

Holds B. Sc. in Mechanical Engineering and M. Sc. in Renewable Energy & E-Mobility. Has over 5 years experience working as Energy Systems Engineer, specializing in techno-economic optimization of CHP and district heating systems within German EVU environments. Experienced in EnergyPRO-based modeling, operational optimization, thermal storage integration, and energy infrastructure transformation projects. Background in Mechanical Engineering and Renewable Energy with hands-on experience in district heating decarbonization, AGFW methodologies, energy balancing, and operational flexibility analysis. Strong cross-functional collaboration experience with operations, asset management, and controlling teams.

PERSONAL DATA

Nationality : Egyptian
Birth Date : 25/06/1997
Gender : Male
Residence : Currently Germany

EDUCATION

- : B. Sc. in Mechanical Engineering, Arab Academy for Science Technology & Maritime Transport, 2020
- : M. Sc. in Renewable Energy & E-Mobility, Hochschule Stralsund, Germany (Mar. 2022 – May 2024)

LANGUAGES

Arabic : Native Language
English : Fluent
French : Basics
German : Very Good (B2)

COMPUTER SKILLS

- : Windows, MS Office, Internet

TRAINING COURSES AND CERTIFICATIONS

- : Calculation of primary energy and emission factors according to FW 309 & FW 311 – AGFW.
- : EnergyPRO 4.9 Basis I & II and Advanced Heat Pump Modeling – EMD International.
- : BEW Feasibility Study – Sinnogy GmbH Akademie.
- : Agent Coding & GitHub Copilot Workshop – Scieneers GmbH.
- : Wind Energy, Technical University of Denmark, Coursera.

- : Solar Energy Basics, The State University of New York, Coursera.
- : PMP 35h Training – Project Management Institute.
- : Introduction to OpenFOAM by Virtual Flow (08/2020).
- : A Human Behavior Approach to Net Zero Energy Buildings Seminar by ASHRAE (06/2020).
- : Car Modeling through Multi-Body Dynamics using MSC ADAMS by EOSTRACK (03/2020).
- : Attendance of LEED & District cooling and 8 other seminars at HVAC R EXPO SAUDI (02/2020).
- : Gas Turbine Familiarization – Egypt Air Training Academy (09/2019).
- : FSAE Italy Certificate of Participation by ANFIA (07/2019).
- : Certificate of Participation by Robo Games (11/2017).
- : IELTS Academic score: 6.5 (08/2016 - 08/2018).

CHRONOLOGICAL EXPERIENCE RECORD

Dates : From Jan. 2026 till now

Employer : Igony Energies GmbH – Saarbrücken, Germany

Job title : Project Engineer (Energy Systems)

Job Description :

- Develop and validate techno-economic models for CHP and district energy systems to support operational optimization and strategic decision-making.
- Build detailed EnergyPRO models for biomass CHP plants with extraction-condensing turbines, integrating steam extraction logic, feedwater systems, thermal storage, and operational constraints.
- Perform model validation against historical operational and outage data to improve simulation accuracy and operational reliability.
- Conduct operational and economic scenario analyses for thermal energy storage integration, identifying flexibility-driven optimization potential of approximately €100k annually.
- Analyze operational, forecast, and market-related data to optimize dispatch strategies, operational flexibility, and revenue streams.
- Collaborate cross-functionally with operations, asset management, controlling, and engineering teams on optimization methodology and plant operation concepts.
- Contributed to internal EnergyPRO evaluation, workflow standardization, and digitalization initiatives within the organizational modeling ecosystem.
- Independently prepared and delivered technical presentations to cross-functional stakeholder groups and department leadership.

Dates : From Jul. 2024 till Dec. 2025

Employer : Stadtwerke Ludwigsburg-Kornwestheim GmbH – Ludwigsburg, Germany

Job title : Project Developer for heating & cooling supply

Job Description :

- Developed AGFW-compliant CO₂ and primary energy factor calculations (FW 609 / FW 611) for district heating systems and BEW subsidy applications.
- Modeled and optimized 12 district heating networks across four cities

(142 MWth, 25+ plants, 100+ generation units, ≈ 80 km network infrastructure) using EnergyPRO and QGIS.

- Led optimization and capacity analysis for the largest network (99 MWth, 15 CHP units, 40 plants), including load profiling, storage sizing, generation mix optimization, and N-1 contingency analyses.
- Simulated integrated renewable and conventional generation systems including CHP, heat pumps, ORC, biomass, solar thermal, storage, and cooling technologies.
- Developed QGIS-based infrastructure models supporting hydraulic simulations, planning workflows, and public expansion visualization tools.
- Contributed to district heating transformation planning within a €160M multi-year infrastructure investment program.
- Developed a renewable heating contracting concept integrating pellet boiler, heat pump, PV, and thermal storage systems for a school campus energy supply solution.

Dates : From Sep. 2023 till May 2024
Employer : E.C.A. Germany GmbH – Cologne, Germany
Job title : Working Student for Heat Pump Market Strategy
Job Description : Researched German and EU heat pump markets, decarbonization strategies, and renewable heating sector trends.

Dates : From Jan. 2021 till Apr. 2022
Job Description : Engineering Internships – Mechanical & Energy Systems – Riyadh, KSA:

- Conducted market and competitor analysis for solar and energy efficiency solutions.
- Supported HVAC system design according to ASHRAE and NFPA standards for industrial facilities.
- Assisted with HVAC component selection and performance testing activities.

Further experiences : EXTRACURRICULAR & ENGINEERING PROJECTS:

- ThaiGer-H2 Racing Team – Shell Eco-Marathon France: Designed fuel cell cooling systems and manufactured carbon fiber body components.
- Formula Student Italy – Arab Academy Motors: Led CFD & FEA simulation activities and supported vehicle body manufacturing using fiberglass.

Field of experience :

- AGFW-Certified / Techno-Economic Energy Systems Engineer / CHP Optimization / District Energy Modeling.
- Energy Systems & Optimization: District Heating Systems / CHP Systems / Thermal Energy Storage / Heat Pumps / Energy Balancing / Operational Flexibility / Dispatch Optimization / Renewable Heat Integration / Energy Infrastructure Transformation.
- Modeling & Simulation: EnergyPRO / Techno-Economic Modeling / Scenario Analysis / Mathematical Modeling / System Validation / Load Analysis / Operational Optimization.
- Data & Digital Engineering: Python / VS Code / GitHub Copilot / Power BI / Advanced Excel.

- GIS & Engineering Tools: QGIS / MATLAB / OpenFOAM / AutoCAD / SolidWorks / Revit.