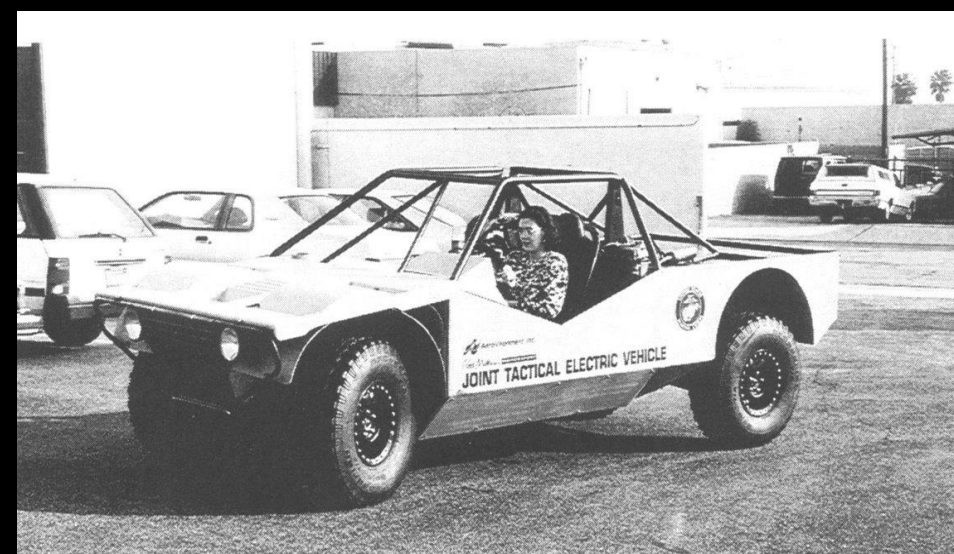
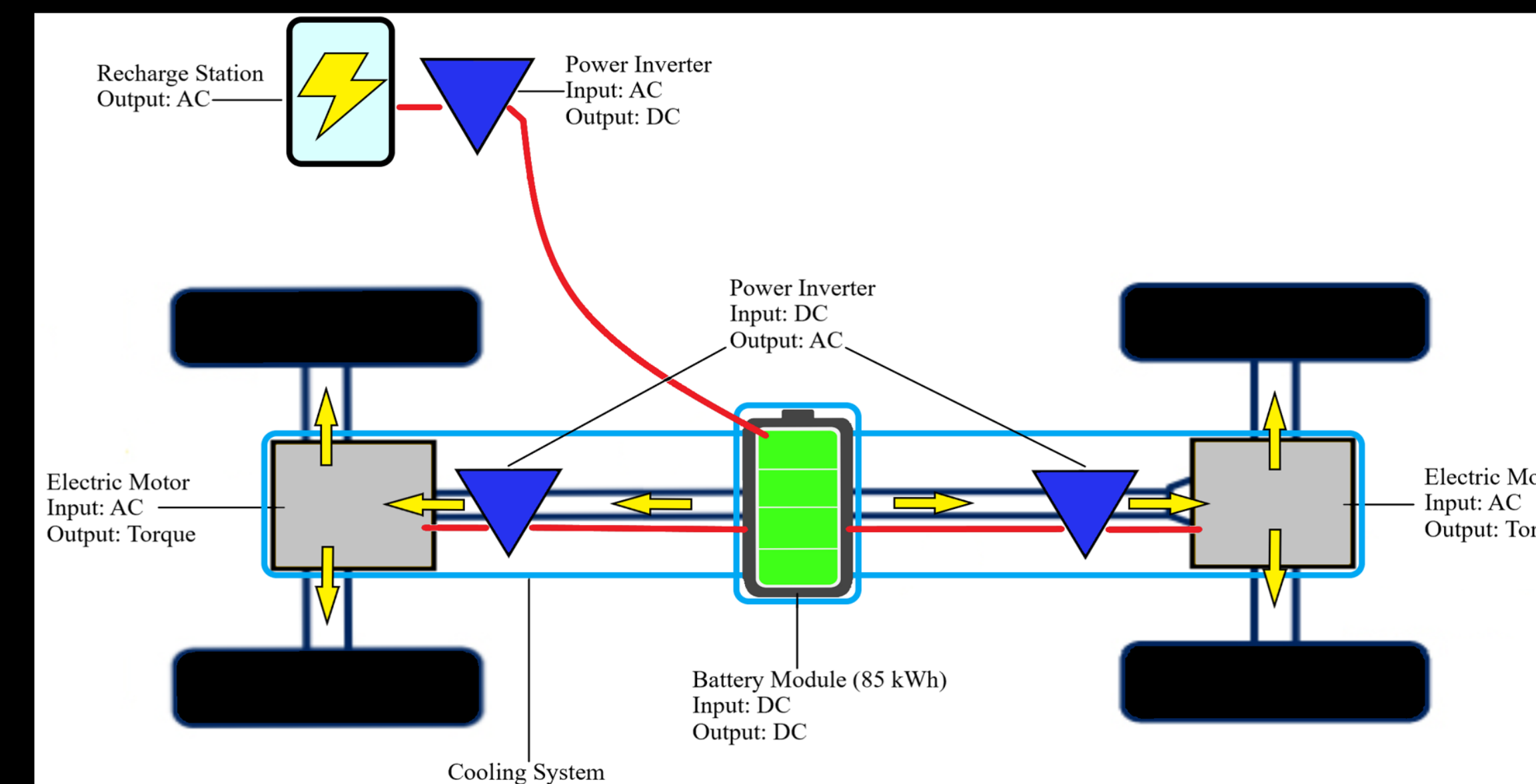




