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ON THE JOB TRAINING REPORT AIRPORT ELECTRICAL ENGINEERING STUDY PROGRAM DIPLOMA PROGRAM THREE BATCH XX AT SULTAN MAHMUD BADARUDDIN II AIRPORT PALEMBANG

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Abstract

The rapid development of Science and technology has resulted in electrical energy becoming a very important thing for humans. What would it be like if we lived without electricity, the use of electrical energy that is already very attached and touches many aspects of human life. Field Work Practice (On The Job Training) is carried out at the Airport that has been determined by the Medan Aviation Polytechnic Education Training. On The Job Training (OJT) is one of the curriculums that must be implemented by Cadets as a form of measuring the level of cadets' abilities in direct work practice and adding knowledge that has not been obtained from campus during the OJT period. After implementing On the Job Training (OJT) for approximately 6 months at Sultan Mahmud Badaruddin II Airport, Palembang, several conclusions can be drawn, including: The performance of the Aviation Electrical Unit which carries out its duties and responsibilities well. Can understand and gain experience and how the conditions or situations are in the world of work. Can develop the abilities possessed from the competencies obtained from the Airport. The author knows and understands the types of organizations, structures, units, and management at the Airport Can handle a problem in the field, and can find out the initial analysis of the problems that occur, so that they can handle the problem appropriately and efficiently.
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Keywords: *Report, Job Training, Electrical Engineering, Airport*

INTRODUCTION

The rapid development of science and technology has resulted in electrical energy becoming very important for humans. What would it be like if we lived without electricity, the use of electrical energy that is very attached and touches many aspects of human life. However, along with the increasing need for electrical energy and the incompatibility of the available generating units, electricity companies such as PLN have cut off the electricity supply to certain loads in order to maintain the quality of the electricity they provide (Horton et al., 2025). External factors such as disruptions due to weather such as lightning, storms, and various other natural disasters. The interruption of the electricity supply is common,

although the duration of the blackout is not yet known for sure (Room, 2021). Because of these conditions, people need a backup source of electricity in a building or a building, namely a generator set unit (genset). The generator set (genset) in a building is a very important component to meet the scope of electrical energy when the supply of electrical energy from PLN is disrupted. This tool functions to provide electrical energy supply to existing electrical equipment when the supply of electrical power from PLN is cut off (Hou, Bose, Marla, & Haran, 2024).

Field Work Practice (On The Job Training) is carried out at the Airport that has been determined by the Medan Aviation Polytechnic Education Training. On The Job Training (OJT) is one of the curriculum that must be implemented by Cadets as a form of measuring the level of cadets' abilities in direct work practice and adding knowledge that has not been obtained from campus during the OJT period (Guo, Li, Taylor, & Zhang, 2023). Medan Aviation Polytechnic Cadets are expected to be able to carry out as much as possible in carrying out OJT to explain the knowledge that has been obtained during education at the Medan Aviation Polytechnic so that Cadets can apply it in the real world of work (Minja & Mushi, 2023).

Sultan Mahmud Badaruddin II Airport Palembang is an airport consisting of terminals and several office units with different electrical load requirements for each building. The source of electrical energy used for this airport comes from PLN, Solarcell and emergency diesel generators (Gu, Wiedemann, Ryley, Johnson, & Evans, 2023). Unpredictable power outages and relatively long blackouts require the airport to have electrical energy backup. The energy backup facility used is a generator set. The generator set at Sultan Mahmud Badaruddin II Airport Palembang has a capacity of 1000 KVA. Generator set maintenance and care is very important so that the generator set can be used optimally, so that it can be used for a long time (Sawmya & Krishnan, 2023). Sultan Mahmud Badaruddin II Airport has 3 generators, the battery in the generator set has several important functions to support system operation, including providing an energy source for the starter and storing backup energy. In an emergency, the battery ensures that the generator can be turned on even if the main electricity goes out completely (Liu et al., 2024). In generators, battery maintenance is very important to ensure that the generator can turn on and function optimally. This includes checking the battery voltage, terminal cleanliness, and ensuring the battery is charged, if the battery experiences a voltage drop it will affect the operation of the generator which will affect airport operations (Yıldız, Mutlu, Nagy, & Kale, 2023). During routine checks, corrosion was found on the battery terminals and the battery on the generator experienced a voltage drop, this can inhibit the starting process on the generator. Corrosion on the battery can be caused by the Continuous Charging process, To anticipate this, an Automatic Charging Design and Voltage Drop Detector for Generator Batteries at Sultan Mahmud Badaruddin II Airport, Palembang was carried out (Purwayudhaningsari, Oetomo, Teki Tjendani, & Frengky Rumihin, 2023).

