



# SANTOPER YOSUA

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I am a fresh graduate of the Electrical Engineering Department, University of North Sumatra, with 3.8 years of study and a GPA of 3.61. During my college years, I was involved in various projects and internship experiences that honed my technical and leadership skills. I have experience in high-voltage testing, power generation system design, as well as renewable energy development, with in-depth knowledge of power system analysis and industrial automation. My technical expertise includes the use of ETAP software, Programmable Logic Controller (PLC), Arduino, MATLAB, AutoCAD, SCADA, and power system analysis and protection. I am also experienced in performing high voltage testing, electrical installation of single-phase and three-phase systems, and programming of control and protection systems. In addition, I have good communication skills, able to work in a team, and have experience in managing projects and leading teams in various organizational activities. With the combination of my technical and soft skills, I am ready to make a significant contribution in the company and ready to face the challenges of developing innovative technology solutions that support sustainability and efficiency in the field of electric power and industrial automation.

## Work Experiences

**High Voltage Engineering Laboratory – Medan, Sumatera Utara** Nov 2024 - Jun 2025  
*Assistant*

As an assistant in the High Voltage Engineering Laboratory, I am responsible for assisting lecturers in guiding and teaching students about high voltage generation and measurement as well as high voltage equipment testing. The laboratory has various practical modules, including AC, DC, and impulse high voltage generation and measurement, liquid dielectric testing, and testing polymer, porcelain, and glass insulators. I was also involved in breakdown voltage testing using the standard ball gap method, partial discharge testing with the Partial Discharge Detector, and tan delta testing, which gave me practical experience in high-voltage electrical testing techniques.

**PT PLN Indonesia Power UBP Labuhan Angin – Tapanuli Tengah, Sumatera Utara** Jul 2024 - Aug 2024  
*Internship*

During my internship at PT PLN Indonesia Power UBP Labuhan Angin, I gained an in-depth understanding of the steam power generation process. I was directly involved in the process of purifying seawater, heating water to produce steam used to drive turbines. I also learnt about the stages of burning coal, from transporting it by barge, transferring it via conveyor, to burning it in the furnace to produce steam. This process drives turbines to produce electricity with a total capacity of 2 x 115 MW. In addition, I analysed the protection of the Unit 1 & 2 main transformers to ensure that the protection system functions optimally in maintaining the stability of the power generation operation.

**Universitas Sumatera Utara – Medan, Sumatera Utara** Apr 2024 - Jun 2024  
*Student Researcher*

Together with my team, I was involved in planning the construction of a wave power plant in Hili Salo'o Village, South Nias, with a capacity of 1 MW. The project uses the Oscillating Water Column (OWC) method, which involves 6 columns measuring 9 m wide and 3 m high, with each column generating 167.5 kW of power. The power calculation was performed based on 2.5 m sea wave height and 12 KTS wind speed data, using relevant technical formulae.

**Universitas Sumatera Utara – Medan, Sumatera Utara** Jan 2024 - Sep 2024  
*Student Researcher*

As team leader, I led the design and development of BumpTherm, a renewable power generation concept that combines two innovative energy sources: mechanical energy from vehicles travelling over speed bumps and thermal energy generated from road temperatures. The project aims to reduce dependence on fossil fuels and provide clean and sustainable energy solutions for cities. BumpTherm operates by converting mechanical energy generated by vehicles travelling over speed bumps into electricity through conversion mechanisms such as rollers, crankshafts, and magnetics. In addition, the thermoelectric system installed on the speed bump converts heat from road temperature or vehicle tyre friction into electrical energy. One BumpTherm unit is estimated to generate 204,018 Watt per day from mechanical energy and 44.1 Watt per day from the thermoelectric system, with a total potential production of more than 4 MW/day if implemented on a city scale.

