Erol Bicer, Ph.D.

Nuclear Engineer

erolbicer@live.com
www.erolbicer.com
+82-10-7497-0705
South Korea
ResearchGate/Erol-Bicer
GitHub/nucerl

LANGUAGES

English — Fluent
Turkish — Fluent
Korean — Conversational

SYSTEM CODES

RELAP5 | MARS-KS | SPACE

CONTAINMENT CODES

GOTHIC | CAP

SEVERE ACCIDENT

MELCOR

CFD CODES

OpenFOAM | CUPID

CODING LANGUAGES

PYTHON | MATLAB | FORTRAN | C++ | HTML/CSS

TOOLS

Git | PCTRAN | SNAP | Origin | Salome | DOS/UNIX | ParaView | CATIA | Mathcad | LaTeX

PROFILE

I specialize in conducting comprehensive safety analyses for various types of nuclear power plants using advanced system and computational fluid dynamics codes. My experience encompasses successfully developing, leading, and completing international projects through effective collaboration with global teams.

PROFESSIONAL EXPERIENCE

FNC Technology Co., Ltd.

Manager
2023 – present | South Korea

Associate Manager
2019 – 2023 | South Korea

Assistant Manager
2016 – 2019 | South Korea

Bil-Plas Industry and Trade Co., Ltd., R&D Engineer
2013 – 2014 | Ankara, Turkey

EDUCATION

Nuclear Engineering, Ph.D., Seoul National University
2024 | Seoul, South Korea

Nuclear Power Plant Engineering, M.Sc., KINGS
2016 | Ulsan, South Korea

Nuclear Energy Engineering, B.Sc., Hacettepe University
2013 | Ankara, Türkiye

LATEST PROJECTS

[SMR] Small and Micro Modular Reactors Technology Analyses

[PCCS] Conceptual Design and Development of Passive Containment Cooling System for APR1400

[SMART] System-Integrated Modular Advanced Reactor Passive Containment Cooling System

[PGSFR] Prototype Gen-IV Sodium-Cooled Fast Reactor Condition Analysis

[EUR] APR1000 PAFS Standard Design Development and EUR Certification Support

AWARDS & CERTIFICATES

International Atomic Energy Agency Fellowship, IAEA

Full Academic Scholarship, KINGS

Modeling and Computation of Multiphase Flows, ETH

International Marketing, Business Knowledge and Intelligence, ATO

PERSONAL VENTURES

Nuclear Industry Association of Turkey, Board of Directors

Turkish Chamber of Commerce in Korea, Co-Founder

Hacettepe Rugby Club, Founder

Erol Bicer, Ph.D.
Nuclear Engineer

erolbicer@live.com
www.erolbicer.com
+82-10-7497-0705

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 Behaviour in Discharge System Shell**
  - Project Development
  - Methodology development
  - Conceptualization and CFD analysis of fuel drain tank

- ❑ **[SMR] Small and Micro Modular Reactors Technology Analyses**
  - Project Development
  - 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

Erol Bicer, Ph.D.
Nuclear Engineer
erolbicer@live.com
www.erolbicer.com
+82-10-7497-0705

- ❑ **[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.

Erol Bicer, Ph.D.
Nuclear Engineer

erolbicer@live.com
www.erolbicer.com
+82-10-7497-0705

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.

Download One-Page Resume

Download Extended Resume