Jalal Alsarraf, Professor Head of Marine Engineering Technology Department

Education:

1989, Diploma in Marine Engineering Technology, College of Technological Studies, PAAET, Kuwait.
1997, B.Sc., Mechanical Engineering, Georgia State, USA.
2002, M.Sc., Ocean Engineering, University of Rhode Island, USA.
2010, Ph.D., Marine Offshore, Subsea Engineering & Material Engineering, Cranfield University, UK.

Number of years of service on this faculty:

30 Years
2000 – 2006 Assistant Teacher of Marine Engineering.
2010 – 2016 Assistance Professor of Marine Engineering.
2016 – 2021 Associate Professor Marine Engineering
2022 – Present Professor & Head Department

Other related experience:

1991 to 1992, Marine Assistant Engineer, Al-Ahmadi Port, Kuwait Oil Company.
1992 to 1997, B.Sc. Scholarship Georgia State, USA.
1997 to 2000, Head of Central Workshops Department & Head of Heavy Equipment Department, Ministry of Works, Kuwait.
2000 to 2002, M.Sc. Scholarship, University of Rhode Island, USA
2002 to 2006, Assistant Teacher, College of Technological Studies, PAAET, Kuwait
2006 to 2010, PhD. Scholarship, Cranfield University, UK.
2010 to 2017, Assistant Professor, Automotive and Marine Engineering Technology, College of Technological Studies, PAAET, Kuwait.
2017 to 2021, Associate Professor, Automotive and Marine Engineering Technology, College of Technological Studies, PAAET, Kuwait.
2022 to Present, Professor& Head of Automotive and Marine Engineering Technology Department, College of Technological Studies, PAAET, Kuwait.

Teaching interests:

Fluid Mechanics, Thermodynamics, Internal Combustion Engines, Marine Ship Systems, Marine Machinery, Steam Engineering, Ships Propulsion Systems, Marine Electro Technology, Marine Corrosion Protections and Monitoring, Material Technology

Courses taught at PAAET:

Engineering Thermodynamics, Fluid Mechanics, Marine Diesel Engines, Auxiliary Machinery, Ships Propulsion Systems, Ship Systems, Inspection and Maintenance, Ship Safety, Projects, Field Training 1 & 2, Marine Relations, Steam Engineering, Marine Diesel Plant Simulator, Material Technology, Refrigeration and Air-Conditioning, Ship Maintenance**,** Marine Electro Technology.

Research interests:

Experimental Research including Marine Corrosion and Corrosion control, Heat and Mass Transfer, Welding Characterization, Neural network applications, Energy Optimization, Phase Change Materials, Thermal Conductivity with Nanofluids.

Principal publications of the last five years:

Journal Papers:

Alsarraf, J., Alnaqi, A.A., Al-Rashed, A.A.A.A., Geometric optimization of a turbulator in nanofluid flow around a bundle of nuclear reactor fuel rods using the response surface methodology Annals of Nuclear Energy, 2025, 220, 111504

Alsarraf, J., Alnaqi, A.A., Al-Rashed, A.A.A.A., "Thermodynamic, techno-economic and environmental analysis with multi-objective optimization of an integrated solar-driven CAES unit with biofuel-driven gas turbine", Thermal Science and Engineering Progress, 2025, 64, 103764

Al-Rashed, A.A.A.A., Alnaqi, A.A., Alsarraf, J., “Sensitivity analysis of parameters and optimization of produced entropy in a nuclear reactor with equilateral fuel rod arrangement and variable angle turbulators”, Annals of Nuclear Energy, 2025, 217, 111310

Alnaqi, A.A., Alsarraf, J., Al-Rashed, A.A.A.A., “Thermodynamic and economic evaluation with multi-objective optimization of a novel thermally integrated pumped thermal energy storage system”, Thermal Science and Engineering Progress, 2025, 58, 103211

Alnaqi, A.A., Al-Rashed, A.A.A.A., Alsarraf, J., “Numerical investigation of the geometric parameters effect of helical blades installed on horizontal geo heat exchanger”, Geothermics, 2025, 125, 103169

Alsarraf, J., Alnaqi, A.A., Al-Rashed, A.A.A.A., “Simulation of two-phase hybrid nanofluid flow in a flat plate solar collector equipped with spiral absorber tube under the influence of magnetic field: Hydraulic-thermal, energy, and exergy analysis”, Journal of Magnetism and Magnetic Materials, 2023, 585, 171120

Al-Rashed, A.A.A.A., Alnaqi, A.A., Alsarraf, J., “Examination of thermo-hydraulic performance and exergy efficiency in a heat exchanger equipped with spiral tube using a two-phase approach for climatic conditions of Kuwait”, Engineering Analysis with Boundary Elements, 2023, 152, pp. 540–551

Alnaqi, A.A., Alsarraf, J., Al-Rashed, A.A.A.A., “The waste heat of a biofuel-powered SOFC for green hydrogen production using thermochemical cycle; Economic, environmental analysis, and tri-criteria optimization” ,Fuel, 2023, 335, 126599

Al-Rashed, A.A.A.A., Alsarraf, J., Alnaqi, A.A., “A comparative investigation of syngas and biofuel power and hydrogen plant combining nanomaterial-supported solid oxide fuel cell with vanadium-chlorine thermochemical cycle”, Fuel, 2023, 331, 125910

Alnaqi, A.A., Alsarraf, J., Al-Rashed, A.A.A.A., “Transient numerical study on injecting PCM in buildings along with extra comfort ventilation: Use of artificial neural network to decline energy utilization”, Engineering Analysis with Boundary Elements, 2022, 143, pp. 559–567

