

# Prof. Dr. Ir. Tulus Burhanuddin Sitorus, S.T., M.T., IPM.

Lecturer of Master's Program in Mechanical Engineering Study Program  
Faculty of Engineering  
Universitas Sumatera Utara

✉ tulus.burhanuddin@usu.ac.id

🏢 Mechanical Engineering Postgraduate Program, Faculty of Engineering, Universitas Sumatera Utara

☎ 081361719718

🌐 ft.usu.ac.id/en/lecturer/tulus-burhanuddin-sitorus

*Prof. Dr. Ir. Tulus Burhanuddin Sitorus, S.T., M.T., IPM is a faculty member at the Department of Mechanical Engineering, Faculty of Engineering, Universitas Sumatera Utara (USU), Indonesia. Born in Medan on September 23, 1972, he has served as a lecturer at USU since 2000. He earned his Doctorate in Mechanical Engineering from Universitas Sumatera Utara in 2017.*

*His research interests include internal combustion engines, solar adsorption refrigerators, earth air heat exchangers, and renewable energy. Throughout his academic career, he has held several key positions at USU, including Secretary of the Department of Mechanical Engineering (2005-2010), Head of the Solar Energy Laboratory (2009-2010), Head of the Internal Combustion Engine Laboratory (2011-2020), Secretary of the Doctoral Program in Mechanical Engineering (2021-2022), and currently serves as the Head of the Master's and Doctoral Programs in Mechanical Engineering (2022-present).*

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## Publications

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2025

Jurnal nasional terakreditasi

### **Ocean Clean Energy: Optimizing the Use of Solar Panels to Increase Cooling Storage Efficiency for Fishermen in Sibolga Towards Sustainability and Climate Change Mitigation**

TULUS BURHANUDDIN SITORUS

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2023

Jurnal internasional bereputasi

### **Effect of Variation in the Number of Inclined Type Blades and Flow Discharge on the Performance of a Vortex Turbine Using a Cylindrical Type Basin**

TULUS BURHANUDDIN SITORUS , IDHAM KAMIL , FAREL HASIHOLOAN NAPITUPU , HIM SAR AMBARITA , ILMI , M. SABRI

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2017

Prosiding seminar internasional

### **The performance and emissions of diesel engines with biodiesel of sunan pecan seed and diesel oil bl**

TULUS BURHANUDDIN SITORUS

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2020

Jurnal nasional terakreditasi

### **Performansi Alat Penukar Kalor Udara-Tanah Menggunakan Siklus Tertutup di Kota Medan**

TULUS BURHANUDDIN SITORUS

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2018

Prosiding seminar internasional

### **Effect of biodiesel fuel from soybean oil on exhaust gas and combustion chamber temperature of diesel engine**

TULUS BURHANUDDIN SITORUS

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2018

Jurnal nasional terakreditasi

## **EFEK BAHAN BAKAR BIODIESEL DARI MINYAK KEDELAI TERHADAP EMISI GAS BUANG DAN TEMPERATUR RUANG BAKAR MESIN DIESEL**

TULUS BURHANUDDIN SITORUS

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2022

Jurnal nasional terakreditasi

## **Rancang Bangun Instrumen Pengujian dan Penentuan Spesifikasi Mesin Diesel**

TULUS BURHANUDDIN SITORUS

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2018

Prosiding seminar internasional

## **The performance of a solar collector on adsorption refrigerator**

TULUS BURHANUDDIN SITORUS

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2016

Prosiding seminar internasional

## **Performance analyses of solar adsorption refrigeration system using Indonesian activated carbon and**

TULUS BURHANUDDIN SITORUS

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2026

Jurnal internasional bereputasi

## **Photovoltaic performance degradation from dust and cleaning frequency in tropical Indonesia**

TULUS BURHANUDDIN SITORUS

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2025

Jurnal internasional bereputasi

## **Enhancing solar still performance using nano-coated covers and integrated solar collectors: An experimental study**

PANDJI PRAWISUDHA , TULUS BURHANUDDIN SITORUS , ARNAS , WANDO SIMANULLANG , Yogie Probo Sibagariang , OO Abdul Rosyid , Andrianshah Priyadi , HIMSAR AMBARITA

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2024

Jurnal internasional bereputasi

## **Experimental Study of the Effect of Plastic Pyrolysis Oil on the Physical Chemical Properties of Rubber Seed Biodiesel and Diesel Engine Performance using a Mixture of Plastic Pyrolysis Oil-Rubber Seed Biodiesel-Diesel Fuel**

