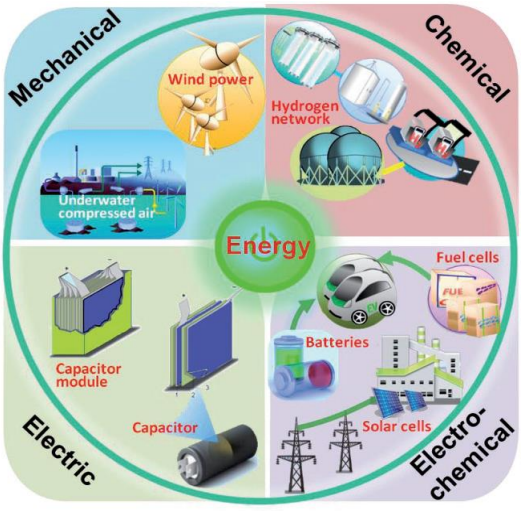
EECS 598-14 Special Topics Course: Advanced Energy Storage
Winter 2020

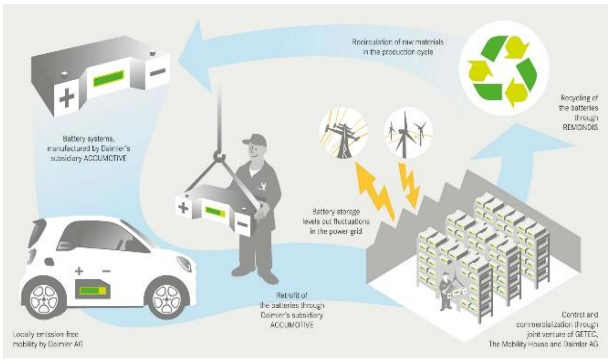


Various types of energy storage

This course will cover advanced topics in energy storages, such as:

- Hybrid energy storage systems consisting of multiple types of energy storage and an energy management strategy which exploits the best properties of each type of storage
- Parameter/state estimation of Lithium-ion batteries via data optimization
- Degradation characterization and analysis of battery pack considering cell-to-cell variations

Cutting-edge technologies in energy storage will be introduced. This course will have a final project where students will design and implement their own energy management system.

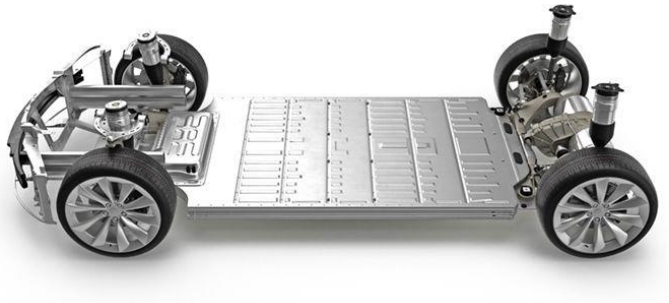


Reusing batteries retired from electrified vehicles in renewable energy systems

This course primarily focuses on introducing and comparing different energy storages, such as pumped-storage, compressed air energy storage, batteries, capacitive energy storage, fuel cells, and flywheels, with special applications to electrified vehicles and renewable energy systems where energy storage plays a crucial role.

The course will focus on reviewing principles and recent progress in energy storage systems, with the goals of improving the performance and lifespan of electrified vehicles as well as integrating renewable energy (e.g., wind and solar energy) into the grid.

Renewable energy systems need energy storage



Battery pack of Tesla (including 7104 battery cells)

Instructor: Dr. Ziyou Song (ziyou@umich.edu)

Credits: 3 (lectures)

Lectures: MW 10:30am-12pm

Classroom: 3427 EECS

Prerequisites: EECS 560 (or equivalent)