METHODS

On January 1, 1920, due to some circumstances, the concession for the plantation land was transferred to Palembang Maatschappij (Palembang MIJ) or NV Palembang Maskapai. That year, there was news that the Dutch aviation pioneer led by Jan Pieterszoon Coen would fly his small Fokker plane from Europe to the Dutch East Indies in 20 hours of flying. So Palembang MIJ, which held the concession for the land, provided a plot of land to be handed over as the first airport in

Palembang City (Khalef & El-adaway, 2023b). Therefore, in 1926, a 17-35 grass runway measuring 75x1000 meters was built on the land by the Dutch East Indies government. On August 8, 1928, the grass runway was landed for the first time by a tarpaulin-walled dragonfly aircraft, containing 2 Dutch companies. In 1939, KLM aircraft carrying 16 passengers began to land. In 1942-1945, the Japanese government controlled and built runway 11-29 again, to be landed by DC 3 aircraft and fighter planes. The width of the runway strip is 150 x 1000 meters and the runway measures 30 x 900 meters. The runway 17-35 strip was also widened to measure 150 x 1200 meters and measuring 30 x 1000 meters. In addition, the Japanese government also built a military dormitory which is now used by the TNI AU Lanud Palembang (Khalef & El-adaway, 2023a).

In 1945-1950 the Japanese government lost the war with the allies and surrendered, so the Dutch regained control of Talang Betutu Airport. At that time the Dutch also held the liberation of the airport as stated in the picture of the airport situation made by the Public Works (PU) department in 1953. In 1950-1953 the status of the airport became an Indonesian Air Force air base based on the decree of the Chief of Staff of the Air Force No. 023 / P / KSTAF / 50 dated May 25, 1950.

In 1958, the technical management of the airport from the PU service was handed over to representatives of the Department of Air Transportation, based on the decree of the Commander of the Air Force and the Minister of Transportation: No. 23 of 1963/AU, dated July 15, 1963C.22/122/U(PHU). The status of the airport changed to Talang Betutu Airport, Palembang and at that time GIA aircraft of the Conviar 440 type and Hercules AURI C-130 were operating. Based on the joint decree of the Minister of Defense and Security/Commander of the Armed Forces, Minister of Transportation and Minister of Finance: No. Kep /30/ IX /1975 KM/393/S/Phb-75 Kep-927 a/mk/IV/8/1975 dated 21-08-1975. When the airport status became Talang Betutu Palembang Airport, the runway became runway 11-29 with a width of 45 meters and a length of 1850 meters, while runway 17-35 was not used (Khalef & El-adaway, 2021).

Based on the Decree of the Minister of Transportation No. Km 76 AU.104 /Phb-85 dated April 3, 1985 and telex to the regional office II of the Directorate General of Air Transportation Palembang No. WP II/1219/Rm8/A/85 dated. On August 24, 1985, effective from September 1, 1985, the name of Talang Betutu airport was changed to Sultan Mahmud Badaruddin II Airport Palembang. The name was taken from the name of Sultan Mahmud Badaruddin II (1767-1862), an Indonesian National Hero against the VOC-Dutch who once led the Palembang Darussalam Sultanate (Keskin, Salman, & Koseoglu, 2022). In 1984, the Indonesian Government established the Jakarta Cengkareng Airport Public Company (Perum) to manage Soekarno-Hatta Airport. In 1986, the name of this company changed to Perum Angkasa Pura II.