Alsarraf, J., Alnaqi, A.A., Al-Rashed, A.A.A.A., “Thermodynamic modeling and exergy investigation of a hydrogen-based integrated system consisting of SOFC and CO_2 capture option”, International Journal of Hydrogen Energy, 2022, 47(62), pp. 26654–26664

Al-Rashed, A.A.A.A., Alsarraf, J., Alnaqi, A.A., “Exergy optimization of a novel hydrogen production plant with fuel cell, heat recovery, and MED using NSGAII genetic algorithm”, International Journal of Hydrogen Energy, 2022, 47(62), pp. 26673–26686

Alsarraf, J., Alnaqi, A.A., Al-Rashed, A.A.A.A., “Effect of nanoparticles shape on the cooling process of a lithium ion battery in geometry with capillary channels in the presence of phase change material”, Journal of Energy Storage, 2022, 48, 103998

Al-Rashed, A.A.A.A., Alnaqi, A.A., Alsarraf, J., “Numerical investigation and neural network modeling of the performance of a dual-fluid parabolic trough solar collector containing non-Newtonian water-CMC/Al2O3 nanofluid, Sustainable Energy Technologies and Assessments, 2021, 48, 101555

Alnaqi, A.A., Alsarraf, J., Al-Rashed, A.A.A.A., “Effect of off-center finned absorber tube and nanoparticle shape on the performance of two-fluid parabolic solar collector containing nanofluid: An application of artificial neural network”, Sustainable Energy Technologies and Assessments, 2021, 48, 101668

Al-Rashed, A.A.A.A., Alnaqi, A.A., Alsarraf, J., Usefulness of loading PCM into envelopes in arid climate based on Köppen–Geiger classification - Annual assessment of energy saving and GHG emission reduction”, Journal of Energy Storage, 2021, 43, 103152

Alnaqi, A.A., Alsarraf, J., Al-Rashed, A.A.A.A., "Hydrothermal effects of using two twisted tape inserts in a parabolic trough solar collector filled with MgO-MWCNT/thermal oil hybrid nanofluid", Sustainable Energy Technologies and Assessments, 2021, 47, 101331

Alnaqi, A.A., Alsarraf, J., Al-Rashed, A.A.A.A., "Using response surface methodology and artificial neural network to examine the rheological behavior of tungsten trioxide/ethylene glycol nanofluid under various sonication times", Journal of Molecular Liquids, 2021, 337, 116022

Al-Rashed, A.A.A.A., Alnaqi, A.A., Alsarraf, J., "Energy-saving of building envelope using passive PCM technique: A case study of Kuwait City climate conditions", Sustainable Energy Technologies and Assessments, 2021, 46, 101254

Al-Rashed, A.A.A.A., Alnaqi, A.A., Alsarraf, J., "Thermo-hydraulic and economic performance of a parabolic trough solar collector equipped with finned rod turbulator and filled with oil-based hybrid nanofluid", Journal of the Taiwan Institute of Chemical Engineers, 2021, 124, pp. 192–204

Alnaqi, A.A., Alsarraf, J., Al-Rashed, A.A.A.A., "Numerical investigation of hydrothermal efficiency of a parabolic dish solar collector filled with oil based hybrid nanofluid", Journal of the Taiwan Institute of Chemical Engineers, 2021, 124, pp. 238–257

Alnaqi, A.A., Alsarraf, J., Al-Rashed, A.A.A.A., Afrand, M., "Thermal-hydraulic analysis and irreversibility of the MWCNTs-SiO2/EG-H2O non-Newtonian hybrid nanofluids inside a zigzag micro-channels heat sink", International Communications in Heat and Mass Transfer, 2021, 122, 105158

Alsarraf, J., Al-Rashed, A.A.A.A., Alnaqi, A.A., Shahsavar Goldanlou, A., "Dominance of cohesion of EG-water molecules over Van der Waals force between SiO2-ZnO nanoparticles in the liquid interface", Powder Technology, 2021, 379, pp. 537–546

Scientific and professional societies of which a member:

1. American Society of Mechanical Engineers, Member 1997
2. Kuwait Society of Engineers, Member 1998
3. National Association of Corrosion Engineers, Member 2010
4. Founding member of Kuwait maritime association 2020

Institutional service in the last five years:

1. 2025 Chairman of the Scholarship Committee
2. 2025 Chairman of the Appointment Committee
3. 2024 Chairman of the Promotion Committee
4. 2024 Chairman of the Scholarship Committee
5. 2024 Chairman of the Appointment Committee
6. 2023 Chairman of the Promotion Committee
7. 2023 Chairman of the Scholarship Committee
8. 2023 Chairman of the Appointment Committee
9. 2022 Member of the Evaluation Committee
10. 2022 Member of the Research Committee
11. 2021 Member of the Evaluation Committee
12. 2021 Member of the Research Committee
13. 2021 Member of the Research Committee
14. 2000 – Now Chairman / Member in several short-term committees to achieve specific purposes

Professional service in the last five years:

Member, Organizing Al-Takatof Al-Kuwaiti exhibition for companies and national industries 2015

1. Member of the Projects Jury Committee, Kuwait Science and Engineering Competition, 2016- 2025
2. Member of the Inventions Jury Committee, International Invention Fair in Middle East, 2015 - 2025

Professional development activities in the last five years:

1. Attended several Workshops and condensed courses conducted by the Center of Evaluation and Development, PAAET, 2010-2025.
2. Attending many seminars organized by PAAET.
3. Attended several Workshops and condensed courses conducted by the Center of Evaluation and Development, PAAET, 2010-2025.