



### THE 8<sup>TH</sup> MECHANICAL ENGINEERING RESEARCH DAY



### / IDEA / INSPIRE / INNOVATE /

**Satellite Event: Automotive Mini Symposium 2022 (AMS'22)** 

### 13 JULY 2022 | Kampus Teknologi UTeM

http://merd22.utem.edu.my

Jointly Organized by:

Faculty of Mechanical Engineering & Centre for Advanced Research on Energy (CARe)

Co-organized by:

The Graduate School of Engineering, Nagoya University, Japan and Universitas Pertamina, Indonesia

# CARTONER - ROBOTIC ARM 6 AXES

DIDATEC Concepteur et fabricant d'équipements pédagogiques

he MLP 550 allows to store in plastic trays 🕜

**PRESENTATION** 

ALP 550

Europe formal, of various sizes, jars bottles, and then covering them by a cover. Meets the training requirements for jobs in

maintenance and production systems Equipment incorporating the latest generation

technologies

automated



- 6-axis robot with double gripper (gripper and suction cups). ABB partner.
- Large amplitude and speed of configurable execution
  - Torque limiting system (hardware protection)

### SAFETY

THE (1) DIDATEC

Format change: numerous parts

- Corrective maintenance: defective parts provided.
  - kit supplied.
- Simulation software Robot Studio (network license 100 users)

The MLP 550 bench is compatible

production line. You will be able to with other machines in our modular

upgrade your equipment over time.

- Bench fully embedded
- Large anti-vibration legs.
- Doors open via access request
- Double safety loop via the securify module.

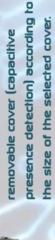
- Œ Provided with 4 pairs of
- clamps for gripping by 1 or 2 of the containers.
- Several types of containers and trays provided.

conveyors by variator.

Adjustable speed



- the number of products in the trays
- Reclining remote console and people with reduced mobility height adjustable for use by





All our machines are delivered - Technical file

Practices work manual

CE certificate of conformity

You Tube

Copyright 2015 DIDATEC

Discover the video of presentation of the MLP 550 on our YouTube channel Come and discover our full range on our website www.didatec-technologie.com

## Accelerate your material science research











## Atomic Force Microscope

Park Systems Corporation

ark XE7 The economical choice for innovative research

X40 Automatic AFM with the first dual-camera system ever adopted in research AFM



# Planetary Centrifugal Mixer

Kakuhumter | Shashin Kagaku Co., Li

Entry model which enables to operate easy with fixed rotation speed ratio against revolution speed.

A new advanced function model equipped with the individual revolution and rotation speed control system





## Portable Solar Simulator

Peccell Technologies, Inc

Handy type solar simulator equipped with Air Mass 1.56 filter for measuring solar cells in laboratory research.



### Glove Box

Tongrun Electronic Co.,Ltd

Bench-Top Glove Box with Gas Purification System H<sub>4</sub>0 & O<sub>4</sub>

Compact acrylic glove box for gas isolation environment



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### **ABOUT THE CONFERENCE**

The 8th Mechanical Engineering Research Day (MERD'22) is organized by the Faculty of Mechanical Engineering (FKM) in association with the Centre for Advanced Research on Energy (CARe), Universiti Teknikal Malaysia Melaka (UTeM). The event will be in the form of a mini-seminar at the Kampus Teknologi UTeM, Melaka, on 13 July 2022. This year, MERD is also co-organized by the Graduate School of Engineering, Nagoya University, Japan and Chemistry Department, Universitas Pertamina, Indonesia. The satellite event, Automotive Mini-Symposium 2022 (AMS'22), will also be organized in conjunction with MERD'22.

### **OBJECTIVES**

The objective is to create a platform for the scientists, scholars, researchers, engineers, and students from Higher Educational Institutions, Research Institutions, and Industries to present their findings of ongoing/completed original research activities. Hence, fostering research collaborations between the universities and industries. The other objective is to introduce young researchers in the scientific field of mechanical engineering through poster/oral presentations and publications, to offer mentoring through senior researchers/scientists, and to foster the building of networks through the informal style of the event.

### **TRACKS**

- I. Automotive Mini-Symposium 2022 (AMS'22)
- II. Additive Manufacturing
- III. Advanced Materials and Processes
- IV. Computer Modelling and Simulation
- V. Energy Engineering and Management
- VI. Engineering Education

- VII. Engineering Technology Management
- VIII. Mechanical Design and Optimization
- IX. Mechanical Vibration and Control
- X. Structural and Mechanical Testing
- XI. Surface Engineering and Tribology
- XII. Thermal and Fluids

### **MERD'22 ORGANIZING COMMITTEE**

### Patron

Vice Chancellor, UTeM
Deputy Vice Chancellor (Research & Innovation), UTeM

### Advisor

Dean, Fakulti Kejuruteraan Mekanikal, UTeM Dean, Graduate School of Engineering, Nagoya University

### Chairman

Shafizal Bin Mat

### Vice-Chairman 1

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### Vice-Chairman 2

Siti Hajar Binti Sheikh Md Fadzlullah

### Secretary

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### **Treasurer**

Nazrin Binti Aziz

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Mohd Fadzli Bin Abdollah Hilmi Bin Amiruddin Amrik Singh a/l Phuman Singh Mastura Binti Mohammad Taha

### Logistic & Technical

Mohd Azman Bin Abdullah Faiz Redza Bin Ramli Mohd Rody Bin Mohamed Zin Zaihasrah Binti Alias

### Sponsorship & Promotion

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### Programme & Protocol

Norma Hayati Binti Hashim Nurhidayah Binti Ismail Norasra Binti A.Rahman Mohd Hafidzal Bin Mohd Hanafi

### Certificate, Souvenir, & Refreshment

Ernie Binti Mat Tokit Rainah Binti Ismail Nurul Hilwa Binti Mohd Zini

### Poster Evaluation

Azma Putra Mohd Zulkefli Bin Selamat Mohd Adrinata Bin Shaharuzaman

### International Relations & Scientific Committee

Noritsugu Umehara - Nagoya University Takayuki Tokoroyama - Nagoya University Nona Merry Merpati Mitan - Universitas Pertamina

