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NAVAL ARCHITECTURE,
MARINE & OFFSHORE
ENGINEERING · MSc
CANDIDATE

PROFILE

BUET-trained naval architect completing an MSc in Mechanical Engineering at Aarhus University. Nearly three years of construction inspection, commissioning and acceptance testing across three national dredger programmes covering 65 vessels, supported by current CFD, structural-analysis and experimental-validation capability.

CORE CAPABILITIES

Marine engineering Hull structures · hydrodynamics · resistance and propulsion · hydrostatics / stability · machinery · maintenance and repair

Yard & assurance Construction inspection · launching · commissioning · acceptance trials · specification checks · tender documentation

Software & analysis AutoCAD · Rhinoceros · OpenFOAM · ANSYS · COMSOL · Python · Maxsurf / Hydromax foundation

MARINE PROFESSIONAL EXPERIENCE

Assistant Naval Architect — BIWTA Dredging Department

Jun 2019 – Mar 2022

Contracted via Shahin Engineering & Services · Dhaka, Bangladesh

- Supported three national dredger procurement programmes covering 65 vessels; ran launching, commissioning and acceptance trials across six vessel classes.
- Inspected 700, 600 and 500 mm cutter-suction dredger construction, checked work against specification, and prepared tender documentation and AutoCAD drawings.

MARINE DESIGN & RESEARCH

Preliminary design of a 1,300-tonne inland cargo vessel

2017

BSc design project · Team of two · BUET

- Completed general arrangement, lines plan, hydrostatics, scantlings, midship section, stability, trim, resistance, rudder, propeller, shafting and machinery selection.
- Final particulars: 58.98 m LOA, 10.78 m breadth, 3.63 m draught and 9-knot service speed; Holtrop-Mennen analysis gave 365 kW break power.

Waste-heat seawater desalination prototype

2017 – 2018

BSc thesis · Team of three · BUET

- Designed and fabricated a 2 m floating-head shell-and-tube heat exchanger with 13 tubes; used a 1 MW Caterpillar engine exhaust as the heat source.
- The original prototype produced 0.7 g/s at a 4 g/s inlet and 450 kW engine load — approximately 60 kg/day. A later 2025 peer-reviewed study reported the higher 1.18 tonnes/day system result.

PEER-REVIEWED PUBLICATION

M. S. A. Towhid, M. R. Islam, M. Khalikujjaman and B. T. Costa, "Waste heat recovery-based seawater desalination for sustainable maritime operations: a study on heat transfer, techno-economic feasibility, and environmental impact," *Journal of ETA Maritime Science*, 13(3), 260–276, 2025. DOI [10.4274/jems.2025.76259](https://doi.org/10.4274/jems.2025.76259). Contribution: data collection and processing, analysis and interpretation, software and validation.

CURRENT MECHANICAL-ENGINEERING WORK

Wind-farm wake modelling in OpenFOAM, validated against LES

May 2026

Individual Wind Energy project · Aarhus University

- Built realizable k- ϵ RANS actuator-disk models for three six-turbine layouts: 7D aligned, 5D aligned and 7D staggered.
- Post-processed rotor-averaged deficit, turbulence intensity and normalised row power in Python; row-power RMSE ranged from 0.037 (staggered) to 0.083 (5D aligned).
- Identified overly rapid RANS wake recovery as a non-conservative source of aligned-array power error.

Food-grade grease benchmarking for industrial robot reduction gears

Feb - Jun 2026

Industry-linked R&D; · Two-person team · Aarhus University · 10 ECTS, grade 10 (ECTS B)

- Planned and executed 23 ball-on-disc trials on a Bruker UMT TriboLab across 20–70 N and 75–367 rpm; most runs lasted 1,800 s.
- Built one Python workflow that removed the 0–300 s run-in and calculated mean COF, standard deviation, coefficient of variation and drift consistently.
- Best food-grade condition achieved mean COF 0.0946 at 2.0% CV, but visible material removal prevented a replacement recommendation based on friction alone.

Verification and validation of an OpenFOAM cylinder-wake benchmark

May 2025

CFD course · Team of four · Aarhus University

- Established mesh independence at 25,100 cells and time-step independence with CFL-consistent refinement.
- Extracted a 0.17 Hz shedding frequency by FFT, giving $St = 0.17$: within 3.1% of an empirical correlation and 3.4% of published drag data.

ADDITIONAL EXPERIENCE

Probationary Officer → Senior Officer — United Commercial Bank PLC

Mar 2022 - Jan 2025

Business Operations Division · Dhaka, Bangladesh

- Diagnosed core-banking system and process faults, coordinated fixes and tested results before live release; left to begin full-time MSc study.

Industrial Trainee — Chittagong Dry Dock Limited (Bangladesh Navy)

Aug - Sep 2017

One-month shipyard programme

- Training in hull construction, docking, ship repair and related yard operations.

EDUCATION

MSc Mechanical Engineering — Aarhus University, Denmark

Feb 2025 - Jan 2027
(expected)

90 of 120 ECTS completed as of August 2026; MSc thesis in progress.

- Focus: CFD, wind and renewable energy, tribology, FEA, reliability, composites, applied mathematics and data science.

BSc Naval Architecture & Marine Engineering — BUET, Bangladesh

2013 - 2018

CGPA 3.36 / 4.00.

- Undergraduate thesis on waste-heat desalination and full preliminary design of a 1,300-tonne inland cargo vessel.

LANGUAGES & AVAILABILITY

Languages: Bengali (native) · English (professional working; IELTS Academic 6.5, November 2022) · Danish (currently studying)

Availability: Full-time graduate roles from February 2027 · References available on request