TULUS BURHANUDDIN SITORUS , BISRUL HAPIS TAMBUNAN

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2023

Prosiding seminar internasional

## **Study On EAHE System Combined with Several Components in the Medan City**

TULUS BURHANUDDIN SITORUS

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2020

Prosiding seminar internasional

## **Utilization of peltier cooling systems driven by solar power for storing vegetables and fruits**

TULUS BURHANUDDIN SITORUS

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2024

Jurnal internasional bereputasi

## **Experimental study of the use of plastic pyrolysis oil as an additive to improve physicochemical properties and performance rubber seed biodiesel**

HIMSAR AMBARITA , BISRUL HAPIS TAMBUNAN , ABDI HANRA SEBAYANG , TULUS BURHANUDDIN SITORUS

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2014

Jurnal nasional

## **Karakteristik Pengaruh Biodiesel Dari Limbah Sawit Cair Terhadap Unjuk Kerja Mesin Diesel Empat Langkah**

TULUS BURHANUDDIN SITORUS

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2019

## **Performansi Alat Penukar Kalor Udara-Tanah (Earth-Air Heat Exchanger) dengan Siklus Terbuka di Kota Medan**

TULUS BURHANUDDIN SITORUS

2024

Prosiding seminar internasional

## **Flow simulation on a vortex turbine using cfd with various outlet diameter sizes**

HIMSAR AMBARITA , FAREL HASIHOLOAN NAPITUPU , TULUS BURHANUDDIN SITORUS , IDHAM KAMIL

2016

Jurnal nasional terakreditasi

## **Analisa kinerja sistempendingin peltier yang menggunakan sel PVdengan sumber energi radiasi matahari**

TULUS BURHANUDDIN SITORUS

2019

Jurnal nasional terakreditasi

## **Kinerja Peralatan Magnetik Untuk Meningkatkan Performansi Dan Mengurangi Emisi Gas Buang Pada Mesin OTTO Empat Langkah**

TULUS BURHANUDDIN SITORUS

2026

Jurnal internasional bereputasi

## **Palm Oil-Based Straight Vegetable Oil as a Sustainable Fuel Alternative for Low-Medium Speed Diesel Engines: A Critical Review of Technical Viability, Emissions, and Circular Economy Integration**

TULUS BURHANUDDIN SITORUS , HIMSAR AMBARITA

2023

Prosiding seminar internasional

## **Experimental study of pumps as turbines with height variation**

FAREL HASIHOLOAN NAPITUPU , TULUS BURHANUDDIN SITORUS , HIMSAR AMBARITA

2025

Jurnal nasional terakreditasi

## **PERFORMANSI MESIN DIESEL MENGGUNAKAN BODIESEL DARI CAMPURAN BIJI KARET-MINYAK PIROLISIS LIMBAH PLASTIK-MINYAK SOLAR**

BISRUL HAPIS TAMBUNAN , TULUS BURHANUDDIN SITORUS

2023

Jurnal nasional terakreditasi

## **Kajian Karakteristik Atap Berbahan Komposit Sekam Padi Dan Serat Daun Nanas**

FAREL HASIHOLOAN NAPITUPU , TULUS BURHANUDDIN SITORUS

2024

Jurnal internasional bereputasi

## **Kinetic analysis and mathematical modeling of low-rank coal drying by using swirl fluidized bed dryer on varied angles of guide vane and temperatures**

MELVIN SITORUS , IDHAM KAMIL , TULUS BURHANUDDIN SITORUS , MELVIN EMIL SIMANJUNTAK , BERTA BR GINTING

2019

Prosiding seminar internasional

## **Utilization of magnetic devices to improve the performance and reduce gas emissions of Otto engine**

TULUS BURHANUDDIN SITORUS

2023

Prosiding seminar internasional

## **Study of heat Energy Disposal in Hollow Roof Cooling Water Tank**

FAREL HASIHOLOAN NAPITUPU , TULUS BURHANUDDIN SITORUS

2026

Jurnal internasional bereputasi

## **Performance evaluation of bifacial and monofacial floating photovoltaic systems: A case study under tropical conditions**

TULUS BURHANUDDIN SITORUS

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2018

Jurnal nasional terakreditasi

## **KINERJA KOLEKTOR TIPE PLAT DATAR PADA MESIN PENDINGIN ADSORPSI TENAGA SURYA DI KOTA MEDAN**

TULUS BURHANUDDIN SITORUS

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2019

Prosiding seminar internasional

## **The Performance of Microcontroller Equipment to Save Fuel Consumption for Motorcycle**

TULUS BURHANUDDIN SITORUS

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2018

Jurnal nasional terakreditasi

## **MECHANISM OF WATER DISTRIBUTION ON LEMON FARM LAND**

TULUS BURHANUDDIN SITORUS

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2023

Jurnal internasional bereputasi

## **An Overview of Physicochemical Properties and Engine Performance Using Rubber Seed Biodiesel-Plastic Pyrolysis Oil Blends in Diesel Engines**