This was also followed by the change of name of Perum Angkasa Pura to Perum Angkasa Pura I which was tasked with managing airports in eastern Indonesia. Sultan Mahmud Badaruddin II Airport was officially taken over by PT (Persero) Angkasa Pura II on January 1, 1990. As a result, the new terminal building of Sultan Mahmud Badaruddin II Airport was finally completed and opened. After South Sumatra Province was officially selected to host PON XVI in 2004, the government made efforts to increase the airport's capacity and upgrade its status to an airport. On September 6, 2024, PT Angkasa Pura Indonesia was formed under the InJourney banner as a strategic solution to improve efficient and effective air connectivity, while supporting the tourism

ecosystem to encourage economic growth and equality in Indonesia (Pasandín & Pérez, 2021). The presence of PT Angkasa Pura Indonesia (InJourney Airports) is expected to improve air connectivity, help expand the Indonesian tourism industry, expand the reach and speed of air logistics, and improve the efficiency and coherence of airport services in Indonesia (Mehrizi-Sani, Liu, Schanen, & Hadjsaid, 2024).

The establishment of PT. Angkasa Pura Indonesia (InJourney Airports) is intended to maximize the empowerment of possible resources and the use of good corporate governance principles to run management and business in the field of aviation services and aviation-related services. This is expected to produce high-quality and highly competitive goods and services, so it can increase the value of a company and public trust (Wandelt & Wang, 2024).

Table 1. Aerodrome and Airport Data

Name Port Air	**Port Air Sultan Mahmoud Badaruddin II**
City Name	Palembang, Sumatra South
Code ICAO	WIPP
Code IATA	PLM
Category Port Air	Domestic
Class Port Air	Class 1
Manager Port Air	InJouney Airport
Telephone	(+62711)3850015
E-mail	Ap2_plm@angkasapura2.co.id
Number Foundation	11- 29

RESULTS AND DISCUSSION

OJT IMPLEMENTATION

OJT Implementation

The implementation of *On The Job Training* (OJT) for students of Airport Electrical Engineering Class XX of Medan Aviation Polytechnic will be held from September 17, 2024 to February 03, 2025. The OJT will be held at Sultan Mahmud Baddarudin II Airport, Palembang (Febrianto, Umbara, & Safaruddin, 2022).

The implementation of *On the Job Training* is carried out in the airport electrical unit. The Airport Electrical Unit is part of the Facilities and Engineering Division which is responsible for flight safety. One of the responsibilities of the Airport Electrical Facility Unit is the maintenance and operation of the electrical distribution system and the Airport electrical system that is directly related to flight safety (Visual Aids). The scope of the implementation of *On The Job Training* (OJT) includes *Airport Lighting Systems* , Transmission and Distribution, *Generator Sets* and *Automatic Change Over Switches* , UPS and Renewable (Fadylla & Azizah, 2023).

On The Job Training (OJT) Implementation Schedule

In the implementation of *On The Job Training* (OJT) of the Airport Electrical Engineering Study Program Batch XX was held on September 17, 2024 to February 03, 2025 at Sultan Mahmud

Badaruddin II Airport, Palembang. The implementation of On The Job Training (OJT) activities for cadets was carried out from Monday to Sunday with a duty format of one day of morning duty, one day of evening duty, one day off. The schedule is attached to this report.
Office Hours:

- Morning Service : 07.30 – 19.30 WIB
- Night Duty : 19.30 – 07.30 WIB
- Normal Service : 07.30 – 16.30 WIB

The problem

Alternative energy is very much needed to fulfill the need for electrical energy which is quite large if there is a power outage in a public service institution. A generator set which is a diesel-fueled driving machine that can produce electricity as an alternative energy to meet energy needs (Wijaya & Riananditasari, 2022).
electricity during a blackout from the PLN power source. However, in the effective operation of the generator set, each component must work properly to produce optimal electrical power. *The Generator Set* is always *running* , one of which is to ensure smooth oil circulation and ensure that all components of the generator set can work. In this running activity, fuel checks, exhaust system checks, generator battery checks are also carried out, where the battery must be ensured to have the voltage according to the needs in the *starting process,* and ensure that the battery terminals are not rusty because they can inhibit *the starting of* the generator. During the inspection activity, rust was found on generator battery 1, rust increases the resistance in the battery terminal connection, As a result, the flow of electric current from the battery to the generator system is disrupted, thus affecting the voltage which results in a decrease in the voltage on the battery and has an impact on the starting process, Rust/corrosion on the battery can be caused by excessive or continuous *charging processes, from this, the Automatic Charging Design and Voltage Drop* Detector for Generator Batteries at Sultan Mahmud Badaruddin Ii Airport, Palembang was carried out (Prasetyo & Pramesti, 2024).