### **INVITED SPEAKERS & PARALLEL SESSION CHAIRS**

### **INVITED SPEAKER 1**

Session Chairperson: Assoc. Prof. Dr. Sivakumar A/L Dharma Lingam

### **INVITED SPEAKER 2**

Session Chairperson: Dr. Amrik Singh A/L Phuman Singh

### SRK 1 | AUTOMOTIVE I

Chairperson: Dr. Faizul Akmar bin Abdul Kadir

### SRK 2 | AUTOMOTIVE II

Chairperson: Adzni bin Md Saad

### ROOM 1 ONLINE | ADDITIVE MANUFACTURING & MATERIALS

Chairperson: Assoc. Prof. Ir. Dr. Mohd Rizal bin Alkahari

### ROOM 2 ONLINE | COMPUTER MODELING & SIMULATION 1

Chairperson: Dr. Fauzi bin Ahmad

### ROOM 3 ONLINE | COMPUTER MODELING & SIMULATION 2

Chairperson: Dr. Shamsul Anuar bin Shamsudin

### ROOM 4 ONLINE | ENERGY ENGINEERING & TECHNOLOGY MANAGEMENT

Chairperson: Dr. Mohd Zaid bin Akop

### ROOM 5 ONLINE | ENGINEERING EDUCATION & MECHANICAL DESIGN OPTIMIZATION

Chairperson: Ir. Dr. Siti Nurhaida binti Khalil

### ROOM 6 ONLINE | TRIBOLOGICAL SURFACES & THERMAL FLUIDS

Chairperson: Anita Akmar binti Kamarolzaman

### **FOREWORD BY CHAIRMAN OF MERD'22**



Assalamualaikum Warahmatullahi Wabarakatuh, Salam Sejahtera and Salam Melakaku Maju Jaya, Rakyat Bahagia Menggamit Dunia,

Alhamdulillah, let us extend our sincere gratitude to Allah S.W.T for giving us the opportunity to be here today for The 8th Mechanical Engineering Research Day (MERD'22), a one day International Poster Seminar organized by Faculty of Mechanical Engineering (FKM), UTeM, jointly organized with Centre for Advanced Research on Energy (CARe), UTeM. The MERD'22 is co-organized with Graduate School of Engineering, Nagoya University and Chemistry Department, Universitas Pertamina, Indonesia. For MERD'22, we received about 161 papers and 140 papers were accepted based on its originality and research quality. The accepted papers were reviewed by local and international experts in order to ensure the papers submitted meet good scientific standards.

This event has successfully created a platform for the scientists, scholars, researchers, engineers, and students from all over country to share and present their findings of ongoing/completed original research activities, hence fostering research collaborations between the universities. This event also has encouraged the involvement of young researchers in the scientific field through oral presentations and publications, offered mentoring through senior researchers/scientists and fostering the building of networks among the participants. I really hope that you will have an interesting and memorable experience during your day in this event. And I sincerely hope all the presentations from invited speakers and presenters during the conference will come in useful as added value to your current knowledge. I wish you every success with this important conference and I look forward to learning about the outcome.

Before I conclude, I would like to take this opportunity to thank the Organizing Committee of MERD2022, Centre for Advanced Research on Energy (CARe), UTeM, our co-organizers Graduate School of Engineering, Nagoya University, Japan and Department of Chemistry, Universitas Pertamina, Indonesia who have worked very hard for the last few months to make this conference possible. To all participants, thank you for committing your time and energy towards this conference. I wish all of you the best and a fruitful discussion.

### **INVITED SPEAKER 1**



Prof. Dr. Noritsugu Umehara Nagoya University, Japan

### **BIOGRAPHY**

Dr. Noritsugu Umehara is a professor at the Department of Micro-nano Mechanical Science and Engineering, Nagoya University, Japan. He has interests in both fundamental and applied aspects of manufacturing and tribology, especially in the new polishing method of advanced ceramics using a magnetic field and water lubrication of advanced ceramics. He began his carrier at Tohoku University in 1988 as a research associate at the Department of Mechanical Engineering before he was appointed as an assistant professor in 1993 and an associate professor in 1995. In 2003, he joined Nagoya University as a professor. He received Bachelor's, Master and Doctor of Engineering degrees from Tohoku University, Sendai, Miyagi in 1983, 1985 and 1988. He has published more than 200 research papers in various journals and holds 6 Patents in Magnetic Fluid Grinding. Dr. Umehara received the JSME Young Engineering award in 1991, 1995 LaRoux K. Gillespie Outstanding Young Manufacturing Engineer Award from the Society of Manufacturing engineers in 1995, F.W. Tayler Medal from the CIRP in 1995, and JSME paper awards in 2010, 2019, and 2021. He is a member of the Japan Society of Mechanical Engineers (JSME), the Japan Society for Precision Engineering (JSPE), the Japan Society of Tribologists (JAST), and the Japan Society for Grinding Engineering. He is the Editorial Board Member of the Journal of Engineering Tribology and Proceedings of the Institution of Mechanical Engineers and the associate editor of Journal of Tribology, ASME, and Friction, Springer and Jurnal Tribologi, Malaysian Tribology Society.

### Effect of Fracture Properties and Surface Morphology on Wear of DLC Coatings at Severe Contact Condition

This presentation shows how the fracture properties and surface morphology of DLC coatings affect their wear properties. Wear tests at boundary lubrication clearly illustrate that brittle fracture occurred with rough surfaces, and the fracture cause a significantly increase in wear rate. Fracture toughness test and calculation of stress intensity factor showed the wear properties could be characterized by the K/KIC value (the ratio of stress intensity factor to the critical fracture toughness) from the fracture mechanics viewpoint, and the specific wear rate increased with increasing K/KIC value. In addition, it was also found that the controlling stress intensity factor (i.e., Young's modulus, friction coefficient, pre-crack length which can be equivalent to surface roughness) is very important for excellent wear resistance. In conclusion, the K/KIC can evaluate wear under severe contact conditions where fracture can occur, and it is necessary to make the K/KIC value as low as possible to design with high wear resistance.

### **INVITED SPEAKER 2**



Naim Husni Bin Latif Malaysia Automotive, Robotics and IoT Institute (MARii)

### **BIOGRAPHY**

Mr. Naim started his job as a homologation engineer at Perodua. Then, he acted as the government liaison for getting the approval of vehicles in countries such as Malaysia, Singapore, Brunei, and thee United Kingdom. After nearly five years in manufacturing, Mr Naim joined a German company, TUV Rheinland, which resides in Malaysia. At TUV Rheinland, he learned about the technical testing that consists of safety and environment, be it passenger, commercial, or motorcycle. Currently, he is attached to Malaysia Automotive, Robotics and IoT Institute (MARii). Policy research and making are done at this automotive institute based on technical evaluation and data, especially on National Automotive Policy 2020 (NAP 2020). He is now the head of the National Emission Test Centre (NETC), the most updated exhaust emission testing centre in the ASEAN region.

### Vehicle Type Approval (VTA) – Scenario for Global Automotive and Malaysia

Before a manufacturer can sell the vehicle to a specific country, the manufacturer needs to perform testing and comply with the requirements set out by the country. This legal requirement is called homologation tests. These tests are related to automotive for legal requirements: environment (noise and exhaust emission), general and passive safety, lighting, tyres, and autonomous features. This presentation provides an overview of how the global requirement works for automotive approval (mostly under United Nations Regulations) and specific for Malaysia's requirement under the jurisdiction of the Road Transport Department (Jabatan Pengangkutan Jalan). Technical testing and reporting structures are the key points of this presentation.

