PROJECTS:

**MEAN LINE DESIGN OF CENTRIFUGAL COMPRESSOR** (IISc-Present MTech Project)

• Mean line design refers to a method used in the design process of centrifugal compressors. It involves the creation of a mean streamline or average flow path within the compressor impeller. It aims to optimize the impeller shape and flow path to achieve desirable performance characteristics, such as improved efficiency and pressure rise.

**FINITE VOLUME METHOD FOR CONSERVATION LAWS ON UNSTRUCTURED GRIDS. (**IISc-Present Course Project)

• A study of solving Navier-Strokes equations with Finite Volume Method based on unstructured grids and the computational analysis.

**BATTERY THERMAL MANAGEMENT SYSTEM**

(IISc-2023 Course Project)

• It is a necessary component of lithium-ion battery systems, especially at high ambient temperatures. It is to keep batteries working under suitable conditions and improve the electrical performance and battery life and to prevent thermal runaway and improve safety. By air cooling, liquid cooling, and phase change material (PCM) cooling.

**SYSTEM SIMULATION ON GREEN HYDROGEN PRODUCTION WITH THE HELP OF SOEC**  (IISc-2023 Course Project)

• Under applied electrical potential using a photo voltaic cell for our case, a solid oxide electrolyser cell (SOEC) splits water into hydrogen (*H*2) by transferring oxygen ions (*O*−2 ) through a solid ionic conductive membrane that after recombining with electrons to form oxygen molecules (*O*2). Because of the integration of excess heat using solar collectors efficiency of SOEC systems becomes higher than other electrolysis technologies.

**DESIGN and DEVELOPMENT OF EFFICYCLE**

(SNIST-2020 BTech Project)

• Design, fabrication, and assembly processes for building a Hybrid Efficycle. Implemented some innovative ideas and totally commercial design methodology and fabricated a two-seated robust vehicle that is powered by a motor and also can be pedalled.

**.** We as a team of 12 members participated in sae Efficycle all India event with the vehicle we designed and secured an all-India 2nd position .

**DESIGN and DEVELOPMENT OF SOLAR VEHICLE:**

* Generated a 3D Model and Performed simulations of the steering subsystem Parts.
* Designed a commercial 3D Model of Rack & Pinion and Performed FEA Simulations using ANSYS.
* Involved in fabrication, assembly and testing and validation of the entire Vehicle.

**DESIGN AND FABRICATION OF RACK and PINION.**

* Designed a commercial 3D model of Rack and Pinion.
* Performed FEA Simulation considering material other than the OEM part material.
* Tested and validated the design drafted.