Battery Damage

The causes of damage to the battery are:
Battery Age
Battery age that has exceeded its lifespan can cause a decrease in capacity and the battery's ability to store energy.
Overcharging
Overcharging can cause the battery to experience electrolyte evaporation, damage to the battery cells.
Undercharging (Undercharging)
Undercharging causes sulfatation, which is the formation of a layer of sulfate crystals inside the battery cells that interferes with the charging and energy consumption process.
Extreme Environmental Temperatures
Extreme ambient temperatures, either too hot or too cold, can be a threat to the performance of a generator battery.

Battery Terminal Corrosion

Battery corrosion is a common problem that can disrupt electrical connectivity and cause the battery to not function properly.

Generator and Starter Motor Specifications at Sultan Mahmud Badaruddin II Airport, Palembang

Table 2.. Generator and Starter Motor Specifications

Brand	: Stamford
SN	: 0182355
Power	: 1000 KVA
Phase	: 3 Phase
Frequency	: 50/60 Hz
Rpm	: 1500/1800
Voltage	: 400 V
Cos φ	: 0.8
Engine	
Brand	: Mitsubishi
Country	: Japan
Starter Motor	
Brand	: Nikko
Voltage	: 24V
Power	: 7.5KW
Installation	
Year	: 2005

Figure 1. Generator Battery

Battery specifications
Type : N150
Brand : FASTER-JP
Voltage : 12V
Capacity : 150 Ah
Dimensions (mm) : (L x W x H) (505 x 220 x 255)

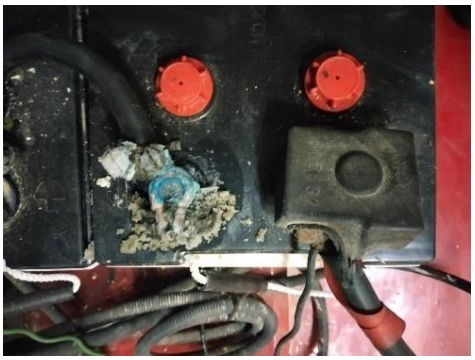

Figure 2. Current Generator Battery Condition

Figure 3. Expected Generator Battery Condition

Table 3. Battery Check Table

Timetable Checking	CONDITION	VOLTAGE				DESCRIPTION
		Battery 1	Battery 2	Battery 3	Battery 4	
First day	On Standby	12.58V	12.58V	13.21V	13.20V	Normal
	At Starter	12.34V	12.34V	12.29V	12.34V	Normal
The second day	On Standby	12.58V	12.58V	13.22V	13.21V	Normal
	At Starter	12.34V	12.34V	12.34V	12.24V	Normal
The third day	On Standby	12.58V	12.10V	13.15V	13.22V	Normal
	At Starter	12.22V	12.03V	12..06V	12.11V	Normal
The fourth day	On Standby	12.55V	12.45V	12.58V	13.05V	Normal
	At Starter	9.75V	10.24V	12.20V	12.58V	Starter Crashes

Problem solving

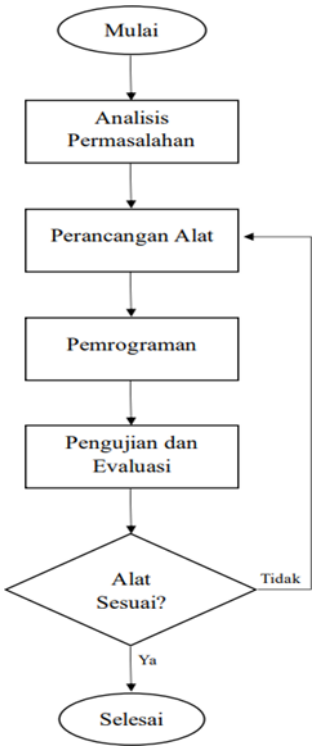

Figure 4. Researcher Scheme

Genset 1 at Sultan Mahmud Badaruddin II Airport Palembang has 4 ACCU batteries with a capacity of 12 volts 150 amperes each. The batteries used to operate the genset components are connected in series, so that the voltage that enters and operates the genset components is 24 volts 150 amperes. After checking all components and parts of the genset, a problem was found, namely the voltage on the battery decreased and was not normal (Erivianto & Dani, 2024). So that the genset cannot start (Priyambada, Finali, DY, Umar, & Utomo, 2024). For this reason, it is necessary to replace the battery so that the genset gets maximum power supply and the genset can work and start the genset 1 (Lestari, 2021).