### PROGRAM SCHEDULE

### 13th July 2022 (Wednesday) Kampus Teknologi, Universiti Teknikal Malaysia Melaka

Time	Details
8.00 - 8.30 am	Registration
9.00 - 11.30 am	Oral / Poster Presentation (MERD'22)
12.00 - 12.05 pm	Welcoming remark by Chairman of MERD'22
12.05 - 12.35 pm	Invited Speaker 1
	Prof. Dr. Noritsugu Umehara from Nagoya University, Japan
12.35 - 1.00 pm	Invited Speaker 2
	Naim Husni bin Latif from Malaysia Automotive, Robotics & IoT Institute (MARii)
1.00 - 1.45 pm	Photo Session & Lunch Break
2.00 - 2.15 pm	Arrival of UTeM VC & VIPs
2.15 - 2.45 pm	Poster Visit
2.45 - 4.30 pm	National Anthem Negaraku
	UTeM Terbilang
	Doa Recitation
	FKM Dean's Speech
	Closing Ceremony
	Montage Presentation
	Certificates and Award Presentation
4.30 pm	End of Session

### Parallel Session: Poster Presentation

### Kompleks Makmal Kejuruteraan Mekanikal

ID	Title	Presenter	Affiliation
4	CHARACTERIZATION OF REFINED PALM OIL WITH BUTANOL ADDITIVE AS AN ALTERNATIVE BIODIESEL	Hazim Sharudin	UiTM Cawangan Johor Kampus Pasir Gudang
5	DESIGN AND PERFORMANCE TEST OF BICYCLE POWERED MOBILE PHONE CHARGER	Hazim Sharudin	UiTM Cawangan Johor Kampus Pasir Gudang
7	DIGITALIZATION OF PIPING ASSET LIFE STUDY	Shamsul Bahar Mohamad Agil	Petronas Technical Services Sdn. Bhd.
10	RAILWAY CAR BODY LATERAL HUNTING ATTENUATION USING BODY- BASED MODIFIED SKYHOOK CONTROL	Fathiah Mohamed Jamil	Universiti Teknikal Malaysia Melaka
11	THE EMISSION CHARACTERISTIC OF COMPRESSION IGNITION ENGINE WITH BIOETHANOL	Adnan Roseli	Universiti Teknikal Malaysia Melaka
13	RAILWAY PANTOGRAPH MODEL VERIFICATION AND ANALYSIS	Munaliza Ibrahim	Universiti Teknikal Malaysia Melaka
16	COMPARATIVE ANALYSIS OF TINBHA WITH EXISTING MATERIALS FOR HIP IMPLANT USING FINITE ELEMENT METHOD	Muhammad Faris Abd Manap	Universiti Teknologi MARA
17	COMPARATIVE STUDY ON OPENING AREA OF BUTTERFLY AND DUAL PLATE SLIDER THROTTLE BODY: MATHEMATICAL ANALYSIS AND MODELLING USING SOLIDWORKS.	Mohd Faqrul Radzi Tahiruddin	Universiti Teknologi MARA
18	SYSTEM IDENTIFICATION MODELLING FOR VERTICAL TRAJECTORY OF UNDERWATER REMOTELY OPERATED VEHICLE (ROV)	Fauzal Naim Zohedi	Universiti Teknikal Malaysia Melaka
19	STRUCTURAL INTEGRITY STUDY OF MODIFIED AGRICULTURE VEHICLE UNDER VARIOUS DRIVING SLOPES	Ahmad Sufian Abdullah	Universiti Teknologi MARA
24	FORMULATION OF CONDITION-BASED MAINTENANCE MODEL FOR COMPRESSOR NETWORK UNDER PREDICTED VIBRATION RATE	Nur Izyan Zulkafli	Universiti Teknikal Malaysia Melaka
25	INVESTIGATION OF LIFT PERFORMANCES ON DART PAPER PLANE BY USING CFD SIMULATION METHOD	Noor Iswadi Ismail	UiTM Cawangan Pulau Pinang
32	PROCESSABILITY OF UNCALCINED TIN DIOXIDE REINFORCED DEPROTEINIZED NATURAL RUBBER NANOCOMPOSITES	Hairul Effendy Ab Maulod	Universiti Teknikal Malaysia Melaka
36	ENGINEERING DESIGN PROCESS FOR VIBRATION TRANSMISSIBILITY TEST ASSEMBLY	Muhamad Syafwan Azmi	Universiti Teknikal Malaysia Melaka
39	OPTIMIZATION OF DEPOSITION PARAMETER ON WIRE ARC ADDITIVE MANUFACTURING OF ALUMINIUM ALLOYS 4043 BY USING TAGUCHI BASED REGRESSION ANALYSIS	Gan Chin Ket	Universiti Teknikal Malaysia Melaka
41	STUDY ON AUTOMATION OF GENERATING CAD MODEL FOR BUMPER GRILLE CAR	Mohd Basri Ali	Universiti Teknikal Malaysia Melaka
42	STRENGTH PREDICTION OF HYBRID COMPOSITE LAMINATES BASED ON VARIOUS COMBINED LAMINATION AND FAILURE THEORIES	Mohamad Mali	Universiti Teknologi MARA
44	CALIBRATION OF TEMPERATURE MEASUREMENT BASED ON IMAGE PROCESSING	Nor Faizah Haminudin	Universiti Teknikal Malaysia Melaka
45	FLEXURAL AND COMPRESSION PROPERTIES OF PRINTED PLA CORE WITH DIFFERENT FACE SHEET	Muhamad Shahirul Mat Jusoh	Kolej Kemahiran Tinggi MARA Masjid Tanah
46	THE EFFECT OF DIFFERENT WEIGHT PERCENTAGE OF SORBITOL ON THE TENSILE PROPERTIES OF SAGO STARCH	Nur Rohaiza Izamuddin	Universiti Teknikal Malaysia Melaka
48	OPTIMIZATIONS COMPOSITION OF AGAROSE AND CHITOSAN-BASED HYDROGEL ON FIBER OPTIC SENSING PLATFORM.	Norjasween Abdul Malik	UiTM Cawangan Johor Kampus Pasir Gudang
49	THERMAL AND FLOW CHARACTERISTICS OF PLA WASTE FROM 3D PRINTING FOR WASTE OPTIMIZATION	Miqdad Khairulmaini	UiTM Cawangan Johor Kampus Pasir Gudang
50	LOW-COST BULK METALLIC GLASS (BMG) FROM WASTE MATERIALS	Mohd Noor Halmy	Universiti Teknologi MARA
52	DESIGN AND FABRICATION OF PLASTIC KERIS BY INJECTION MOULDING	Hazriel Faizal Pahroraji	UiTM Cawangan Johor Kampus Pasir Gudang