**CV. Putra Riau Gemilang – Pekanbaru, Riau** Mar 2019 - Apr 2020  
*Internship*

As an intern at CV Putra Riau Gemilang, I was involved in various activities related to electrical power installation and distribution. Some of the competencies I developed during my internship included installation and maintenance of power distribution networks, distribution network calculations, and maintenance of electrical network components. I also gained skills in troubleshooting power system disturbances and creating technical reports on operational activities. During my internship, I managed to obtain a B (Good) grade in all aspects of assessment, including technical skills and work ethic.

Internship

As an intern at PT Wijaya Teknik Riau, I developed skills in the installation and maintenance of electrical power systems, including the introduction and installation of electrical networks, as well as an understanding of electrical components and equipment such as 1-phase and 3-phase motors. I was also instrumental in organising work and carrying out installation techniques as well as ensuring operational efficiency in the field. During my PKL, I received an A (Very Good) in all aspects of assessment, including attitude, technical skills, and final report.

Education Level

Universitas Sumatera Utara - Medan, Indonesia

Jul 2021 - Mar 2025

Bachelor of Engineering, 3.61/4.00

- Assistant – High Voltage Engineering Laboratory
- Mentor – Reviewer of Student Creativity Program (PKM) Proposal University of North Sumatra
- Coordinator Creative Design Division – High Voltage Direct Current National Webinar 2023
- Relation Staff – New and Renewable Energy Festival 2023 Universitas Sumatera Utara
- Equipment, Venue, and Transportation Division Coordinator – Usumulaktupku 2023
- Events Section and Master of Ceremony – Yoseph Engineering's New Student Welcome 2023
- Member Funds and business – Usumulaktupku 2022

SMK Muhammadiyah 1 Pekanbaru - Pekanbaru, Indonesia

Jul 2018 - Jun 2021

Electrical Power Installation Engineering, 87.85/100.00

- Certificate of Competency in Single-Phase and Three-Phase Lighting Installation organised by the Professional Certification Agency (LSP) of SMK Muhammadiyah 1 Pekanbaru.
- Certificate of Competency in Electrical Power Installation Engineering Expertise organised by CV. Global Service Centre Pekanbaru
- Passed the SMK Muhammadiyah 1 Pekanbaru competency test in the use and installation of Programmable Logic Controller (PLC)

Organisational Experience

Gerakan Mahasiswa Nasional Indonesia (GMNI) Fakultas Teknik USU - Universitas Sumatera Utara, Medan

Oct 2023 - Jun 2025

Vice Chairman of Research and Development

A student organisation that focuses on social, political, and leadership development within the Faculty of Engineering, University of North Sumatra.

- Managing and developing research programmes and developing students' intellectual potential.
- Working with various parties to produce strategic studies that support student empowerment.
- Sharpen research, analysis, project management, leadership, and effective communication skills to face organisational challenges.

UKM Inkubator Sains Universitas Sumatera Utara - Universitas Sumatera Utara, Medan

Aug 2023 - Mar 2025

Members

The first official student activity unit at Universitas Sumatera Utara in the science and technology cluster, focusing on research and innovation.

- Conducted research in the field of renewable energy, focusing on solar and wind hybrid systems for sustainable power generation.
- Successfully selected for the University-Level PPK Ormawa Program, focusing on student organization development and leadership.
- Conducted training in research methodologies, academic study techniques, and leadership development for university students.
- Presiding over the election meeting of the new board for 2024/2025.

Ikatan Mahasiswa Pekanbaru Universitas Sumatera Utara - Universitas Sumatera Utara, Medan

Sep 2021 - Aug 2024

Members

a student organisation that aims to establish friendship and strengthen relationships between students from Pekanbaru at the University of North Sumatra (USU).

- Being the coordinator of the Equipment, Venue, and Transport division in Usumulaktupku 2023 activities.
- Being a member of the Fund and Business division in Usumulaktupku 2022 activities.
- Develop leadership and teamwork skills in various organised activities and events.

Members

Catholic student organisation that focuses on developing the character, spirituality, and leadership of members within the Faculty of Engineering.