Tool Description

The components used are:

1. Relay
2. 7-Segment Digital Display
3. Capacitor
4. LED lights
5. Arduino Uno
6. Voltage Sensor (2 pcs)
7. Buzzer (2 pcs)
8. Cable
9. 12V Battery

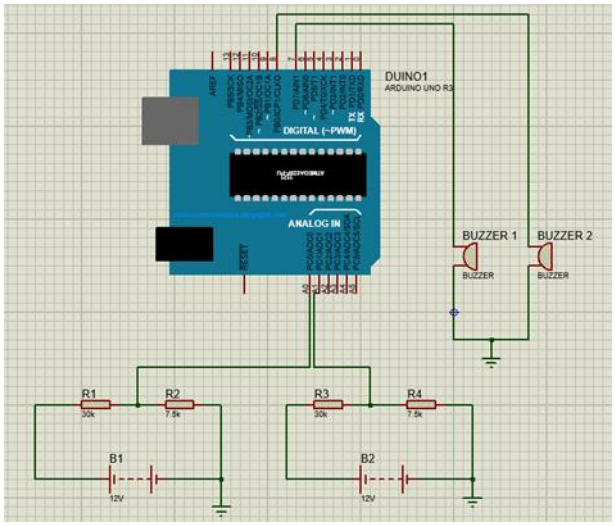

Figure 5. Tool Series

The working principle of the circuit is that Arduino Uno and the charging module detect incoming voltage. If the voltage is less than 12 volts, the buzzer will turn on and the charging system will also turn on. However, if the voltage is more than or equal to 12 volts, the buzzer will not turn on and indicates that the battery has the required voltage.

After the assembly process is complete, the next step is to test/conduct an experiment. To start the experiment, there are 2 voltage sources, namely a battery with a voltage of 12 volts and below 12 volts. The first experiment, the tool is connected to a voltage below 12V, then the buzzer and charging system will light up and indicate that the battery is experiencing low voltage. The second experiment, the tool is connected to a 12V battery. When this condition occurs, the buzzer and charging system will not light up because the battery is at normal voltage (Lubis, Pane, Lubis, Siregar, & Kusuma, 2021).

Experiments on the tool can be done in the following way:

1. When the Tool Detects Voltage below 12V

When in this condition the device is connected to a battery with a voltage below 12V, the buzzer will sound and the charging system will turn on and carry out the charging process, this indicates

that the voltage has dropped and the automatic charging device will work to carry out the charging process (Muthmainnah et al., 2024).

Figure 6. Testing the Tool at Voltages below 12V

In the picture, the battery voltage is 7.5V, this happens because there is no battery charging process, so the battery experiences a voltage drop. When a voltage drop occurs, the charging system will automatically carry out the charging process until the battery gets normal voltage.

2. When the Tool Detects 12V Voltage

In this condition the tool is connected to a 12V battery, the system will automatically read and analyze the voltage.

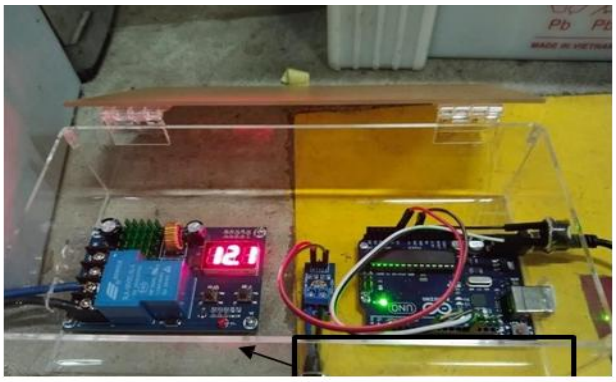

Figure 7. Testing the Tool at 12V Voltage

If the voltage meets the standard to perform the starting process, the buzzer and charging system do not turn on. In the picture, the device reads the 12V battery voltage, when the device reads the 12V battery voltage and has met the standard to perform the starting process on the generator, the device will automatically stop the charging process, in other words, the buzzer and charging system do not turn on because the charging module and microcontroller system read that the voltage on the battery is normal (Ojo et al., 2024).

