Muhammad Rafi Afif Indrajaya

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EXECUTIVE SUMMARY

Purpose-oriented **master's student** in the prestigious **Erasmus Mundus Joint Master's (EMJM) Program in Decentralized Smart Energy Systems (DENSYS)**, specializing in **Clean Energy, Power-to-X**, and **Hydrogen production and utilization**. With a diverse, **multi-industrial background** ranging from **transportation** to **power generation**, I am determined to drive innovation and contribute to **clean energy solutions** for a sustainable future.

EDUCATION

Politecnico Di Torino | *MSc in Energy and Nuclear Engineering.* *Turin, Italy* | **10.2025 – 01.2026 (Expected)**

- Second year of the EMJM, DENSYS Program.
- **Key Courses**: Polygeneration and Advanced Energy Systems, Smart Electricity Systems, Resources Sustainability.

School of Mines | *RD20 Summer School* *Colorado, USA* | **06.2025 – 06.2025 (Expected)**

- Selected to represent the DENSYS program at a summer school focused on discussing the green transition development for G20 member countries.

University of Lorraine | *Master Energie Parcours* *Nancy, France* | **08.2024 – 07.2025**

- First year of the EMJM, DENSYS Program.
- **Grade: 4.00/4.00 (GPA of The First Year)**.
- **Key Courses**: Energy Conversion Processes, Renewable Energy Sources, Energy Storage, Python for Energy Systems, Critical Resources for Energy and Recyclability.

Sophia University 上智大学 | *Bachelor of Science, Green Engineering* *Tokyo, Japan* | **09.2020 – 09.2024**

- Sophia Overseas Designated School **Full-ride Scholarship Awardee**.
- Graduated in the **top 5%** of the green engineering cohort.

Kantonsschule Hohe Promenade | *AFS Exchange Program* *Zurich, Switzerland* | **08.2018 – 07.2019**

- Chosen as one of **16 out of 900 applicants** for the AFS Intercultural Exchange Program from Jakarta, which promotes cultural and academic exchange to foster global citizenship and cross-cultural understanding.

EXPERIENCE

Bosch | *Solid Oxide Fuel Cell (SOFC) Project Business Analyst Intern* *Tokyo, Japan* | **10.2023 – 03.2024**

- Conducted **market research** with the **global Bosch SOFC team** on business implementation across **Japan, EU, USA & SE Asia**, identifying three high-potential growth markets for deployment.
- Developed a **Python-based interactive gas infrastructure map (JSON & Pandas)**, streamlining regional energy feasibility analysis.
- Modeled **lifecycle emissions & financial feasibility** for natural gas, hydrogen & biogas as SOFC fuels.
- Led a **Beer Waste-to-power project** in a Japanese brewery using Bosch's SOFC product, identifying the potential to generate **572 kW of power** & reduce **thousands of metric tons of CO_2** annually.

Medco Power Indonesia | *Renewable Energy Engineer Intern* *Jakarta, Indonesia* | **03.2023 – 04.2023**

- Analyzed the global electrolyzer market for a **solar-hydrogen hybrid power plant** proposal in Indonesia.
- Analyzed a PPA (Power Purchase Agreement) between Medco Power and the Indonesian State Electricity Corporation (PLN) to identify opportunities for **PV mounting optimization**.
- Conducted feasibility studies on **Bifacial PV systems** to increase solar absorption for a **utility-scale PV plant**.
- Achieved a **25% increase** in cost efficiency by redesigning the plant of a multi-million dollar PV project.

MFTBC – Daimler Trucks Asia | *Quality Management Intern* *Kanagawa, Japan* | **02.2022 – 08.2022**

- Implemented **SQL-based employee survey analytics**, identifying improvement points and actionable solutions.
- Designed and launched the creation of the "Seat Booking System", **automating pandemic office management**.
- Received a **certificate of recognition** from the head of the department for digital transformation contributions.

PROJECTS

Geothermal Potential Analysis in Taiwan 🔗 | *University of Lorraine* *Nancy, France* | **10.2024 – 02.2025**

- Developed and modeled **Python-based Single Flash and Binary Rankine Cycle Geothermal Power Plants** (CoolProp) in the Datun region, Taiwan.
- Identified power production potential of **197 GWh/year (Single-flash)** and **74.61 GWh/year (Binary-cycle)** for high and medium-temperature geothermal wells, respectively, offsetting **255,180 tons of CO_2** emission annually.

Assessment of Hydrogen Production from Biomass 🔗 | *University of Lorraine* *Nancy, France* | **11.2024 – 01.2025**

- Researched and analyzed the state-of-the-art literature on hydrogen production from biomass as a carbon-neutral hydrogen production solution by comparing the different biomass conversion technologies and hydrogen production methods while highlighting their corresponding yield and environmental & financial impacts.

Bachelor's Thesis 🔗 | *Sophia University* *Tokyo, Japan* | **10.2023 – 07.2024**

- Thesis's title: **Implementation of Renewables-based Power-to-Hydrogen-to-Power (P2H2P) System for Tropical Remote Island Stand-Alone Microgrids: A Techno-economic Comparative Analysis**
- Modeled and analyzed the implementation of renewables-based P2H2P as a zero-carbon emission energy solution for the stand-alone microgrid in Sipora Island, Indonesia, by using **Homer Pro software**.
- Optimized sizing of the P2H2P power system resulted in the **lowest electricity cost of $0.236/kWh**, outperforming traditional diesel systems and battery-based renewable systems.

KEY SKILLS AND INTERESTS

Languages	Tools	Interpersonal	Hobbies
Indonesian (Native)	Microsoft Office Suite	Experienced project manager	Adventurer (Travelled to
English (IELTS 8.0 / C1)	Python, SQL, R	Proactive team player	22 countries, lived in 5)
German (B2)	Tableau, Power BI, Jira	Resilient, and punctual	Football Enthusiast
Japanese (Intermediate/N3)	HOMER, MATLAB, Simulink	Creative and detail-oriented	Cinematographer
France (A2)	OpenModelica	Global-minded collaborator	Violinist

VOLUNTEERING & LEADERSHIP

President of the Indonesia Division at SEAS | *Sophia University* *Tokyo, Japan* | **10.2021 – 08.2024**

- The Southeast Asian Society at Sophia (SEAS) is a multi-university organization that empowers Southeast Asians in Japan and raises awareness of social issues in ASEAN countries.
- Successfully raised over 650,000 JPY for the benefit of the Internally Displaced Persons (IDPs) in ASEAN.
- Led event organization for cultural fairs, career seminars, and networking dinners.

Volunteer at Sophia Refugee Support Group (SRSG) | *Sophia University* *Tokyo, Japan* | **08.2023 – 07.2024**

- Teaching Japanese to multiple refugees weekly according to their proficiency levels.
- Helping refugees in Japan acclimate to Japanese society by holding monthly gatherings, providing food, a safe space, cultural exchange, and Japanese learning.