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## Project Involvements

- ❑ **[MSR COUPLE] Development of a 3D Multi-physics Safety/Performance Platform**
  - OpenFOAM case development
  - OpenFOAM interface coupling methodology development

- ❑ **[MSR] Development and Analysis of Fuel Salt Leakage Behavior in Discharge System Shell**
  - *Project Development and Management (APM)*
  - Methodology development
  - Conceptualization and CFD analysis of fuel drain tank

- ❑ **[SMR] Small and Micro Modular Reactors Technology Analyses**
  - *Project Development and Management (APM)*
  - Literature and technology review
  - Technical feasibility analysis
  - Commercial feasibility analysis

- ❑ **[SMART] System-Integrated Modular Advanced Reactor Passive Containment Cooling System**
  - Modeling of SMART CPRSS through GOTHIC code
  - Literature survey for the design and arrangement of a SMART CPRSS sparger
    - Direct contact condensation and Chugging
  - Modeling of SISTA (CPRSS-related experimental facility) through MARS code
  - CAP Verification
    - Simulations of condensation and boiling conceptual problems through MARS code
    - Simulations of a conceptual problem through MARS and SPACE codes
  - CAP input preparation for Sub P/T Analysis
  - CPRSS hydraulics and heat structure calculation sheet preparation for CAP code

- ❑ **[PGSFR] Prototype Gen-IV Sodium-Cooled Fast Reactor Condition Analysis Project**
  - Simulations of Design Basis Events through MARS-LMR
    - Leakage of Intermediate Heat Transport System Pipe
    - Reactor Vessel Leak into the Containment Vessel

- ❑ **[SMART DEC] Feasibility Study of the SPACE Code Application on DEC Accident Analysis of the SMART Nuclear Power Plant III**
  - SPACE code calculation sheet preparation
    - Passive Safety Injection System (PSIS)
    - Passive Residual Heat Removal System (PRHRS)

- ❑ **[PCCS] Conceptual Design and Development of Passive Containment Cooling System for APR1400**
  - Literature survey on condensation with non-condensable gases
    - Separate and Integral Test Facilities to validate the MARS condensation model
    - Available condensation models
    - Review of MARS condensation model
  - COPAIN test facility (on-plane condensation) simulations through MARS code
  - On-tube condensation simulations through MARS code
    - MARS trouble report to KINS: Volume average velocity deficiency
  - Multi-compartment and multi-dimension simulations (conceptual) through GOTHIC code

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- ❑ **[ATLAS] Determination of ATLAS Heat Loss and Improvement of MARS Input Model**
  - ATLAS experimental facility heat loss quantification of RCS side
  - Integral and differential approaches
  - Implementation of heat loss modeling to MARS input
  - Simulations of OECD and DSP problems with the new MARS input

- ❑ **[NON-LOCA] SPACE Code Input Deck Preparation and Validation**
  - HANUL 1&2 hydraulics and heat structure calculation sheet preparation for SPACE code
    - Reactor Pressure Vessel, Steam Generators, Secondary Systems, Safety Systems
  - HANUL5&6 hydraulics and heat structure calculation sheet preparation for SPACE code
    - Steam Generators, Steam Lines, Safety Systems
    - SPACE Code Validation
    - DSP01 - ATLAS DVI Line Break SBLOCA Simulation
    - DSP02 - ATLAS CL SBLOCA
    - Marviken Sensitivity Tests

- ❑ **[PAFS] Passive Auxiliary Feedwater System Development**
  - Calculation of pipe flow resistance coefficients
  - RELAP5 code input deck preparation for Hanul NPP Units 5&6 (OPR1000)
    - Full steady-state input model
    - Code-to-code verification with SPACE

- ❑ **[ACHX] Air Cooling Heat Exchanger Experiment Simulations through MARS**
  - Fin efficiency and fouling factor analyses
  - Heat transfer coefficient and loss coefficient calculations

- ❑ **[IoT] A Review of Regulatory Criteria for using IoT Technologies in Radioactive Waste Management**
  - Review of Radio Frequency Identification System and IoT technologies
  - Review of IoT applications on radioactive waste management
  - Review of global IoT standards and best practices

- ❑ **[EUR] APR1000 PAFS Standard Design Development and EUR Certification Support**
  - APR100 Design Review and Documentation
  - EUR Certification Documentation

# Academic Contributions

## Graduate Research

- ❑ Ph.D. Dissertation: **E. Bicer**, “Development of a Mean Bubble Size Approach to Improve Pool Scrubbing Swarm Region Modeling,” Doctoral Dissertation, Seoul National University, 2024.
- ❑ Master's Thesis: **E. Bicer**, “A Comparative Study of DVI Line Break Accident between ATLAS Facility and APR1400,” Master’s Thesis, KEPCO International Nuclear Graduate School, 2015.