Experimental Results

From the results of the experiments that have been carried out, it can be concluded that this voltage detector has the ability to detect voltages below 12V. When the detected voltage is below the threshold, the buzzer and charging system on this device will be active. The activation of the buzzer

and charging system occurs because the Arduino and charging module have reached the limits specified in the device's control system.

The results of this study indicate that this voltage detector can provide benefits for technicians in identifying voltage drops in the battery. With an early warning system via a buzzer, technicians can immediately take preventive action before the battery voltage drops to a lower level and potentially damages the starting system that relies on battery power (Gunawan, Kamarudin, Kartiwi, & Effendi, 2022).

In addition to the use of this detector, battery maintenance steps also need to be carried out routinely to prevent damage and ensure longer battery life. With the combination of the use of this voltage detector and routine battery maintenance, it can be ensured that the electrical system that depends on the battery will be better maintained, reducing the risk of premature damage, and increasing the efficiency and safety of battery use in various technical applications.

The use of this tool can also increase the effectiveness of the technicians' work by providing information on the condition of the battery voltage. Maintenance of the battery charger must also be considered, because the battery charger has the task of supplying power to the battery so that the voltage on the battery remains maintained and stable (Fitra & Sunardi, 2023).

CONCLUSION

In the discussion, the author explains the discussion of the causes of the problems and the resolution of the problems that occurred at Sultan Mahmud Badaruddin II Airport, Palembang with the On the Job Training (OJT) program. So it can be concluded that;

1. The battery on the generator set at Sultan Mahmud Badaruddin II Airport experienced corrosion and voltage drops.
2. A damaged battery causes starting failure so that the generator cannot operate and back up when the electricity goes out.
3. The detection and automatic charging tool is expected to help technicians in battery maintenance.
4. Maintenance and care of generator sets at Sultan Mahmud Badaruddin II Airport, Palembang is very necessary because with structured and regular maintenance and care, costs or losses can be reduced.

Conclusion of OJT Implementation

After conducting On the Job Training (OJT) for approximately 6 months at Sultan Mahmud Badaruddin II Airport, Palembang, several conclusions can be drawn, including:

1. The performance of the Aviation Electrical Unit which carries out its duties and responsibilities well.
2. Can understand and gain experience and how the conditions or situations are in the work environment.
3. Can develop existing skills from competencies gained from the Airport.
4. The author knows and understands the types of organizations, structures, units and management at airports.

5. Able to handle a problem in the field, and be able to know the initial analysis of the problem that occurs, so that the problem can be handled appropriately and efficiently.

REFERENCES

Erivianto, D., & Dani, A. (2024). Pelatihan Penggunaan Programmable Logic Controller (Plc) Untuk Meningkatkan Kompetensi Teknisi Pada Pt. Prima Multi Peralatan. *Pedamas (Pengabdian Kepada Masyarakat)*, *2*(03), 762–769. Opgehaal Van Https://Pekatpkm.My.Id/Index.Php/Jp/Article/View/309

Fadylla, A. R., & Azizah, F. N. (2023). Optimization Of Distribution Costs With A Transportation Model In Msmes Making Tempe. *Sainteks: Jurnal Sain Dan Teknik*, *5*(1), 47–56. Https://Doi.Org/Https://Doi.Org/10.37577/Sainteks.V5i1.492

Febrianto, M. A., Umbara, N. B., & Safaruddin, S. (2022). Dampak Perkembangan Dan Proses Pembuatan Semen Pada Pt. Semen Baturaja. *Jurnal Multidisipliner Bharasumba*, *1*(04), 619–639. Https://Doi.Org/Https://Doi.Org/10.62668/Bharasumba.V1i04.292

Fitra, G. M. R., & Sunardi, S. (2023). Design And Development Of A Iot-Based Moisture Detection Device For Corn Seeds. *Buletin Ilmiah Sarjana Teknik Elektro*, *5*(3), 359–366. Https://Doi.Org/Https://Doi.Org/10.12928/Biste.V5i3.8345