Aero Doty, Chance Foss, Cole Kissler, Connor Parks, Caitlin Suire

DESIGN

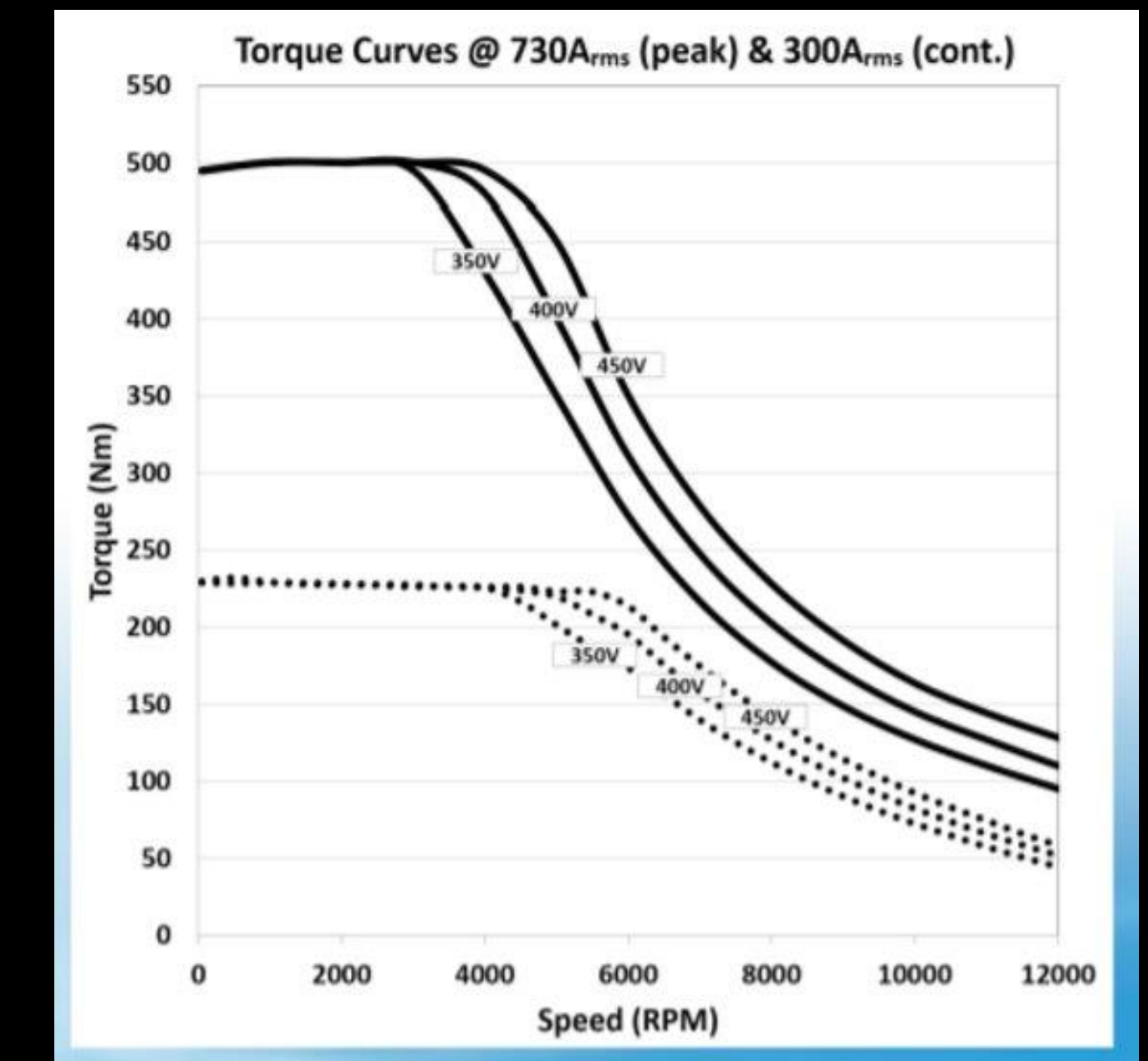
The goal was to create and design an electric vehicle powertrain that could compete with the output power specifications of a tesla vehicle in terms of horsepower and torque.



