

SOFTWARE REQUEST I-STEM PORATL – GUIDE APPROVAL

Dated : 05.03.2025

Name of the research scholar : Senthil Kumar G
Scholar email : gsenthilchn@gmail.com
Register No. : 22142197126
Name of the Supervisor : Dr. D. Sangeetha
Supervisor email : sangeetha@annauniv.edu
Faculty : Mechanical Engineering
College / Campus : Anna University / CEG, Chennai.
Curriculum start : July'2022 onwards
Category : Part time
Tentative title : Enhancing transient current loading performance of Hydrogen (H₂) Proton Exchange Membrane Fuel Cell (PEMFC) by improving transient flow behavior in bipolar plate design to meet transient automotive application.

Software Licence required : COMSOL - Basic + Advanced Module

Justification for COMSOL SW : Project work involves simulation of PEM fuel cell performance. Design and CFD flow simulation of gas flow channel design for bipolar plate to optimize steady state and transient performance of PEM fuel cell for uniform fuel, oxygen flow, starvation and water flooding.

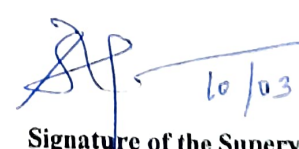
This project is targeting to reduce mass transfer delays of fuel, oxygen in bi polar plate flow passages during sudden transient step loads in fuel cell operation.

COMSOL software has specific module for simulating 1) Fuel cell & Electrolyser, 2) CFD 3) Porus media flow 4) Heat transfer 5) CAD import 6) Liquid and Gas properties modules. These modules are required for my project simulation to meet the project targets.

The project outcome will help to improve fuel cell transient performance for automotive application.

Request for guide approval for submitting in I-Stem portal.


Signature of the Scholar
SENTHIL KUMAR G


Signature of the Supervisor

(With seal)

Dr. D. SANGEETHA
M.Sc., Ph.D., (Polymers), MSA(Tech), M.E., Ph.D (Manufg)
Professor
Institute for Energy Studies
Department of Mechanical Engineering
Anna University, Chennai-25