- Play an active role in organising social, religious, and self-development activities that strengthen relationships between members and create a family atmosphere.
- Developing organisational skills through participation in the planning and implementation of events that support Catholic values and the development of student professionalism.
- Contribute ideas and contributions in various activities aimed at improving the academic and social quality of Yoseph Engineering members.
- Being the Events Section and Host in the 2023 Yoseph Engineering New Student Welcome activity.

Staff Energizen Development

Involved in the establishment and development of an organisation that focuses on fulfilling SDGs 7 and 13, with the aim of supporting environmental sustainability and the use of renewable energy.

- As Energizen Development Officer, responsible for member development through education and training activities that support the adoption of renewable energy and environmental sustainability.
- Organise and participate in projects that promote climate change impact reduction and educate the campus community on the importance of affordable, reliable and sustainable energy access.
- Take an active role in designing and implementing programmes that support the achievement of sustainability and renewable energy development goals at the campus and wider community levels.
- Became Relation Staff in the New and Renewable Energy Festival 2023 at the University of North Sumatra.

Licences and certifications

Balai Besar Pelatihan Vokasi dan Produktivitas Medan

Certificate number 0769-PR\_NB/IV.25/1808127501

Actively participating in this training, I developed technical skills in the use of AutoCAD software to create accurate and efficient construction drawings. In addition, I also engaged in team collaboration to complete case studies of building projects, enhancing my ability to work in teams and complete tasks efficiently and on time.

Engineering Education

Certificate number 016/EE/PST-TR3/X/2024

Participated in training on OMRON PLC integration with Haiwell SCADA Cloud, including RS-232/RS-485 communication settings and management of hardware settings as well as connecting to the internet via MQTT Broker.

Lembaga Sertifikasi Profesi (LSP) SMK Muhammadiyah 1 Pekanbaru

Certificate number 107/SERT.I/LSP.SMKM1.PKU/2021

Declared competent in the installation and maintenance of electrical installations for various types of buildings, such as residential houses, schools, hotels, and office buildings, with an average score of 99.7 for cluster one and 99.6 for cluster two.

CV. Global Service Centre Pekanbaru

Certificate number 1704/III.4/AU/2021

Received a score of 99.5 for competency in designing residential electrical installations, demonstrating the ability to plan and implement electrical systems to a safe and efficient standard.

Achievements

Student Achievement Awarding Day

University of North Sumatra

Certificate number 34621/UN5.1.R1/KM.05.04/2024

Led the team in achieving the National Achievement Award given for outstanding contributions in several national competitions that have been successfully won. This success reflects leadership skills, team collaboration, and innovation in solving national challenges.

**Finalist of Adiwidya HackFest International Innovation Summit 2024 - Bandung, Indonesia**

16 November 2024

Adiwidya International Innovation Summit 2024

*Certificate number 0299/SERTIFIKAT/Sekum-Adiwidya/KAMIL\_PASCASARJANA\_ITB/XI/2024*

Received an incentive as the team leader who developed the project 'BumpTherm: Speed Bump Power Plant Concept and Heat Utilisation Using Thermoelectricity'.

**PKM-GFT Incentive Winner in 2024 - Jakarta, Indonesia**

19 August 2024

Direktorat Pembelajaran dan Kemahasiswaan Ditjen Diktiristek - Kemendikbudristek

*Certificate number Manual.1144/E2/KM.01.00/2024*

Received an incentive as the team leader who developed the project 'BumpTherm: Speed Bump Power Plant Concept and Heat Utilisation Using Thermoelectricity'.

**Participant, Study Case Competition at REVEAL 2024 - Malang, Indonesia**

1 June 2024

Society of Renewable Energy Universitas Brawijaya

*Certificate number 323/03/SRE/EXT/VI/2024*

Participated in the REVEAL 2024: Renewable Energy Innovation Festival, hosted by Brawijaya University. Contributed to innovative solutions for sustainable development goals, particularly in the role of youth and renewable energy in achieving Indonesia's vision for 2045. Engaged in collaborative problem-solving and knowledge sharing, enhancing skills in team dynamics and sustainable energy practices.