HIMSAR AMBARITA , BISRUL HAPIS TAMBUNAN , ABDI HANRA SEBAYANG , TULUS BURHANUDDIN SITORUS

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2018

Jurnal nasional terakreditasi

## **Study on Thermoelectric Cooler Driven by Solar Energy in Medan City**

TULUS BURHANUDDIN SITORUS

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2024

Prosiding seminar internasional

## **Feasibility Study of Rubber Seeds from North Sumatra, Indonesia as Biodiesel Feedstock; Production and Characterization**

TULUS BURHANUDDIN SITORUS , BISRUL HAPIS TAMBUNAN

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2020

Prosiding seminar internasional

## **Experimental study of solar adsorption refrigerator using a parabolic collector**

TULUS BURHANUDDIN SITORUS

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2017

Jurnal nasional

## **Karakteristik Kinerja Mesin Diesel Stasioner dengan Bahan Bakar Campuran Biodiesel dari Biji Kemiri Sunan**

TULUS BURHANUDDIN SITORUS

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2020

Prosiding seminar internasional

## **Study on the performance of the Otto engine by using mixtures of gasolinebioethanol of nira**

TULUS BURHANUDDIN SITORUS

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2018

Prosiding seminar internasional

## **Performance of the natural cooler to keep the freshness of vegetables and fruits in Medan City**

TULUS BURHANUDDIN SITORUS

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2022

Jurnal internasional bereputasi

## **The Earth-Air Heat Exchanger System Performance Combined with a Solar Collector for Cooling an Indoor Space Room in Medan City**

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2024

Prosiding seminar internasional

**Optimization of Renewable Energy in North Sumatra Using Firefly Algorithm Method Towards Net Zero Emissions**

TULUS BURHANUDDIN SITORUS , HIMSAR AMBARITA , ILMU

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2018

Prosiding seminar internasional

**Performance of an adsorption refrigerator driven by solar energy using amixture adsorbent in Medan c**

TULUS BURHANUDDIN SITORUS

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2024

Jurnal internasional bereputasi

**Performance of a Vortex Turbine With Modifications to Flow Angle, Blade Inclination, and Flow Velocity for a Cylindrical Basin**

TULUS BURHANUDDIN SITORUS

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2023

Prosiding seminar internasional

**The effect of composition's variations of a mixture of bovine bone powder and acrylic resin matrix on mechanical and microstructure properties in the manufacture of denture**

TULUS BURHANUDDIN SITORUS , ALFIAN HAMSI

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2024

Prosiding seminar internasional

**Experimental Study of Gravitational Water Vortex Turbine at Flow Angle 70 Deg Inclined Blade**

TULUS BURHANUDDIN SITORUS

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2023

Prosiding seminar internasional

**Experimental study of the otto engine with fuel mixture of pertamax and bioethanol 96% from cassava**

TULUS BURHANUDDIN SITORUS

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2018

Jurnal nasional terakreditasi

**Kinerja Sistem Kotak Pendingin Peltier Tenaga Surya Untuk Penyimpanan Sayur dan Buah**

TULUS BURHANUDDIN SITORUS

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2022

Jurnal nasional terakreditasi

**EFEKTIVITAS SISTEM GABUNGAN PENUKAR KALOR-UDARA TANAH DENGAN KOLEKTOR SURYA UNTUK PENDINGINAN RUANGAN DI KOTA MEDAN**

TULUS BURHANUDDIN SITORUS , SYAHRUL

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2023

Prosiding seminar internasional

**The performance of the otto engine with a capacity of 150 cc that uses several variations of pertalite mixture with bioethanol from cassava**

TULUS BURHANUDDIN SITORUS

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2023

Prosiding seminar internasional

**Experimental Study of An EAHE Combined with A Solar Collector and A Solar Panel**

TULUS BURHANUDDIN SITORUS

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2020

Jurnal nasional terakreditasi

# **Performansi Kolektor Surya Pada Mesin Pendingin Yang Menggunakan Pasangan Adsorpsi Karbon Aktif Serbuk-Metanol**

TULUS BURHANUDDIN SITORUS

2016

Jurnal internasional bereputasi

## **EXPERIMENTAL STUDY OF SOLAR REFRIGERATOR SYSTEM USING ACTIVATED ALUMINA AND METHANOL ADSORPTION PAIR**

FAREL HASIROLAN NAPITUPU , TULUS BURHANUDDIN SITORUS , HIMSAR AMBARITA

2023

Prosiding seminar internasional

## **The Performance Of An Earth-Air Heat Exchanger By Using A Solar Chimney**

TULUS BURHANUDDIN SITORUS

2020

Prosiding seminar internasional

## **The box-type condenser design used in solar adsorption refrigerator**

TULUS BURHANUDDIN SITORUS

2018

Jurnal nasional terakreditasi

## **Analisa dan Uji Eksperimental Performansi Alat Penukar Kalor Kompak Jenis Radiator Kendaraan Berkapasitas Mesin 1300 cc**

