

2022 MSE Open lab.

미래에너지동력연구실 소개

2022.09.05.(월)

기계시스템공학부

이 정 우



미래에너지동력연구실

교수 소개

Jeongwoo Lee

- Assistant Professor

Division of Mechanical System Engineering

Jeonbuk National University

- Director of Advanced Transportation Machinery Research Center

Jeonbuk National University



Education

Seoul Nat'l University, B.S.

Seoul Nat'l University, M.S. (Prof. K.D. Min)

Seoul Nat'l University, Ph.D. (Prof. K.D. Min)

Job Experience

Senior Researcher, KIMM

Researcher, Seoul Nat'l University BK 21+

Post-doctoral Researcher, Seoul Nat'l University IAMD

Part-time lecturer, Chungang University (Combustion engineering)

Publications (98) ※The 1st author 58 articles

- | | |
|-----------------------------|------------------------------|
| 1. International Journal | 32 (Main author:22) articles |
| 2. Domestic Journal | 7 (Main author:6) articles |
| 3. International Conference | 12 (Main author:6) articles |
| 4. Domestic Conference | 47 (Main author:24) articles |

Research Interests

1. Hydrogen-fueled ICE
2. Thermodynamic analysis on Battery
3. Power distribution of UAV

Honors and Awards (7)

1. Outstanding Thesis Award in Thermal Engineering Field (Master Thesis), *The Korean Society of Mechanical Engineers* in 2012
2. Outstanding Doctoral Dissertation Award, *Department of Mechanical Engineering, SNU* in 2016
3. IAMD Best Young Investigator Award, *Institute of Advanced Machines in SNU* in 2016
4. Outstanding Thesis Award Energy and Power Engineering Field (Ph.D. Thesis), *The Korean Society of Mechanical Engineers* in 2018
5. Outstanding Korean Journal Paper in KSAE (Seoyeon EH), *The Korean Society of Automotive Engineers* in 2019
6. The Best Young Researcher in KIMM, *Korea Institute of Machinery and Materials* in 2019
7. The Best Researcher, *Korea Institute of Gas* in 2021

※ Contact information

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구성원 및 졸업생 소개



1. 오준호 석사 (2022.08. 졸업)

: 현재 한국에너지기술평가원 전임연구원 재직 중

- 수소 직분엔진 실험

- 암모니아 엔진 실험

- SCI 1저자 1편, 공저자 6편 외



2. 하준 석사과정 (2022.03.~)

: 현재 한국기계연구원 모빌리티 동력연구실 파견 중

- 수소 직분엔진 실험

- 배터리 모델링 (Comsol)

3. 장용훈 석사과정 (2022.03.~)

: 현재 한국기계연구원 모빌리티 동력연구실 파견 중

- 암모니아 엔진 실험

- 수소/암모니아 화학반응 모델링 (Chemkin)



4. 김기연 학부연구생 (2023.02. 대학원 입학 예정)

: 현재 산업부 무탄소 직분엔진 개발 과제 참여 중 (서울대학교 파견 중)

- 수소 직분엔진 실험

5. 곽예승 학부연구생 (KAIST 대학원 지원)

: 현재 산업부 무탄소 직분엔진 개발 과제 참여 중 (KAIST 파견 중)

- 수소 직분엔진 실험

6. 장일품 학부연구생 (2023.02. 대학원 입학 예정)

: 배터리 실험 및 엔진 기초 공부

Research & Education Plan of Advenger*

*Advenger: ADVanced ENergy ResearchER

From H2 Energy to Mechanical/Electrical Energy

- Experiment of H2-fueled ICE
- Simulation of H2 and NH3 chemical reaction mechanism
- Simulation for internal reaction of FC system (PEMFC & SOFC)



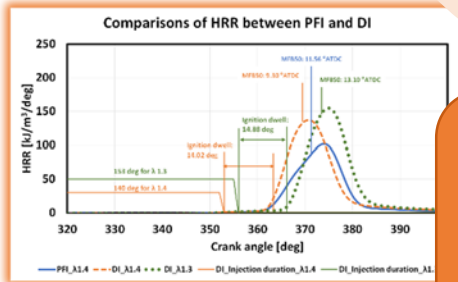
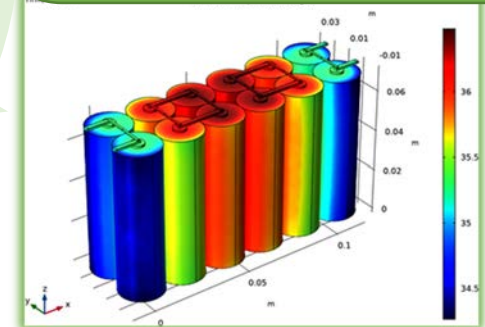
Energy Conversion System

Energy Storage Mechanics

Electric energy storage & Hydrogen reformation

- Simulation of thermodynamic condition for thermal runaway from Battery
- Analyzing relation between electricity and thermo-characteristics
- Simulation of Thermo-chemistry during Hydrogen reformation

