

MECHANICAL DESIGN COMPETITION

Preliminary GUIDEBOOK

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ABOUT US



Himpunan Mahasiswa Mesin Universitas Diponegoro is a student organization that serves as a platform for Mechanical Engineering students to grow through **academic development, leadership, innovation, and collaboration.**

As part of the **Department of Mechanical Engineering**, HMM Undip supports programs that strengthen **engineering knowledge, student creativity, and professional character.**

Through **Mech-ONE**, HMM Undip brings a new initiative to connect **students, academics, industry stakeholders, and young innovators** in one collaborative platform.

**Driven by engineering.
Built through collaboration.
Committed to future innovation.**



ABOUT

Mech-ONE



Mech-ONE 2026 or Mechanical Engineering Competition – Open National and International Event is a national and international-scale program initiated by Himpunan Mahasiswa Mesin Universitas Diponegoro.

THEME

“Advancing Renewable Energy Technologies for a Sustainable and Resilient Future,”

Mech-ONE is designed as a platform for students to **develop ideas, designs, and solutions** in renewable energy, mechanical engineering, and sustainable business.

Mech-ONE CONSISTS OF

THREE MAIN PROGRAMS

01

Mechanical Design Competition

Ocean renewable energy engineering design challenge.

02

Business Plan Competition

Renewable energy business solutions for coastal sustainability.

03

National Seminar

A national forum for knowledge sharing, discussion, and appreciation.

BACKGROUND OF THE EVENT

The transition toward **renewable energy** has become one of the most important movements in shaping a **cleaner and more resilient future**. As global energy challenges continue to grow, **innovation** is needed not only in technology, but also in the way ideas are designed, developed, and implemented.

At the same time, **coastal areas** such as Semarang face real environmental challenges, including **tidal flooding, land subsidence, waste issues**, and the need for more adaptive infrastructure. These conditions require solutions that combine **engineering, sustainability, and practical implementation**.

Mech-ONE is created as a response to that challenge. Through **mechanical design, sustainable business planning, and national discussion**, this event encourages students to transform **coastal and energy problems** into **future-oriented solutions**.

Where engineering minds turn energy challenges
into future solutions.

MECHANICAL DESIGN COMPETITION

This competition focuses on developing innovative engineering designs for **ocean renewable energy systems**. Participants will analyze technical problems and create practical mechanical solutions. Our theme:

“Ocean Renewable Energy Engineering”

BACKGROUND



Ocean renewable energy is increasingly recognized as a key contributor to the future of sustainable energy systems. With vast and continuously available marine resources, technologies that harness wave, tidal, and offshore renewable energy have the potential to provide reliable solutions for energy generation, freshwater production, and sustainable coastal development.

However, significant engineering challenges remain in designing systems that are efficient, reliable, economically viable, and capable of operating in harsh marine environments. Addressing these challenges requires innovative approaches that integrate mechanical design, energy conversion, structural integrity, sustainability, and practical implementation.

This competition provides a platform for participants to develop cutting-edge engineering solutions that explore the potential of ocean renewable energy while addressing real-world challenges through creativity, innovation, and technical excellence.

WHY YOU SHOULD JOIN?

1

ENGINEERING IMPACT THROUGH INNOVATION

Transform real-world ocean energy challenges into innovative engineering solutions that create tangible benefits for coastal communities and sustainable development.

2

REAL-WORLD DESIGN CHALLENGE

Experience the complete engineering design cycle inspired by real industrial challenges, from conceptualization and system integration to technical evaluation.

3

ADVANCED ENGINEERING THINKING

Strengthen your ability to analyze complex engineering systems, optimize design performance, and make data-driven technical decisions.

4

GLOBAL PROFESSIONAL NETWORK

Engage with future engineers, researchers, and industry experts while expanding your professional network beyond academic boundaries.

5

COMPETITIVE ENGINEERING PORTFOLIO

Showcase your technical expertise through a high-impact project that demonstrates innovation, feasibility, and engineering excellence.

IMPACT DIRECTION

Shaping the Future of Sustainable Ocean Engineering

Inspiring the next generation of engineers to develop transformative technologies that advance renewable energy utilization, freshwater accessibility, and resilient coastal infrastructure.