Gu, Y., Wiedemann, M., Ryley, T., Johnson, M. E., & Evans, M. J. (2023). Hydrogen-Powered Aircraft At Airports: A Review Of The Infrastructure Requirements And Planning Challenges. *Sustainability*, *15*(21), 15539. Https://Doi.Org/10.3390/Su152115539

Gunawan, T. S., Kamarudin, N. N., Kartiwi, M., & Effendi, M. R. (2022). Automatic Watering System For Smart Agriculture Using Esp32 Platform. *2022 Ieee 8th International Conference On Smart Instrumentation, Measurement And Applications (Icsima)*, 185–189. Ieee. Https://Doi.Org/10.1109/Icsima55652.2022.9928950

Guo, Z., Li, B., Taylor, G., & Zhang, X. (2023). Infrastructure Planning For Airport Microgrid Integrated With Electric Aircraft And Parking Lot Electric Vehicles. *Etransportation*, *17*, 100257. Https://Doi.Org/10.1016/J.Etran.2023.100257

Horton, R., Trump, B. D., Trump, J., Knowles, H. S., Linkov, I., Jones, P., & Kiker, G. (2025). Performance Metrics For Resilience Of Airport Infrastructure. *Transportation Research Part D: Transport And Environment*, 104676. Https://Doi.Org/10.1016/J.Trd.2025.104676

Hou, B., Bose, S., Marla, L., & Haran, K. (2024). Impact Of Aviation Electrification On Airports: Flight Scheduling And Charging. *Ieee Transactions On Intelligent Transportation Systems*, *25*(3), 2342–2354. Https://Doi.Org/10.1109/Tits.2023.3324310

Keskin, B., Salman, B., & Koseoglu, O. (2022). Architecting A Bim-Based Digital Twin Platform For Airport Asset Management: A Model-Based System Engineering With Sysml Approach. *Journal Of Construction Engineering And Management*, *148*(5), 4022020. Https://Doi.Org/10.1061/(Asce)Co.1943-7862.0002271

Khalef, R., & El-Adaway, I. H. (2021). Automated Identification Of Substantial Changes In Construction Projects Of Airport Improvement Program: Machine Learning And Natural Language Processing Comparative Analysis. *Journal Of Management In Engineering*, *37*(6), 4021062. Https://Doi.Org/10.1061/(Asce)Me.1943-5479.0000959

Khalef, R., & El-Adaway, I. H. (2023a). Advancing Airport Project Delivery: A Comparison Of Design–Build And Traditional Methods In Terms Of Schedule And Cost Performance. *Journal Of Management In Engineering*, *39*(6), 4023041. Https://Doi.Org/Https://Doi.Org/10.1061/Jmenea.Meeng-5490

Khalef, R., & El-Adaway, I. H. (2023b). Advancing Airport Project Delivery: A Comparison Of Design–Build And Traditional Methods In Terms Of Schedule And Cost Performance. *Journal Of Management In Engineering*, *39*(6). Https://Doi.Org/10.1061/Jmenea.Meeng-5490

Lestari, I. (2021). *Analisis Produktivitas Batching Plant Menggunakan Metode Time Study*. Universitas Islam Riau. Opgehaal Van Http://Repository.Uir.Ac.Id/Id/Eprint/9556

Liu, X., Li, M., Liu, X., Zhang, T., Fu, Z., Su, Z., & Tu, R. (2024). Quantifying Energy Flexibility Potential Of Ground Electric Vehicles In An Airport With Real Behavior Data. *Sustainable Cities And Society*, *105*, 105331. Https://Doi.Org/10.1016/J.Scs.2024.105331

Lubis, F., Pane, R., Lubis, S., Siregar, M. A., & Kusuma, B. S. (2021). Analisa Kekuatan Bearing Pada Prototype Belt Conveyor. *Jurnal Mesil (Mesin Elektro Sipil)*, *2*(2), 51–57. Https://Doi.Org/Https://Doi.Org/10.53695/Jm.V2i2.584

Mehrizi-Sani, A., Liu, C.-C., Schanen, J.-L., & Hadjsaid, N. (2024). Wip: French Experience For U.S. Students In Renewables-Based Power Systems Research. *2024 Ieee Frontiers In Education Conference (Fie)*, 1–5. Ieee. Https://Doi.Org/10.1109/Fie61694.2024.10892924

Minja, M. N., & Mushi, A. T. (2023). Design Of International Airport Hybrid Renewable Energy System. *Tanzania Journal Of Engineering And Technology*, *42*(1), 46–57.

