

PROCESS 2.0

*Progressive Research of
Chemical Engineering
Solution Summit*

ABSTRACT & REGISTRATION **BOOKLET**



AICHE
Institut Teknologi Bandung Student Chapter

*process and
scale up 2.0*

AIChE ITB SC *Overview*

The American Institute of Chemical Engineers (AIChE) ITB Student Chapter, established on October 2, 2015, is Indonesia's pioneering AIChE Student Chapter, proudly recognized as an International Student Chapter. Our mission is to empower members, equipping them with essential skills and a robust professional network that sets the stage for thriving careers in the chemical engineering industry. By connecting students to a network of industry leaders, we help build a strong foundation for their future.

At **AIChE ITB SC**, we are committed to helping our members reach new heights by delving into the world of chemical engineering and related disciplines. Our focus is on fostering personal and professional growth through meaningful connections, both locally and globally, and encouraging collaboration with international AIChE chapters and other domestic organizations.

This chapter is a dynamic space where students can grow through engaging programs, partnerships with other student chapters, and connections with industry professionals. Open to all undergraduate students, **AIChE ITB SC** offers a wealth of opportunities and benefits to help students unlock their potential and shape their future in the field.

Process 2.0 Overview

PROCESS 2.0 (Progressive Research of Chemical Engineering Solution Summit) is the second annual competition organized by the AIChE ITB Student Chapter, aiming to drive impactful innovation in sustainability. This year, the competition embraces the theme "Advancing Sustainability: Shaping the Future, Redefining Waste, and Enhancing Smart Living", which closely aligns with several United Nations Sustainable Development Goals (SDGs), including SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action).

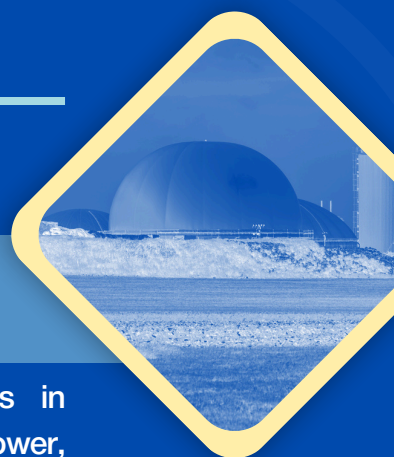
Participants are challenged to develop solutions that reimagine waste management and promote sustainable, smarter living practices. The competition offers two categories: **Product Innovation** and **Chemical Engineering Paper**. Undergraduate students are encouraged to present innovative concepts and practical applications that address these SDGs, aiming to create a lasting impact on sustainability. PROCESS 2.0 provides a platform for students to apply their chemical engineering knowledge, not just theoretically but in ways that create real-world solutions, driving progress toward a more sustainable and resilient future.

Chemical Engineering Paper Mechanism

Subtheme _____

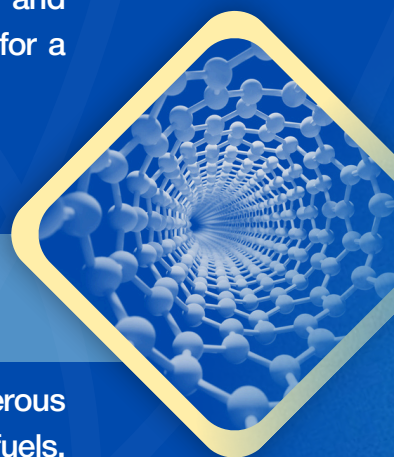
Innovations in Renewable Energy Sources and Advanced Technologies Applications

This sub theme encourages participants to explore advancements in renewable energy by investigating new energy sources, such as nuclear power, and bioenergy from unconventional sources. Additionally, it emphasizes optimizing existing renewable technologies, including enhancing geothermal processes, developing advanced materials for energy capture, and improving integrated renewable energy systems. By focusing on both innovation and optimization, this sub theme aims to contribute to sustainable solutions for a cleaner energy future.



Role of Catalysis in Everyday Products

Explores how catalytic processes are crucial in the production of numerous household items and essential in manufacturing products like detergents, fuels, and plastics. This subtheme encourages research into the specific catalytic processes involved in everyday items, examining how they improve production efficiency, reduce energy consumption, and minimize environmental impact. By understanding these processes, researchers can propose ways to enhance sustainability in the production of widely-used consumer goods.



Chemical Engineering Paper Mechanism

Subtheme _____

Applications of Nanomaterials in Everyday Life

Explore the use of nanomaterials in improving the functionality and sustainability of everyday products. Nanomaterials, with their unique properties at the atomic scale, are increasingly applied in various fields, from enhancing the strength and durability of materials in construction to improving the efficiency of drug delivery systems and creating more effective personal care products. Research in this sub theme could focus on the role of nanotechnology in revolutionizing consumer goods, improving energy storage systems, or advancing environmental remediation techniques, all of which have a significant impact on daily life.