**3rd Place Winner, National Essay and Poster Competition KSE Juara 2024 - Medan, Indonesia**

3 May 2024

Karya Salemba Empat USU

*Certificate number 031/KSEUSU/II/2024*

Awarded 3rd place in the prestigious National Essay and Poster Competition hosted by KSE Juara 2024, with the theme "Optimizing the Role and Innovation of the Youth in Achieving Indonesia's Golden Vision 2045." Demonstrated strong research and analytical skills by contributing innovative perspectives on youth involvement in national development goals, reinforcing a passion for sustainable progress and youth empowerment.

**Finalist, MIPA National Scientist Competition (MIPANTASTIC) 2023 - Medan, Indonesia**

9 December 2023

FMIPA Universitas Sumatera Utara

*Certificate number 3169/UN5.2.1.8/KMS/MIPANTASTIC/2023*

Selected as a finalist in the MIPA National Scientist Competition 2023, themed "Embracing the Future of Science: Multidisciplinary Insights for Golden Indonesia 2045." Presented innovative ideas and research focused on multidisciplinary approaches to national development, demonstrating strong analytical and problem-solving skills aligned with Indonesia's long-term vision for 2045.

**Semifinalist, HK ExperTalk National Essay Competition 2023 - Jakarta, Indonesia**

21 November 2023

PT Utama Karya (Persero) Collaborate with Science Hunter Indonesia

*Certificate number 02.246/SHI-EXT/EVT/2023*

In this competition, I led a team to design innovative solutions for energy-efficient road and bridge infrastructure development, with a focus on implementing green infrastructure. Our team also proposed a "Speed bump power plant" project that utilizes thermoelectric technology to convert mechanical and thermal energy into electricity on toll roads. The project aims to provide efficient and sustainable energy solutions, reduce operational costs, and support environmental sustainability.

**Semifinalist, White Paper Competition Industrial Workshop 2023 - Yogyakarta, Indonesia**

31 October 2023

Department of Mechanical and Industrial Engineering Universitas Gadjah Mada

*Certificate number 02.246/SHI-EXT/EVT/2023*

Led the team in designing and developing Design of Biogas Reactor Equipped with CO<sub>2</sub> Absorption for Household Scale Based on Palm Oil Mill Effluent (POME). The project aims to create an environmentally friendly solution by utilizing POME waste to produce high-quality biogas, which can be used as a renewable energy source at household scale, as well as reducing greenhouse gas emissions.

**Participant, Paper Competition Student Innovation Competition in Climate, Energy and Sustainability (SICLUS) 2023**

10 September 2023

Society of Renewable Energy Universitas Hasanuddin

*Certificate number 786/SER/PP/SREUNHAS/IX/2023*

Led the team in compiling and developing a full paper entitled "Energy Management System Using Sensors and the Internet of Things to Monitor and Control Building or Room Energy Usage". This paper is designed to improve energy efficiency by utilizing IoT technology in monitoring and controlling the energy consumption of buildings or spaces.

Forum Digital BUMN (FORDIGI)

Led the team in participating in the Cloud Storm competition organized by Forum Digital BUMN (FORDIGI). Our team made it to the Top 10 with a PowerPoint presentation titled "Mix Water Tunnel", which focused on innovative solutions in water system management.

## **Skills & Other Experience**

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- **Hard Skills** : ETAP (Electric Transient Analysis Program), Programmable Logic Controller (PLC), Arduino, C++, Matlab, Excel, Word, Power Point, Partial Discharge Detector, AutoCAD, Proteus 8 Profesional, NI Multisim, Visio, High Voltage Testing, Phase and 3-phase Electrical Installation, Panel Installation, SCADA (Supervisory Control and Data Acquisition), Relay SEL-787, Power System Protection, Power System Analysis, Electrical Machinery, and Electromagnetic interference (EMI).
- **Soft Skills** : Public Speaking, Leadership, Teamwork, Communication, Time Management, Critical Thinking.
- **Languages**: Indonesian, English.
- **Interest**: Power System Technology and Innovation, Industrial Automation and Control, Project Management and Team Leadership, and Communication and Presentation Skills Development.