TULUS BURHANUDDIN SITORUS

2017

Jurnal nasional terakreditasi

## **Performansi mesin otto yang menggunakan bahan bakar biogas dari limbah cair sawit**

TULUS BURHANUDDIN SITORUS

2017

Jurnal nasional

## **KINERJA LEMARI PENDINGIN ALAMI YANG DIGUNAKAN SESUAI KONDISI CUACA DI KOTA MEDAN**

TULUS BURHANUDDIN SITORUS

2024

Jurnal internasional bereputasi

## **Study of Comparison Heat Energy Disposal in Hollow Roof Cooling Water Tank using Natural Material**

FAREL HASIROLAN NAPITUPU , TULUS BURHANUDDIN SITORUS

2017

Jurnal internasional bereputasi

## **A Study on Adsorption Refrigerator Driven by Solar Collector Using Indonesian Activated Carbon**

TULUS BURHANUDDIN SITORUS

2018

Poster seminar internasional

## **Performance and emissions of an engine fuelled by biogas of palm oil mill effluent**

TULUS BURHANUDDIN SITORUS

2016

Jurnal nasional

## **Analisa Kinerja Lemari Pendingin Alami Sebagai Penyimpan Sayur dan Buah-buahan dengan Media Pendingin Air**

TULUS BURHANUDDIN SITORUS

2019

Jurnal nasional terakreditasi

## **Kajian Eksperimental Mesin Pendingin Adsorpsi Tenaga Surya dengan Menggunakan Adsorben Campuran**

2020

Prosiding seminar internasional

### **The experimental study of thermoelectric cooler performance in Medan city**

TULUS BURHANUDDIN SITORUS

2022

Jurnal nasional terakreditasi

### **Pengaruh Bahan Bakar Biodiesel dari Dimetil Ester Terhadap Kinerja Mesin Diesel Empat Langkah**

TULUS BURHANUDDIN SITORUS

2024

Prosiding seminar internasional

### **Waste to Energy; Conversion of Plastic Waste into Liquid Fuel Equivalent to Diesel and Gasoline Using the Pyrolysis Method**

TULUS BURHANUDDIN SITORUS

2026

Jurnal internasional bereputasi

### **Evaluation of the performance and emissions of diesel engines powered by minimally refined palm oil produced using calcined limestone**

TULUS BURHANUDDIN SITORUS , HIMSAR AMBARITA

## Researches

2014

Penelitian Disertasi Doktor

### **Performansi Mesin Pendingin Siklus Adsorpsi Tenaga Matahari dengan Pasangan Adso**

HIMSAR AMBARITA , TULUS BURHANUDDIN SITORUS , FAREL HASIHOLOAN NAPITUPU

2013

Penelitian Hibah Bersaing

### **Perbaikan Mutu Kakao Indonesia Melalui Metode Pengeringan**

HIMSAR AMBARITA , TULUS BURHANUDDIN SITORUS , FAREL HASIHOLOAN NAPITUPU

2019

Penelitian Unggulan Perguruan Tinggi

### **Performansi kolektor surya yang digunakan pada mesin pendingin adsorpsi di kota Medan**

SYAHRUL , TULUS BURHANUDDIN SITORUS

2014

Penelitian Disertasi Doktor

### **PERFORMANSI MESIN PENDINGIN SIKLUS ADSORPSI TENAGA MATAHARI DENGAN PASANGAN ADSORBEN KARBON AKTIF DAN REFRIGERAN HIDROKARBON**

TULUS BURHANUDDIN SITORUS

2020

Penelitian Unggulan Perguruan Tinggi

### **Kajian efek penambahan kolektor surya pada sistem earth-air heat exchanger terhadap temperatur udara ruangan di kota Medan**

SYAHRUL , TULUS BURHANUDDIN SITORUS

## Intellectual Property Rights

2026

Paten nasional

# Sudu Turbin Air Vortex Untuk Optimalisasi Fluida Dan Efisiensi Energi

IDHAM KAMIL , HIMSAR AMBARITA , SUPRIANTO , TULUS BURHANUDDIN SITORUS

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