Entropymetry

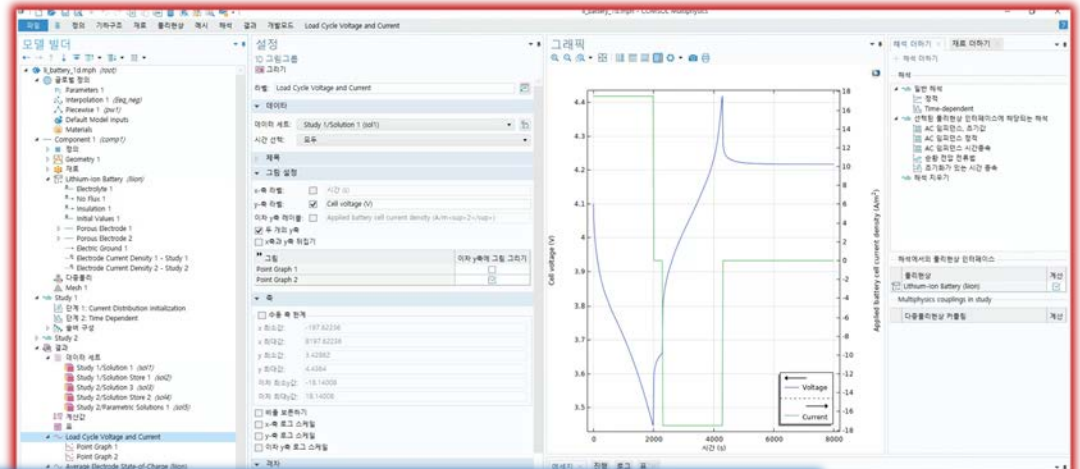


Loss analysis based on the Entropy

- Study on the statistical thermodynamics and particle dynamics
- Entropymetry for powersystems (Lost work analysis in ICE, FC, BEV)

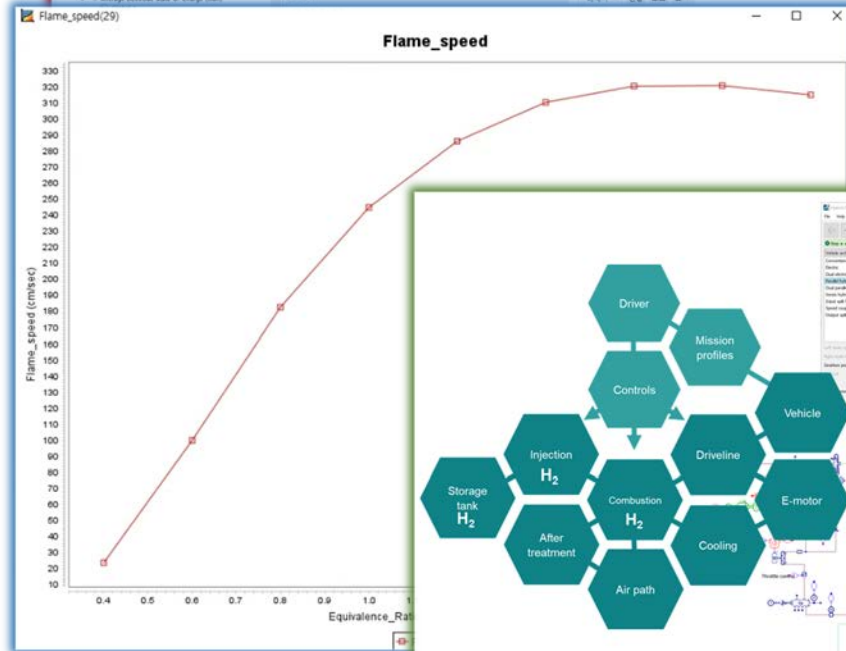
1. Comsol Multiphysics

- 배터리 모듈
- 연료전지 모듈
- 화학반응 모듈



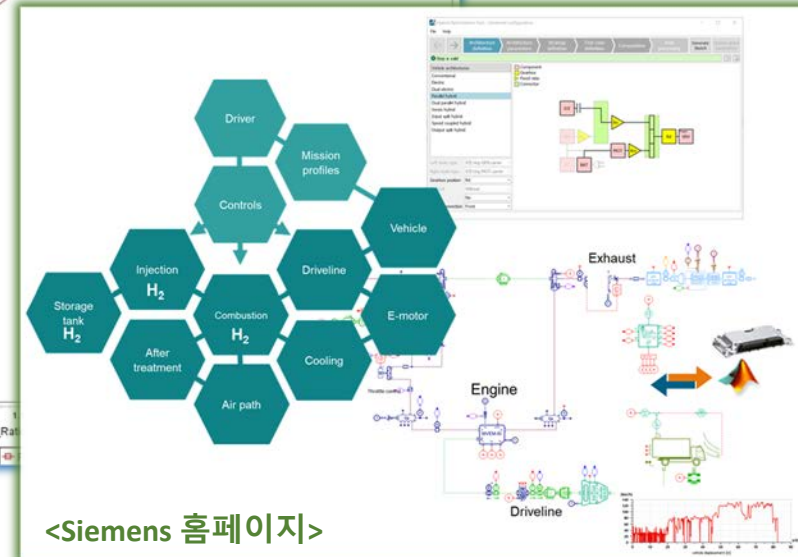
2. Ansys Chemkin

- 수소/암모니아 메커니즘
- 연소온도/연소속도 외



3. Siemens Amesim

- 수소 엔진 시스템 모델링
- 하이브리드 시스템 모델링



자세한 사항은 홈페이지 참조!!



※ Homepage: <https://advenger.jbnu.ac.kr> (미래에너지동력연구실)

E-mail: engine@jbnu.ac.kr (전북대학교 기계시스템공학부 이 정 우)