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## Journal Articles

1. **E. Bicer**, S. J. Hong, and H. K. Cho, "A Novel Correlation for Bubble Size Variation in the Swarm Region under Pool Scrubbing Conditions," *Progress in Nuclear Energy*, vol. 176, pp. 105366–105366, Aug. 2024.
2. **E. Bicer**, S. J. Hong, and H. K. Cho, "Investigation of Equivalent Spherical Bubble Diameter at High Inlet Velocity Pool Scrubbing Conditions," *Nuclear Engineering and Technology*, May 2024.

## Proceedings

1. **E. Bicer**, S.-S. Jeon, Y.-J. Choo, S.-J. Hong, and Y. Cho, "Improving Swarm Region Modeling in Pool Scrubbing through a Mean Bubble Size Approach," in *The 13th Korea-Japan Symposium on Nuclear Thermal Hydraulics and Safety*, Seoul, South Korea: NTHAS-13, Oct. 2024.
2. **E. Bicer**, Y.-J. Choo, and S.-J. Hong, "Improvement of Swarm Rise Region Modelling in SPARC-90 Pool Scrubbing Code," in *Transactions of the Korean Nuclear Society Autumn Meeting*, Changwon, Korea: KNS, Oct. 2024.
3. **E. Bicer**, Y. J. Park, Y.-J. Choo, S. J. Hong, and Y. J. Cho, "The Effect of Bubble Diameter on Decontamination Factor in Pool Scrubbing Codes," in *Summer Conference of the Korean Society for Fluid Machinery*, Pyeongchang, South Korea: KSFM, Jul. 2024.
4. **E. Bicer**, Y. Park, Y. Choi, and S.-J. Hong, "Numerical Analysis of Melting/Solidification Problems using OpenFOAM," in *Transactions of the Korean Nuclear Society Spring Meeting*, Jeju, South Korea: KNS, May 2024.
5. **E. Bicer**, Y.-J. Choo, and S.-J. Hong, "Development of a Mean Bubble Size Correlation under Pool Scrubbing Conditions," in Transactions of the Korean Nuclear Society Spring Meeting, Jeju, South Korea: KNS, May 2024.
6. **E. Bicer**, S. Li, and Y. Liao, "Estimation of Turbulence Parameters in Pool Scrubbing Conditions," in *The 19th Multiphase Flow Conference*, Dresden, Germany: HZDR, Jun. 2023.
7. **E. Bicer**, S.-S. Jeon, Y.-J. Choo, and S.-J. Hong, "Influence of Inlet Turbulent Boundary Conditions on Bubble Diameter Calculation," in *Transactions of the Korean Nuclear Society Spring Meeting*, Jeju, South Korea: KNS, May 2023.
8. **E. Bicer**, S.-J. Hong, and S.-S. Jeon, "Bubble Diameter Evaluation in Pool Scrubbing Geometries," in *Proceedings of ICAPP*, Gyeongju, South Korea: ICAPP, Apr. 2023.
9. **E. Bicer**, H. Cho, and H. Joon, "CFD Simulation of High Inlet Velocity Air Flow into a Large Tank at Pool Scrubbing Conditions," in *Transactions of the Korean Nuclear Society Autumn Meeting*, Changwon, South Korea: KNS, Oct. 2021.
10. S.-J. Hong, S.-S. Jeon, Y.-J. Choo, J.-H. Lee, J.-H. Bae, **E. Bicer**, B.-D. Chung, Y.-I. Kim, "CAP Code Version-up to 3.0 and Its Application to Pressure and Temperature Analysis," in *Transactions of the Korean Nuclear Society Autumn Meeting*, Changwon, South Korea: KNS, Oct. 2020.
11. S.-S. Jeon, **E. Bicer**, J.-H. Bae, S.-J. Hong, B.-U. Bae, and K.-H. Kang, "System Code Analysis of ATLAS Facility Including Heat Loss Evaluation," in *Transactions of the Korean Nuclear Society Spring Meeting*, Jeju, South Korea: KNS, Apr. 2019.
12. **E. Bicer**, Y.-J. Choo, and S.-J. Hong, "Capability of MARS-KS on Predicting Wall Condensation in the Presence of Non-Condensable Gases," in *Transactions of the Korean Nuclear Society Autumn Meeting*, Gyeongju, South Korea: KNS, Oct. 2016.
13. **E. Bicer**, Y.-J. Choo, S.-S. Jeon, S.-S. Kim, Y.-H. Kim, and S.-J. Hong, "Prediction of Wall Condensation in the Presence of Non-Condensable Gases through Various Thermal-Hydraulic Codes," in *25th International Conference Nuclear Energy for New Europe*, Portorož, Slovenia: NENE-2016, Sep. 2016.
14. **E. Bicer**, A. L. Tatu, and T. Kim, "Scaling Analysis for DVI Line Break Accident of APR 1400 Based on ATLAS Experiment," in *International Topical Meeting on Nuclear Reactor Thermal Hydraulics*, Chicago, USA: NURET-16, Aug. 2015.

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