Advancements in Bioprocessing for Sustainable Product Development

This sub theme invites research into the role of bioprocesses in creating sustainable products. Participants can explore how biological systems, such as fermentation, microbial cultures, and enzyme-driven processes, are utilized in industries ranging from pharmaceuticals to food production. This subtheme encourages research on optimizing bioprocessing techniques to create products like biofuels, bioplastics, and biodegradable materials, contributing to a more sustainable and eco-conscious industry.



Product Innovation Mechanism

Subtheme _____

Green Chemistry for Everyday Product

Invites participants to explore and innovate sustainable alternatives to conventional household products through the principles of green chemistry. This involves the design and synthesis of safer, biodegradable, and non-toxic cleaning agents, personal care items, and textiles that minimize environmental impact and reduce reliance on harmful chemicals. Innovations could focus on utilizing renewable resources, optimizing processes to lower energy consumption, and developing formulations that maintain efficacy while being eco-friendly. The goal is to create products that not only enhance consumer safety and health but also contribute to a more sustainable future by reducing pollution and waste in everyday life



Smart Living for Energy Management

Focuses on developing innovative systems, devices and automation to enhance sustainability in daily life. Participants are encouraged to create solutions such as smart energy management systems that optimize energy usage and intelligent water conservation technologies that minimize waste. Make sure to enable the design and optimization of the systems, developing sustainable materials, analyzing resource flows for efficiency, and using modeling tools to predict performance.

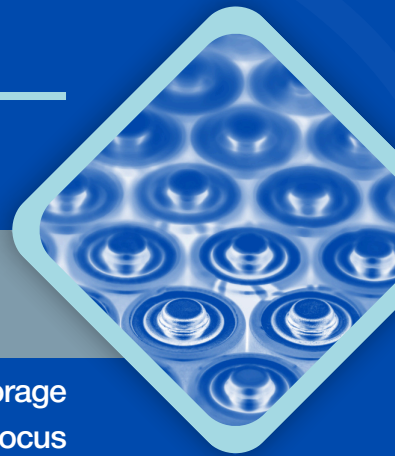


Product Innovation *Mechanism*

Subtheme _____

Battery and Energy Storage

Explore cutting-edge innovations in battery technology and energy storage systems aimed at improving efficiency and performance. Research can focus on optimizing existing battery chemistries, such as lithium-ion, solid-state, or flow batteries, to enhance energy density, lifespan, and charging rates. Participants are also invited to investigate advanced materials and methods that improve energy storage capacity, thermal management, and overall sustainability of energy systems.



Innovative Approaches to Waste Treatment and Resources Recovery

Explore creative and effective methods for treating various types of waste, emphasizing the transformation of waste into valuable resources. Participants can investigate technologies such as advanced recycling methods, bioconversion processes, and innovative waste-to-energy solutions. The focus is on developing sustainable practices that minimize environmental impact while maximizing resource recovery, including materials, energy, and nutrients.



Timeline



General *Rules*

1. Participants are an active undergraduate student from any major at universities in Indonesia are eligible to participate.
2. All of the participants are required to complete the registration form and pay the registration fee based on the phase of registration (For full paper stage).
3. Each team consists of a minimum of 2 people and a maximum of 3 people.
4. Each team is allowed to have members from different majors, but all members must be from the same University or Institute.
5. The Abstract and Full Paper session will be conducted Online and The final session will be conducted Offline at Bandung Institute of Technology.
6. The title submitted for the Abstract must remain consistent for both the Full Paper and Final session and has to be related to the main and sub-theme of the PROCESS 2.0 competition.
7. Members who have been registered cannot be replaced.
8. Every team is prohibited from submitting more than one abstract.
9. The abstract title should solely reflect the participant's idea, and a completed "Statement of Originality" form is required for verification purposes.
10. The submissions must not contain any sensitive elements, such as racism and pornographic content.
11. All submitted data will be recorded in our database and will not be shared or distributed.

Competition

Stages & Event Series

1

Abstract Stage (25 November - 13 December 2024)

The initial stage involves Abstract Submission by the participating teams. In this stage, each team must submit their abstracts for evaluation. These abstracts are then reviewed, and through a process of gradual elimination, only the teams with the best abstract will advance.