### Parallel Session: Poster Presentation

### Kompleks Makmal Kejuruteraan Mekanikal

53	FAILURE ANALYSIS OF KEVLAR/EPOXY COMPOSITE LAMINATES WITH SLOTTED SHEAR AND V-NOTCH CUT-OUT	Nurrul Amilin Zainal Abidin	UiTM cawangan Johor Kampus Pasir Gudang
54	EFFECTS OF CUTTING TOOL'S HELIX ANGLE ON THE DRILLED HOLE SURFACE ROUGHNESS	Mohd Faing laafar	
57	EVALUATION OF SURFACE ROUGHNESS OF MILD STEEL COATED WITH TIO2 BY ELECTRICAL DISCHARGE COATING	IPay lun Liew	
58	QUALITY EVALUATION OF LOW VISCOSITY STRETCHABLE ELECTRONIC CIRCUIT (SCI) PRINTED ON FLEXIBLE AND STRETCHABLE SUBSTRATE USING SCREEN-PRINTING METHOD	Daniel Azlan Mohd Azli	Universiti Teknikal Malaysia Melaka
60	EROSION WEAR BEHAVIOR OF BORONIZED 304 STAINLESS STEEL AT DIFFERENT IMMERSION TIMES	Muhammad Amir Mat Shah	Universiti Teknologi MARA
63	AUTOMATED FERTIGATION SYSTEM: A SYSTEMATIC BIBLIOMETRIC ANALYSIS	Dhiya' Hawina Che Aziz	Universiti Teknikal Malaysia Melaka
64	A DESIGN OF GAMIFICATION ARTIFICIAL INTELLIGENCE CODING ACTIVITIES TO IMPROVE COGNITIVE SKILLS AMONG PRIMARY STUDENTS	Nurul Alin Kamarudin	Universiti Teknikal Malaysia Melaka
65	OIL WETTING EFFECT ON PISTIA LEAVES SURFACE TOWARDS TRIBOLOGICAL PERFORMANCE	Najibah Ab Latif	Universiti Teknologi MARA
66	SURFACE HARDNESS OF PASTE BORONIZED STAINLESS STEEL UNDER DIFFERENT BORONIZING TEMPERATURE	Ahmad Faidzal Khodori	UiTM Cawangan Johor Kampus Pasir Gudang
70	ANALYSIS OF RESISTANCE SPOT WELDING OF VARIOUS STEELS USING NUMERICAL COMPUTATION	Nurulnatisya Ahmad	Universiti Teknologi MARA
73	INSTRUMENTED CHARPY IMPACT: INFLUENCE OF IMPACT VELOCITY AND MATERIAL THICKNESS ON THE IMPACT DURATION AND ENERGY ABSORBED	Hikmah Zainuddin	Universiti Teknikal Malaysia Melaka
76	EFFECT OF HEAT TREATMENT ON MICROCONSTITUENTS AND MECHANICAL PROPERTIES OF ADDITIVELY MANUFACTURED TIGAL4V ALLOY	Siti Khadijah Alias	Universiti Teknologi MARA
77	A PROPOSED DESIGN FLOW FOR AUTOMATED WAITER ROBOTIC WITH DIGITAL POINT OF SALE FEATURE	Cecilia Chong Ching Nee	Universiti Teknikal Malaysia Melaka
72	EFFECT ON FRICTION AND WEAR OF ANODIC ALUMINUM OXIDE- REINFORCED GRAPHITE AT DIFFERENT HUMIDITY	Noor Ayuma Mat Tahir	Malaysia-Japan International Institute of Technology
	COMPARATIVE ASSESSMENT ON THE SURFACE QUALITY OF FDM 3D PRINTING COMPONENT PRINTED WITH KENAF REINFORCED ABS (KRABS) AND ABS FILAMENTS	Syahibudil Ikhwan Abdul Kudus	Universiti Teknikal Malaysia Melaka
86	HYPERELASTIC MODELS OF SHEEP SKIN UNDER UNIAXIAL TENSILE TEST	Nur Aini Sabrin Manssor	Universiti Teknologi MARA
22	SIMULATION OF POLYPROPYLENE ALUMINIUM TRIHYDRATE COMPOSITE IN INJECTION MOLDING PROCESS	Mohammad Khalid Wahid	Universiti Teknikal Malaysia Melaka
89	OPTIMIZATION OF CUTTING PARAMETERS FOR TURNING MILD STEEL UNDER DRY CONDITION USING RESPONSE SURFACE METHODOLOGY	Syidatul Akma Sulaiman	UiTM Cawangan Johor Kampus Pasir Gudang
93	INFLUENCE OF SINTERING TEMPERATURE ON GRAIN DENSIFICATION AND SURFACE TOPOGRAPHY OF ZIRCONIA DENTAL RESTORATION	Rahimah Abdul Hamid	Universiti Teknikal Malaysia Melaka
96	INVESTIGATION OF FLOW SEPARATIONS IN CONICAL CONVERGING- DIVERGING ROCKET NOZZLE AT DIFFERENT ATMOSPHERIC PRESSURES	Radzi Abdul Rasih	Universiti Teknologi MARA
101	DESIGN AND FABRICATION OF FKM KEYCHAIN BY INJECTION MOULDING USING WASTE MATERIAL (PLASTICS)	Norhisyam Jenal	UiTM Cawangan Johor Kampus Pasir Gudang
102	STUDY ON SPEED AND ACCURACY IN MEASURING PEOPLE FLOW RATE USING COMPUTER VISION	Fikhri Fahmi Mohamed Fuad	Universiti Teknikal Malaysia Melaka
107	OPTIMISATION OF PARAMETERS IN STIR CASTING OF GRAPHENE/A356 ALLOY COMPOSITE USING TAGUCHI METHOD	Nur Farah Bazilah Wakhi Anuar	Universiti Teknikal Malaysia Melaka