WINNER PRIZE POOL

1ST PLACE

IDR 2.500.000

+ Merchandise and Certificate

2ND PLACE

IDR 1.500.000

+ Merchandise and Certificate

3RD PLACE

IDR 1.000.000

+ Merchandise and Certificate

Best Poster

IDR 500.000

+ Certificate

**Total Prize Pool:
IDR 5.500.000**

Competition Flow

This competition consists of two main stages designed to evaluate the quality of participant's ideas, the depth of their analysis, and their ability to present comprehensive solutions.

PRELIMINARY PHASE

In the Preliminary Phase, each team is required to submit a **comprehensive engineering design proposal** based on the competition theme. The proposal must clearly present the problem analysis, design objectives, conceptual design, system working principles, engineering calculations, technical feasibility, and implementation considerations.

Participants are expected to develop innovative mechanical design solutions that utilize ocean renewable energy to address real-world challenges in freshwater production and sustainable energy generation for coastal and remote island communities.

All submissions will be evaluated by a panel of judges based on design innovation, engineering feasibility, design analysis, sustainability, manufacturability, and the overall quality of the proposed solution.

The top 8 teams based on the proposal evaluation results will advance to the final stage.

FINAL PHASE

Participants who pass the selection process will present their proposals before a panel of judges. They will be evaluated based on their proposal quality, presentation, analysis, and ability to defend their ideas. Only 8 teams will advance to the final stage of the competition.

In addition to the **presentation** and **presentation slides**, participants are also required to submit a **poster** as one of the competition outputs.

The judging will also consider the implementation potential, solution impact, and business strategy before determining the final winner.

TIMELINE

PRELIMINARY PHASE

PRELIMINARY	KEY DATES	AGENDA	LOCATION
	31 May– 28 June	First Batch Registration	Online by Web
	29 June – 28 July	Second Batch Registration	Online by Web
	2 August	Deadline Submit Work	Online by Web
	28 August	Announcement of Finalists	Online by Web/Instagram

FINAL PHASE

FINAL	KEY DATES	AGENDA	LOCATION
	28 -30 August	Finalists Registration	Online by Web
	28 August - 6 September	Collection of Finalists Posters	Online by Web
	28 August - 24 September	PPT Collection	Online by Web
	22 - 23 September	Technical Meeting	Online
	26 September	Final Presentation	Offline, Undip Tembalang
	26 September	Awarding	Offline, Undip Tembalang

International participants are allowed to conduct their final presentation online.

General Rules

1. **Participant Status:** Participants must be active students enrolled in D3/D4/S1 programs, proven by a valid Student Identification Card (KTM) or official proof of active student status.
2. **Team Members:** Each team consists minimum of **3 (three)** and maximum of 5 (five) members from the same university.
3. **University Quota:** Each university is allowed to send more than one team.
4. **Team Leader:** Each team must appoint one member as the Team Leader who will serve as the main correspondent with the committee.
5. **Submission Limit:** Each team is only allowed to submit one work.
6. **Work Originality:** All submissions must be original, unpublished, and must not have been previously competed for or won any awards in other competitions.
7. **Theme Alignment:** The submitted work must align with the main theme and one of the predetermined subthemes.
8. **Language & Content:** The Proposal, Poster, and Presentation Deck (PPT) must be written in proper English and must not contain any SARA (ethnicity, religion, race, or intergroup sentiments) or offensive elements.
9. **Stage Mechanism:** The preliminary stage is conducted online, while the final stage is conducted offline at Universitas Diponegoro. Teams that qualify for the final stage must attend the Technical Meeting.
10. **Information Changes:** Any changes to the regulations or new announcements will be delivered during the Technical Meeting and officially communicated via the WhatsApp group and the team leader's email.
11. **Violation Sanctions:** Violation of the rules, predetermined formats, or late submission of files can cause points reduction or even disqualification from the competition.
12. **Judges' Decision:** The decision given by the judges during the competition is absolute and cannot be contested under any circumstance.

MECHANICAL DESIGN COMPETITION



The **general guidebook** provides information regarding competition regulations and procedures. **Detailed case descriptions and technical requirements** are available in the **Case Guidebook**, which can be accessed after team **registration is completed**.

Registration Flow

Participants are required to complete the registration process through the official website:

<https://mech-one-2026-website.vercel.app>

The registration process must be carried out only by the team leader.