During this stage, registered teams need to write an abstract that identifies the challenges from the competition's theme, the solution to the challenges, and the outcomes that the team may expect. Each team must write the abstract with the following criteria:

- The abstract must elaborate on the team concepts, starting from the problem statements to solutions that align with the AiChE Summit's theme.
- The abstract must be written in accordance with the format that was given by the committee.
- The abstract must consist of min. 150 words and max. 300 words.
- Paper size: A4 portrait
- Language: English or Indonesia (Just use one language in the entire competition stages)
- Margin: 4 : 3 : 3 : 3 (left: top: right: bottom)
- Font type: Times New Roman
- Font Size: 12 and 14 (Title font size)
- Line Spacing: 1.0
- Alignment: Justify
- Bibliography: APA 7th edition style
- Abstracts that passed the preliminary stage will be sent to the Leader's email.
- The minimum content of the abstract is an introduction that consists of background, method, goals, and recommendations for the discussion or results obtained, as well as conclusions
- The abstract must be submitted in (.pdf) file to <https://bit.ly/RegistToProcess2> with the subject Team Name_Abstract_ProcessScaleUP2

Competition Stages & Event Series

1

Abstract Stage (25 November - 13 December 2024)

- You can access the abstract format through this link:
- Abstract format: <https://bit.ly/AbstractFormatProcess2>
- The abstract should attach the statement of originality which can be accessed through this link: <https://bit.ly/StatementOfOriginalityProcess2> and have to send the file to registration link with the subject Team Name_StateOriginality_ProcessScaleUP2
- To confirm the Statement of Originality, participants must use the IDR 10,000 stamp for validation.

Abstract Assessment Criteria

Aspect	Valuation (%)
1. Format Suitability	5
2. Content	80
a. Theme Compatibility	10
b. Background Problem	20
c. Innovative, Creativity, and Originality of the Solution	30
d. Sustainability evaluation	20
3. Conclusion	15

Competition *Stages & Event Series*

2

Semifinalist Announcement (30 December 2024)

After participants submit their abstract, the event will continue to the assessment period and collective decision by the judges. The selected abstract will be advanced through the next stage, which is the **Full Paper Stage**. The selected teams will be announced by the committee through the team leader's email and have to pay for full paper stage as follows:

- Normal registration (31 December 2024 - 7 January 2025) : IDR 120,000.00
- Extended registration (8 January 2025 - 13 January 2025) : IDR 145,000.00

3

Full Paper Stage (31 December 2024 - 13 January 2025)

The following stage is the full paper submission phase. At this stage, every team that successfully navigated the abstract submission phase is required to develop a full paper addressing the issues they identified in their abstracts. These full paper will undergo a judging process, where teams will be progressively filtered out until only the most exemplary teams with the best full paper remain and advance to the Grand Final.

During this stage, teams need to write a full paper that identifies the challenges from the competition's theme, the solution to the challenges, and the outcomes that the team may expect. Each team must write a full paper with the following criteria:

- The problem-solving strategy in the full paper is recommended to demonstrate background, problem-solving, solution with financial analysis, impact and risk assessment, and implementation strategy.
- Paper size: A4 portrait
- Language: English or Indonesia (Just use one language in the entire competition stages)

Competition *Stages & Event Series*

3**Full Paper Stage (31 December 2024 - 13 January 2025)**

- Margin: 4 : 3 : 3 : 3 (left: top: right: bottom)
- Font type: Times New Roman
- Font Size: 12 and 16 (Title font size)
- Line Spacing: 1.5
- Alignment: Justify
- APA 7th edition

Full Papers that passed the Full Paper submission stage will be sent to the Leader's email.

During the semifinal stage, it is recommended that the Full Paper should exhibit the following:

Product Innovation:

1. Background analysis
2. Problem identification
3. Solution
4. Financial Analysis
5. Impact and Risk Assessment
6. Implementation strategy
7. Conclusion and Suggestion

Chemical Engineering Paper:

1. Background analysis
2. Problem Identification
3. Solution
4. Conclusion and suggestion

Competition *Stages & Event Series*

3**Full Paper Stage (31 December 2024 - 13 January 2025)**

Full Paper Content:

1. Title's page (Including university's logo and name, team members, city and year)
2. Validation page and it can be accessed through: <https://bit.ly/ApprovaSheetProcess2>
3. Statement of originality
4. Foreword
5. List of contents
6. List of tables (if there are any)
7. List of figures (If there are any)
8. Abstract
9. Chapter 1 preliminary : The preliminary section will contain background of the research, problem statement and goals of research, and the benefit of the research.
10. Chapter 2 literature review : A literature review is a conceptual framework that includes the research journal, books, or other credible sources' limitations and theory.
11. Chapter 3 research method : The research method outlines the appropriate processes or procedures that are utilized while producing a research paper that clearly defines the techniques of gathering information and organizing files, analyzing information, creating a resume, and the conceptual framework for literature review method. The research methodology comprises an examination of the observations made, including the time and location of the observations, the materials and equipment utilized, the preparation process, the specifics of the production costs, the data gathering techniques, the data processing steps, and the data analysis.
12. Chapter 4 results and discussion : It includes a description of study findings, results, and development concepts based on facts or information and a literature evaluation that are in line with the issue statement and objectives or comprises the information and findings of the study was carried out.
13. Chapter 5 conclusion and suggestion : Conclusion contains an analysis of the problems and addresses the objectives. Suggestions are presented specifically in line with policy implications.
14. Bibliography