### Parallel Session: Poster Presentation

### Kompleks Makmal Kejuruteraan Mekanikal

114	HYDROGEN CONSUMPTION FOR A PROTOTYPE PEM FUEL CELL VEHICLE USING DIRECT POWER AND ENERGY STORAGE STRATEGIES	Abdul Hadi Abdol Rahim	UiTM Cawangan Johor Kampus Pasir Gudang
118	NUMERICAL PREDICTION OF FRICTION FACTOR FOR MICRO-SIZE CHANNEL HEAT SINK	Ernie Mat Tokit	Universiti Teknikal Malaysia Melaka
	A PRELIMINARY INVESTIGATION ON FORMULATION AND CHARACTERIZATION OF GNP-FILLED PEDOT: PSS STRETCHABLE CONDUCTIVE INK	Zuraimi Ramle	Universiti Teknikal Malaysia Melaka
123	ADAPTIVE CRUISE CONTROL USING PID AND MODEL PREDICTIVE CONTROLLERS IN LOW TRAFFIC CONDITION	Nur Rashid Mat Nuri	Universiti Teknikal Malaysia Melaka
124	ANALYSIS ON THE IMPACT OF IMAGENET PREPROCESSING IMAGE MODE USING VGG19 PRE-TRAINED MODEL IN PLANT DISEASE CLASSIFICATION	Zuraini Othman	Universiti Teknikal Malaysia Melaka
128	MECHANICAL PROPERTIES OF TREATED KENAF/ABS (KRABS) COMPOSITE FILAMENT OF FUSED DEPOSITION MODELING (FDM) WITH DIFFERENT FIBRE LOADING	Hazliza Aida Che Hamid	Universiti Teknikal Malaysia Melaka
129	THE EFFECT OF FIBER TREATMENT TOWARDS RHEOLOGICAL PROPERTIES OF SUGAR PALM FIBER / POLYLACTIC ACID COMPOSITE FILAMENT OF FUSED DEPOSITION MODELING	Mohd Hakim	Universiti Teknikal Malaysia Melaka
133	CFD STUDY OF COOLANT FOR BATTERY THERMAL MANAGEMENT SYSTEM	Muhammad Shahir Muhamad Zin	Universiti Teknikal Malaysia Melaka
134	PHYSICOCHEMICAL PROPERTIES OF JATROPHA CURCAS OIL AS A POTENTIAL FEEDSTOCK FOR BIODIESEL PRODUCTION	Amiera Husna Abdul Halim	Universiti Teknikal Malaysia Melaka
135	THERMAL ASSESSMENT OF A DUAL-FAN GRAPHIC PROCESSING UNIT (GPU) UNDER CONTINUOUS LOAD	Muhammad Zulfattah Zakaria	Universiti Teknikal Malaysia Melaka
137	MAXIMUM BENDING STRESS ANALYSIS OF FLAX/EPOXY AND GLASS/EPOXY POLYMER COMPOSITES	Muhamad Faris Syafiq Khalid	Universiti Teknologi MARA
138	MODELLING AND SIMULATION OF KENAF/EPOXY COMPOSITE ON FLEXURAL STRENGTH	Mohd Fadzli Ismail	UiTM Cawangan Johor Kampus Pasir Gudang
139	STUDY OF TEMPERATURE AND TIME ON TENSILE STRENGTH IN HEAT TREATMENT OF 3D PRINTED POLYAMIDE	Mohd Juzaila Abd Latif	Universiti Teknikal Malaysia Melaka
140	3D MODELLING OF LOCALIZED CORROSION IN STEEL USING COMSOL MULTIPHYSICS	Noor Mirza Syamimi	Universiti Teknikal Malaysia Melaka
142	THERMOPLASTIC MATRIX SELECTION PROCESS FOR COMPOSITE VEHICLE FRONTAL BUMPER USING ANALYTIC HIERARCHY PROCESS	Noryani Muhammad	Universiti Teknikal Malaysia Melaka
147	APPLICATION OF SIMPLE SMART HOME DEVICES FOR ENERGY EFFICIENCY IN MALAYSIA	Mohd Nazmin Maslan	Universiti Teknikal Malaysia Melaka
148	EFFECT OF PRINTING ORIENTATION ON TENSILE PROPERTIES OF 3D PRINTED POLYLACTIC ACID MATERIAL	Mohd Juzaila Abd Latif	Universiti Teknikal Malaysia Melaka
149	NUMERICAL STUDY OF PHOTOVOLTAIC SYSTEM INTEGRATED WITH ORGANIC PHASE CHANGE MATERIAL USING ANSYS	Nurfarhana Salimen	Universiti Teknikal Malaysia Melaka
151	PREDICTION OF MECHANICAL AND PHYSICAL PROPERTIES OF HYBRID COMPOSITES USING ROHM	Noryani Muhammad	Universiti Teknikal Malaysia Melaka
152	INVESTIGATION ON PERFORMANCE OF ECO-WASTE COMPOSITE MATERIALS VIA VICKERS AND ACOUSTIC MEASUREMENT.	Masturah Mesri	Universiti Teknikal Malaysia Melaka
155	THE SIMULATION STUDY ON ACOUSTICS CHARACTERISTICS FOR SELECTED LOCAL WOOD USED IN MALAY TRADITIONAL HOUSE	Mohd Faizal Mat Tahir	Universiti Kebangsaan Malaysia
158	CONCEPTUAL DESIGN AND ANALYSIS OF FILAMENTS EXTRUDER FOR 3D PRINTING	Shafizal Mat	Universiti Teknikal Malaysia Melaka
161	THE CORRELATION OF SURFACE ROUGHNESS AND TOOL WEAR UNDER CRYOGENIC CONDITION	Nurul Hayati Abdul Halim	Universiti Teknologi MARA
162	RHEOLOGICAL PROPERTIES OF HYDROXYAPATITE (HAP)/POLY-LACTIC ACID (PLA) COMPOSITE AT DIFFERENT WEIGHT PERCENTAGES IN PRODUCING 3D PRINTING FILAMENT	Afeeqa Puteri Marzuki	Universiti Teknologi MARA

### Parallel Session: Oral Presentation & Online | SRK 1

Chairperson: Dr. Faizul Akmar bin Abdul Kadir

	15	Title		A ((()) - A)
Time	ID	Title	Presenter	Affiliation
09:00	*15	DIESEL ENGINE VIBRATION ANALYSIS FUELLED WITH AMMONIA ADDITIVE IN BIODIESELS: ARTIFICIAL NEURAL NETWORKS APPROACH	Raja Mazuir Raja Ahsan Shah	Universiti Teknologi MARA
09:15	*98	PERFORMANCE AND EMISSIONS OPTIMISATION OF HYDROGEN- FUELED CI ENGINE USING A 1-D MODELLING TECHNIQUE	Irnie Zakaria	Universiti Teknologi MARA
09:30	23	EXPERIMENTAL RAIN SIMULATION FOR THE ON-ROAD TESTING OF AUTOMOTIVE EMERGENCY BRAKING (AEB) VEHICLE PERFORMANCE	Muhd Ridzuan Mansor	Universiti Teknikal Malaysia Melaka
09:45	33 I	VALIDATION OF SIMULATION AND HARDWARE-IN-THE-LOOPS (HILS) OF STEER BY WIRE SYSTEM	Mohd Faiq Aiman Aili	Universiti Teknikal Malaysia Melaka
10:00	34	EXPERIMENT VALIDATION OF IWM BY USING HITLS METHOD	Muhammad Shukri Azizi Razak	Universiti Teknikal Malaysia Melaka
10:15	35 I	PERFORMANCE VALIDATION OF IWM BY USING SYSTEM IDENTIFICATION	Muhammad Shukri Azizi Razak	Universiti Teknikal Malaysia Melaka
10:30	37	COMPARISON OF DEPOSIT DEVELOPMENT ON HEATED SURFACE USING B10 AND B20 BIODIESEL	Favian Jikol	Universiti Teknikal Malaysia Melaka

