJ



CR18
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