RESULTS

Primary components:

- Motors
- Batteries
- Inverters
- Cooling System



OBJECTIVE

Create a fully electric vehicle to showcase engineering student ingenuity at university events

BACKGROUND

Joint Tactical Electric Vehicle (JTEV)

- Prototype hybrid-electric military vehicle
- Designed in the 1990s
- DC motor controlled, prone to overheating
- Donated to University of Idaho

Characteristic	Requirement
Helo-Transportability	MLR (CH-46 Helicopter or V-22 Osprey)
Fuel Type	Diesel
Off-Road Range (miles) (25 gallon tank)	460 Hybrid + 12 Electric
Highway Fuel Efficiency (mpg)	20
Off-Road Fuel Efficiency (mpg)	18.5
Transmission	Single speed
Driving Wheels	All
Payload (LB)	1500
GVW (LB)	5000
Crew	2+1
Fording (in)	36
Side slope (%)	40+
Intermittent Gradeability	60% @ 10+ mph
Continuous Gradeability	5% @ 45 mph
Top Speed, Highway (mph)	65
Top Speed, Off-Road (mph)	30+
Acceleration, 0-30 (s)	3.5
Acceleration, 0-60 (s)	8
Ground Clearance	10-15 in. continuously variable with default mode
Turning Radius (ft)	20
Approach Angle	75°
Departure Angle	60°

Design plan:

- Disassembly/research of vehicle
- Assessment of components
- Selection of replacement parts
- Establishment of budget

FUTURE WORK

- Implement motors and powertrain systems into chassis
- Design and implement motor adaptor plates
- Cosmetic alterations of vehicle



5.6 kWh Tesla battery module



IM-225-DX Integrated Motor



Dual pass aluminum radiator

VALUE PROPOSITION

Convert and modernize a 1990s hybrid electric vehicle into a fully electric vehicle to create a campus attraction that displays the excellence of Vandal Engineering.

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