### Parallel Session: Oral Presentation | SRK 2

Chairperson: Adzni bin Md Saad

Time	ID	Title	Presenter	Affiliation
09:00	62	VEHICLE PITCH MOTION CONTROL USING ACTIVE SUSPENSION DURING ANTILOCK BRAKING	Mohd Hirzan Mahamed	Universiti Teknikal Malaysia Melaka
09:15	59 1	SAFETY ANALYSIS OF FORWARD COLLISION PREVENTION SYSTEM TO AVOID THE FRONTAL COLLISION IMPACT	Vimal Rau Aparow	University of Nottingham Malaysia
09:30	104	SYSTEM IDENTIFICATION OF VEHICLE LONGITUDINAL DYNAMIC FOR AUTOMATIC CRUISE CONTROL	Khairul Amri Tofrowaih	Universiti Teknikal Malaysia Melaka
09:45	130	AERODYNAMIC ANALYSIS OF F1 IN SCHOOLS RACING CAR	Mohd Zakaria Mohammad Nasir	Universiti Teknikal Malaysia Melaka
10:00	131	MOTORCYCLIST INTERACTION WITH AUTOMATED VEHICLE: IMPACT OF APPEARANCE AND DRIVING STYLE IN MIXED DRIVING SCENARIO	Juffrizal Karjanto	Universiti Teknikal Malaysia Melaka
10:15	132	MODIFIED TI3C2TX MXENE FILLERS FOR CHITOSAN-BASED POLYMER ELECTROLYTE MEMBRANE	Kee Shyuan Loh	Universiti Kebangsaan Malaysia

### Parallel Session : Online | ROOM 1

Chairperson: Assoc. Prof. Ir. Dr. Mohd Rizal bin Alkahari

Time	ID	Title	Presenter	Affiliation
09:00	l 31 l	DEVELOPMENT OF MODULAR-BASED BIOPRINTER WITH THREE-WAY VALVE FOR HYDROGEL CONTROL	Abernice Ann	Universiti Teknikal Malaysia Melaka
09:10	74	HIGH STRENGTH 3D PRINTED STRUCTURE INCORPORATED WITH TITANIUM DIOXIDE NANOPARTICLES FOR APPLICATION IN AQUEOUS SYSTEM	Evyan Yang	Nilai University
09:20	l 67 l	CHARACTERISTICS OF OXIDE LAYER FORMED ON THE ALUMINIUM- SILICON (ALSI7MG) ALLOY CHIPS DURING IN-SITU MELTING	Ain Zubaidah Samian	Universiti Tun Hussein Onn Malaysia
09:30	l 75 l	CHEMICAL TREATMENT HAS AN INFLUENCE ON THE STRENGTHENING OF RECYCLE WOOD PP COMPOSITE (R-WOPPC) FILAMENT	Nafis Syahmi Zainal Azali	Universiti Teknikal Malaysia Melaka
09:40	l 97 l	EFFECT OF WORN DRILL BITS ON THE VIBRATION OF THE AIR DRILL DURING COMPOSITE DRILLING PROCESS	Wei Tong Koh	Universiti Sains Malaysia
09:50	l 106 l	THE EFFECT OF GNP FILLER SIZE ON THE ADHESION STRENGTH OF STRETCHABLE CONDUCTIVE INK	Zuraimi Ramle	Universiti Teknikal Malaysia Melaka
10:00	l 109 l	THE EFFECT OF GRAPHENE NANOPLATELETS FILLER SIZES ON THE ELECTRICAL PERFORMANCE OF STRETCHABLE CONDUCTIVE INK	Andee Faeldza Dziaudin	Universiti Teknikal Malaysia Melaka
10:10	l 121 l	RELIABILITY STUDY ON THERMALLY CONDUCTIVE ADHESIVE AS TIM: LAP SHEAR STRENGTH OF HYBRID GNP/FBN COMPOSITE	Solehah Jasmee	Universiti Teknikal Malaysia Melaka
10:20	l 157 l	DEVELOP OF HAYBRID CORN AND TAPIOCA STARCH BASED AS BIO PLASTIC MATERIALS.	Mohd Zulkefli Selamat	Universiti Teknikal Malaysia Melaka

### Parallel Session : Online | ROOM 2

Chairperson: Dr. Fauzi bin Ahmad

Time	ID	Title	Presenter	Affiliation
09:00	6	A HUE PRESERVING ENHANCEMENT METHOD FOR UNIFORM LOW LIGHT IMAGES	Mohd Fikree Hassan	International University of Malaya-Wales
09:10	12	THE DEVELOPMENT OF A MOBILE APPLICATION FOR WIRELESS MOTORCYCLE IGNITION SYSTEM	Abdurrahman Jalil	Universiti Teknologi MARA
09:20	20 1	A SURFACE GEOMETRIC MODEL OF A TWO-FLUTES END MILL FOR SURFACE ROUGHNESS PREDICTION	Fatiha Naziera Yusof	Universiti Teknologi MARA
09:30	40	MODELING THE TREND OF AUTOMATED WAREHOUSE STUDIES: A BIBLIOMETRIC ANALYSIS	Siti Norida Wahab	Universiti Teknologi MARA
09:40	56	TOYOTA SEWING SYSTEM AND SIMULATION FOR CLOTHING INDUSTRY PRODUCTIVITY IMPROVEMENT	Rohana Abdullah	Universiti Teknikal Malaysia Melaka
09:50	68	EFFECT OF INTAKE LENGTH ON THE ENGINE PERFORMANCE OF SINGLE CYLINDER ENGINE	Muhammad Arif Ab Hamid Pahmi	UiTM Cawangan Pulau Pinang
10:00	69	MODELING OF NATURAL CONVECTION HEAT TRANSFER OF INLINE PIN FIN AND PLATE HEAT SINK BY COMPUTATIONAL FLUID DYNAMICS	See Yuan Cheng	Universiti Teknikal Malaysia Melaka
10:10	99	PID-FUZZY GAIN TUNING FOR LAB-VOLT TEMPERATURE PROCESS CONTROL TRAINER	Mohamad Riduwan Md Nawawi	Universiti Teknikal Malaysia Melaka
10:20	100	OPEN-HOLE CARBON AND GLASS EPOXY COMPOSITES UNDER TENSILE LOADING USING DIFFERENT TYPES OF MESHING	Nurul Nadiah Azmi	Universiti Teknologi MARA