Each participant is required to do the all of the **registration requirements below:**

1. Student ID Card / Proof of Active Student Status (All Members)
2. Follow @mech.one_undip (All Members)
3. Twibbon Post with Mention and 3 Tagged Friends (Team)
4. Poster Sharing to 3 Social Media Groups (All Members)
5. Instagram Story Mentioning @mech.one_undip (All Members)
6. Upload Compiled Proof of Requirements (PDF/JPG)

Registration and Submission Procedure:

1. Create an Account and Log In

Access the competition website <https://mech-one-2026-website.vercel.app> , create an account, and log in using the registered credentials.

2. Complete Your Profile

Complete your profile information through the account menu and upload all required documents as specified.

3. Register the Team

Register your team according to the selected competition category by completing the registration form, making the required payment, and uploading the proof of payment.

4. Access the Case Guidebook

Upon successful team registration, participants will gain access to the **Case Guidebook**, which contains the case details, technical requirements, and additional information necessary for preparing the submission.

5. Submit the Competition Entry

Upload and submit the required work/proposal through the submission system before the specified deadline.

*Once the team received the confirmation of registration, the leader is required to join the **WhatsApp group** via the link provided in the **email**.*

Confirmation email will be sent within maximum 2x24 hours after submission.

Preliminary Phase

The output of the first mandatory phase for all participants is **Proposal, CAD Design Package, and Drawings**. Each team is required to **register through on website** between **31 May–28 July**, with the **submit work Deadline** on **2 August 2026 at 23:59 GMT+7**. Failure to submit the Proposal within the specified timeframe will result in the team being disqualified from the competition.

- The proposal must be written in **proper English language**
- Proposal must be submitted with an **originality statement** and **Similarity Index** on the last page

Document Format

- Font type: Times New Roman
- Font size: (Title: 14 Bold) (Subtitle and body: 12)
- Line spacing: 1,5
- Alignment: Justify
- Margin: 3,5(top), 3(bottom, right, left)
- Page number: Bottom right corner
- Paper size: A4
- File format: PDF
- The file name of the proposal can be found in the **submission format**
- **Maximum 10 pages** (excluding cover page, references, appendices, and originality statement).

Content Format

- The Proposal must include, but not limited to:
- The cover page
- Executive summary
- Introduction
- Design Concept & Innovation
- Design Analysis
- Benefits & Sustainability
- Conclusion
- References
- Appendices (required)
- Originality statement
- Maximum Turnitin Similarity Index: **23%** (excluding references and bibliography).
- (The originality statement and proposal template can be accessed below)

Template of Document (Proposal, Originality Statement, twibbon, etc):
<https://bit.ly/PRELIMINARYMDCMECHONE2026>

Note

- The proposal must remain neutral and unbiased toward any institution, and must not contain any offensive content, discriminatory remarks, or elements related to ethnicity, religion, race, or intergroup sentiments.
- The proposal must be original, free from plagiarism, have not been published on any media platforms, and have not been submitted to or awarded in any previous competitions.
- The proposal that has been submitted can not be revised

Scoring Table

The general guidebook provides information regarding competition regulations and procedures. **Detailed case descriptions and technical requirements** are available in the **Case Guidebook**, which can be accessed after team **registration is completed**.

PENALTIES

Late Submission

Proposal submissions received after the deadline will be penalized by the point reduction of 10 points per hour. Any submission made more than two (2) hours after the deadline will result in disqualification.

Exceeding Page Limit

Proposal that exceed the page limit will be penalized with a 10 points deduction.

Code of Conduct Violation

Any submission or conduct containing offensive content, discriminatory remarks, or elements related to ethnicity, religion, race, or intergroup sentiments will result in immediate disqualification.

Re-Registration Requirement

Finalists who fail to complete the re-registration process within Three (3) days of the announcement will be disqualified

Final Decision

All decisions made by the judges and organizing committee are final and binding. Further provisions may be determined by the organizing committee if necessary.

STILL CONFUSED?

Feel free to contact the CP from our Mech ONE Admin team.

Contact Person

 **WHATSAPP:**

CP 1: Aldi

No. Whatsapp: 0851-5689-1196

CP 2: Hugo

No. Whatsapp: 0812-5757-8953

Presented by

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