Muthmainnah, M., Mulyadi, M. F., Tazi, I., Mulyono, A., Hananto, F. S., Chamidah, N., & Kusairi. (2024). Development Of An Automated Monitoring System For Soil Moisture And Temperature In Smart Agriculture To Enhance Lettuce Farming Productivity Based On Iot. *Multidisciplinary Science Journal*, *6*(11), 2024233. Https://Doi.Org/10.31893/Multiscience.2024233

Ojo, J. A., Ajiboye, J. A., Ajiboye, M. A., Ajiboye, D. J., Ohize, H. O., & Isa, A. A. (2024). Design And Implementation Of Real-Time Internet Of Things (Iot) Enhanced Irrigation System. *El-Amin University Minna*, *1*(1), 31.

Pasandín, A. M. R., & Pérez, I. P. (2021). Developing Theory From Practice: A Case Study In Civil Engineering Airport Design Problem-Based Learning. *Computer Applications In Engineering Education*, *29*(5), 1112–1131. Https://Doi.Org/10.1002/Cae.22364

Prasetyo, M. A., & Pramesti, Y. S. (2024). Optimization Of Industrial Machine Balancing Processes For Fastening Precision And Efficiency. *Jurnal Indonesia Sosial Teknologi*, *5*(10). Opgehaal Van 10.59141/Jist.V5i10.1173

Priyambada, A., Finali, A., Dy, I. S. P., Umar, M. L., & Utomo, R. E. P. (2024). Analisa Penyebab Kerusakan Pada Belt Conveyor Di Pt Xyz Menggunakan Metode Fta Dan Fmea. *Journal Of Scientech Research And Development*, *6*(1), 1015–1025. Https://Doi.Org/Https://Doi.Org/10.56670/Jsrd.V6i1.412

Purwayudhaningsari, R., Oetomo, W., Teki Tjendani, H., & Frengky Rumihin, O. (2023). Risk And Cost Analysis Study Occupational Health And Safety (K3) On Passenger

Terminal Building Works New Mentawai Airport Development Project. *Jurnal Ekonomi Teknologi Dan Bisnis (Jetbis)*, *2*(8), 590–603. Https://Doi.Org/10.57185/Jetbis.V2i8.69

Room, B. (2021). Fact Sheet: The American Jobs Plan. *The White House. Recuperado De: Https://Www. Whitehouse. Gov/Briefing-Room/Statements-Releases/2021/03/31/Fact-Sheet-Theamerican-Jobs-Plan*.

Sawmya, S., & Krishnan, L. R. K. (2023). A Conceptual Review On Privatization Of Indian Airports-A New Dimension In People Management Explored. *Sawmya, S. & Krishnan, Lrk (2023). A Conceptual Review On Privatization Of Indian Airports-A New Dimension In People Management Explored. Journal Of The International Academy For Case Studies*, *29*, 1–14. Opgehaal Van Https://Ssrn.Com/Abstract=4661450

Wandelt, S., & Wang, K. (2024). Towards Solving The Airport Ground Workforce Dilemma: A Literature Review On Hiring, Scheduling, Retention, And Digitalization In The Airport Industry. *Journal Of The Air Transport Research Society*, *2*, 100004. Https://Doi.Org/10.1016/J.Jatrs.2024.100004

Wijaya, R. N., & Riananditasari, N. (2022). Pengaruh Fasilitas Ruang Tunggu Bandar Udara Sultan Aji Muhammad Sulaiman (Sams) Internasioanal Sepinggan Balikpapan Terhadap Kepuasan Penumpang Di Masa Pandemi Covid-19. *Formosa Journal Of Multidisciplinary Research*, *1*(3), 819–834. Https://Doi.Org/Https://Doi.Org/10.55927/Fjmr.V1i3.600

Yıldız, M., Mutlu, S., Nagy, A., & Kale, U. (2023). Solar Energy For The Airport Ground Support Equipment – A Quantitative Study. *Aircraft Engineering And Aerospace Technology*, *95*(5), 831–837. Https://Doi.Org/10.1108/Aeat-08-2022-0211