### Parallel Session : Online | ROOM 3

Chairperson: Dr. Shamsul Anuar bin Shamsudin

Time	ID	Title	Presenter	Affiliation
09:00	103 l	MARKER-LESS MONITORING SYSTEM FOR TRAIL ANALYSIS OF RAT EMULATOR USING VIDEO IMAGES	Ya'Akob Yusof	Universiti Teknologi MARA
09:10	119 I	ANDROID APPLICATION DEVELOPMENT FOR PROPERTY RENTAL SERVICES	Kasthuri Subaramaniam	UCSI University
09:20	120 l	DESIGN SETUP FOR USING ELECTRICAL CAPACITANCE TOMOGRAPHY FOR BURIED PIPELINE FAULT DETECTION	Ahmad Muzaffar Abdul Kadir	Universiti Teknikal Malaysia Melaka
09:30	141	UNIVERSITY GRADE PREDICTION MODEL	Kasthuri Subaramaniam	UCSI University
09:40	145	DESIGN OF EFFECTIVE E-LEARNING INTERFACES BASED ON GENDER	Kasthuri Subaramaniam	UCSI University
09:50	159	COMPUTATIONAL STUDY ON THE SYNTHESIS OF POLY(ETHYLENE- VINYL ACETATE) AS POUR POINT DEPRESSANT ON EXTENDED TIGHT- BINDING LEVEL	Stanislaus Axel Ajipratama	Universitas Pertamina
10:00	160 l	COMPUTATIONAL STUDY ON POLYETHYLENE GLYCOL ESTER AS POUR POINT DEPRESSANT ON EXTENDED TIGHT-BINDING LEVEL	Andrea Hanna	Universitas Pertamina
10:10	163	THE STUDY OF EQUILIBRIUM PROCESS FOR LARGE SCALE POLYDIMETHYLSILOXANE NANOTUBE AND NANOPILLAR USING MOLECULAR DYNAMICS SIMULATION	Abdul Haadi Abdul Manap	Universiti Sains Malaysia

### Parallel Session : Online | ROOM 4

Chairperson: Dr. Mohd Zaid bin Akop

Time	ID	Title	Presenter	Affiliation
09:00	) )	DEVELOPMENT OF IOT SMART POWER METER USING BLYNK APPLICATION	Arunaghiry Narenthiran	Universiti Teknikal Malaysia Melaka
09:10	22	DEVELOPMENT OF MATHEMATICAL MODEL TO PREDICT THE VISCOSITY AND CALORIFIC VALUE OF REFINED PALM OIL - HEXANOL BINARY BIOFUEL BLENDS	Sharzali Che Mat	UiTM Cawangan Pulau Pinang
09:20	61 I	IMPLEMENTATION OF GREEN BUILDING INDEX (GBI) AT UTEM'S BUILDING	Merrill Demornay	Universiti Teknikal Malaysia Melaka
09:30	94 1	THE FUTURE OF INTERNET OF THINGS (IOT) IN SOLAR UPDRAFT TOWER	Mohd Noor Asril Saadun	Universiti Teknikal Malaysia Melaka
09:40	100	DEHUMIDIFICATION OF RECIRCULATION AIR FROM SOLAR DRYER USING SILICA GEL FOR FOOD PRODUCT DRYING	Muhammad Safwan Asyraf Ramli	Universiti Teknikal Malaysia Melaka
09:50	125 I	ATMOSPHERIC WATER GENERATION USING THERMOELECTRIC COOLER POWERED BY SOLAR ENERGY	Rozaini Othman	UiTM Cawangan Pulau Pinang
10:00	127 I	ASSESSMENT ON THERMAL COMFORT LEVEL: CASE STUDY AT UTEM'S CHANCELLERY BUILDING	Siti Nur Afifah Noordin Saleem	Universiti Teknikal Malaysia Melaka
10:10	8	THE ROLE OF INFORMATION TECHNOLOGY PERSONNEL COMPETENCY (ITPC) TOWARDS ORGANIZATIONAL AGILITY: AN EMPIRICAL STUDY ON AUTOMOTIVE ORGANIZATIONS IN MALAYSIA	Noor Hafizah Hassan	Asia Pacific University of Technology & Innovation
10:20	81	E-VOTE	Nur Syahirah Mohd Izwan Wasandan	Universiti Teknikal Malaysia Melaka
10:30	91 I	ARTIFICIAL INTELLIGENCE OF THINGS (AIOT) RANSOMWARE DETECTION CONCEPTUAL FRAMEWORK	Noor Hafizah Hassan	Asia Pacific University of Technology & Innovation
10:40	116	ANDROID BASED SMART VIRTUAL OFFICE	Athirah Shuhaidi	Universiti Teknikal Malaysia Melaka
10:50	126	UAV EXPERIMENTATION FOR PAVEMENT DISTRESSES DETECTION	Laura Inzerillo	University of Palermo

### Parallel Session : Online | ROOM 5

Chairperson: Ir. Dr. Siti Nurhaida binti Khalil

Time	ID	Title	Presenter	Affiliation
09:00	21	DEVELOPMENT OF SMART FACTORY ENVIRONMENTAL MONITORING SYSTEM	Norharyati Harum	Universiti Teknikal Malaysia Melaka
09:10	28	APPLICATION OF MEASUREMENT LIGHT INTENSITY APPS FOR STUDENT'S PROJECT	Bulan Abdullah	Universiti Teknologi MARA
09:20	29	IMPLEMENTATION OF ONLINE-BASED LEARNING ON THE TECHNICAL SUBJECT AT UTEM	Erman Hamid	Universiti Teknikal Malaysia Melaka
09:30	55	INDUSTRIAL NOISE MONITORING VIA NOISE-MEASURING SMARTPHONE APPS	Nurul Hanna Mas'Aud	UiTM Cawangan Johor Kampus Pasir Gudang
09:40	9	ANALYSIS OF A 6-AXIS DRONE WEIGHT OPTIMIZATION USING GENERATIVE DESIGN	Mariam Md Ghazaly	Universiti Teknikal Malaysia Melaka
09:50	30	ANALYSIS OF BRAKE FORCE DISTRIBUTION FOR THE MOTORCYCLE	Mahamad Hisyam Mahamad Basri	UiTM Cawangan Pulau Pinang
10:00		DEVELOPMENT OF PILLION SIMULATION FEATURES FOR MOTORCYCLE SIMULATOR TO ANALYSE ERGONOMIC CHARACTERISTICS OF PASSENGER	Wan Muhammad Syahmi Wan Fauzi	UiTM cawangan Johor Kampus Pasir Gudang
10:10	144	ELONGATION MOTION ANALYSIS OF A FIBER-REINFORCED SOFT ACTUATOR USING FINITE ELEMENT METHOD (FEM) ANALYSIS	Mariam Md Ghazaly	Universiti Teknikal Malaysia Melaka
10:20		THE WRIGHT MAP PATTERN IN ASSESSING ADVERSITY QUOTIENT FOR MALAYSIAN POLYTECHNIC STUDENTS FROM CORE MODEL PERSPECTIVE	Mohd Effendi @ Ewan Mohd Matore	Universiti Kebangsaan Malaysia