Competition *Stages & Event Series*

3**Full Paper Stage (31 December 2024 - 13 January 2025)**

UNIVERSITY
LOGO

**PROCESS: Progressive Research of Chemical Engineering Solution
Summit**

Title

Arranged by:

Leader's name (ID Student)

Member 1 (ID Student)

Member 2 (ID Student)

University Name

University City Name

Year

Competition

Stages & Event Series

3**Full Paper Stage (31 December 2024 - 13 January 2025)**

Full Paper Assessment Criteria

Aspect	Valuation (%)
1. Format Suitability	5
2. Content	85
a. Theme Compatibility	10
b. Background Problem	15
c. Innovative, Creativity, and Originality of the Solution	30
e. Sustainability evaluation	20
f. Cohesion and Coherence	10
3. Conclusion and Suggestion	10

Competition

Stages & Event Series

4

Finalist Announcement (25 January 2025)

There will be 5 finalist teams for each competition and it will be announced on 25 January 2025 based on valuation from the semifinal stage.

5

Coaching Session (1 - 2 February 2025)

In this stage, all finalists will be provided coaching sessions with comprehensive guidance and preparation for presentation day. The main topics of this session will be technical meetings and mentorships to make sure that finalist provide their best presentations, including presentation format and equipment setup on improving presentation skills and technical content.

6

Final Stages (15 - 16 February 2025)

Final stages will consist of three main events:

a. Presentation Day

This stage will provide you the opportunity to report on the results of your creative endeavor and give each team a presentation. For product innovation competition, finalist are required to show the product innovation/prototype. The final participant score will be determined using the following choice matrix. A total score that is reported and ranked will be produced by adding the scores of each scoring criterion.

Competition

6**Final Stages (15 - 16 February 2025)**

Presentation Assessment Criteria

Aspect	Valuation (%)
1. Design Creativity of Presentation	5
2. Presentation Technique	50
a. Clarity of Delivery	10
b. Systematic presentation and content	10
c. Content Explanation Quality	20
d. Accuracy	10
3. Validity and comprehension	45
a. Depth of Understanding	25
b. Factual accuracy of the answer	10
c. Substantiation and Clarification	10

Competition

6**Final Stages (15 - 16 February 2025)**

Prototype Assessment Criteria (Product Innovation Competition)

Aspect	Valuation (%)
1. Innovation	40
a. Novelty Level	25
b. Prototype Originality	15
2. Sustainability and Availability	20
a. Implementation Potential	10
b. Environmental and Social Impacts	10
3. Cost and Efficiency	25
a. Efficiency and Capacity	15
b. Operational Consistency	10
3. Creativity of Design and Display	15

Registration Mechanism

Abstract Registration

1. Registration is open through google form that can be accessed on: <https://bit.ly/RegistToProcess2> no later than 13 December 2024.
2. The participants are required to post a twibbon on Instagram. The twibbon template that can be accessed on: <https://bit.ly/TwibbonProcess2>
3. The participants are required to post a poster on Instagram story. The poster that can be accessed on: <https://bit.ly/PosterProcess2>
4. Participants are obligated to create an email account to enter the competition and complete the verification through the registered email account
5. Participants are required to fill in the team's data
6. The Preliminary Stage registration is fully free

Full paper Registration

1. Semifinalist who passed the abstract stage are obliged to submit full paper in pdf format with the subject Team Name_Full Paper_ProcessScaleUP2
2. After passing the abstract selection, each team are required to make the payment and must be submitted with full paper file through the link. Proof of payment must be in pdf. file with the subject Team Name_Proof Of Payment_ProcessScaleUP2

The payment date no later than 13 January 2025.

- Normal registration (31 December 2024 - 7 January 2025) : IDR 120,000.00
- Extended registration (8 January 2025 - 13 January 2025) : IDR 145,000.00

Payment can be made via:

- BRI (0593 0102 0934 501) a.n. Jefri Gunawan
- BCA (8780394855) a.n. Jefri Gunawan
- GOPAY (085848688026) a.n. Jefri Gunawan

Note: Payments must include the code 009. For example, IDR 145,009.00

Prize

win up to :

15 million

IDR

+ TROPHY
+ CERTIFICATE

Contact *Person*

Cifolia (TK'22)

087757851939 (Whatsapp)

Anggi (TK'23)

08118886108 (Whatsapp)