### Parallel Session : Online | ROOM 6

Chairperson: Anita Akmar binti Kamarolzaman

Time	ID	Title	Presenter	Affiliation
09:00	38	TRIBOLOGICAL INVESTIGATION ON VEGETABLE OIL ENHANCE BY HBN NANOPARTICLES AS FUTURE BIO-BASED LUBRICANT	Muhammad Ilman Hakimi Chua Abdullah	Universiti Teknikal Malaysia Melaka
09:10	43	A STUDY ON TRIBOLOGICAL PERFORMANCES OF HBN/WS2 AND HBN/TIO2 HYBRID VEGETABLE BASED NANOFLUIDS FOR METALWORKING FLUID	Ainaa Mardhiah Sabri	Universiti Tun Hussein Onn Malaysia
09:20	79	SURFACE PROFILE ANALYSIS: CONVENTIONAL BLASTING USING GARNET AND RECYCLED GARNET	Nur Kamarliah	UiTM Cawangan Johor Kampus Pasir Gudang
09:30	83	EFFECT OF ELECTRODE PLATE SURFACE TEXTURE ON HHO GENERATOR GAS PRODUCTION PERFORMANCE	Mawi Asmawi	Universiti Teknikal Malaysia Melaka
09:40	24	EFFECT OF NANOPARTICLES WITH DIFFERENT YOUNG'S MODULUS ON INTERFACE CONTACT PROPERTIES	Jeng-Haur Horng	National Formosa University
09:50	92	ANALYSIS OF INSULATION ON BIODIESEL STORAGE TANKS	Satishwara Rao Narasimmanaidu	Universiti Teknikal Malaysia Melaka
10:00	143	PALM OIL ESTER PROPERTIES AS LUBRICANT BASE OIL	Sharizad Hakim Suadi	Universiti Teknologi MARA
10:10	27 I	HEAT TRANSFER AND FLOW CHARACTERISTICS OF TWO-STREAM IN A CHANNEL WITH SYNTHETIC JET	Azmi Husin	UiTM Cawangan Pulau Pinang
10:20	154	PYROLYSIS OF BIOMASS: POTENTIAL AND APPLICATIONS	Nona Merry Mitan	Universitas Pertamina

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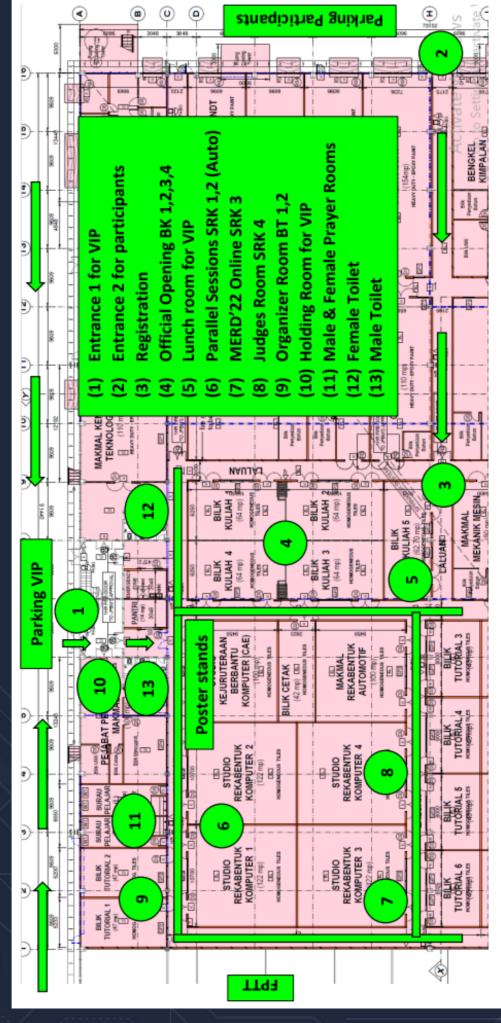


### **LOCATION TO MERD'22**

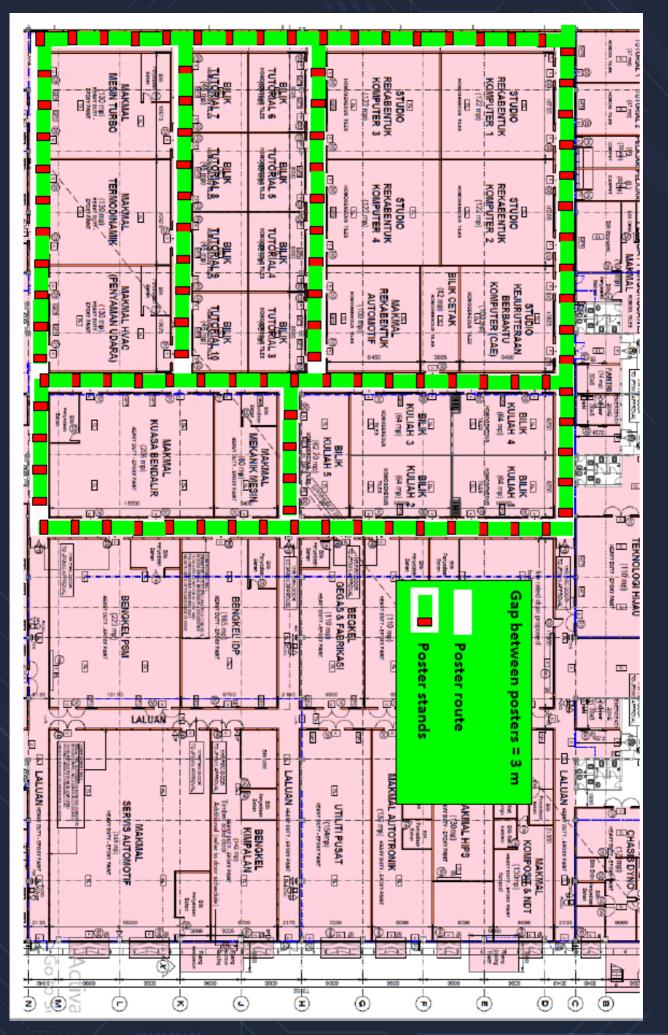
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# FLOOR PLAN OF MERD'22 INSIDE KMKM



### KMKM PLAN LAYOUT







THE 8<sup>TH</sup> MECHANICAL ENGINEERING RESEARCH DAY



Satellite Event: Automotive Mini Symposium 2022 (AMS'22)