

SHAPING PERSPECTIVES IN ENGINEERING

ENISIGHT

KOE NEWSLETTER

ISSUE 1 | MARCH 2026

A photograph of the Space Shuttle Discovery being launched from the Kennedy Space Center. The shuttle is white with a large orange external tank and two white solid rocket boosters. It is ascending vertically, leaving a large plume of white smoke and fire at its base. To the left of the shuttle, the complex yellow metal structure of the Mobile Launcher Platform is visible, supported by a tall tower. The background is a clear blue sky.

NATIONAL ROCKET LAUNCHER

Reality or Fantasy?

Koe E-Newsletter

First Issue 2026

Annual Publication

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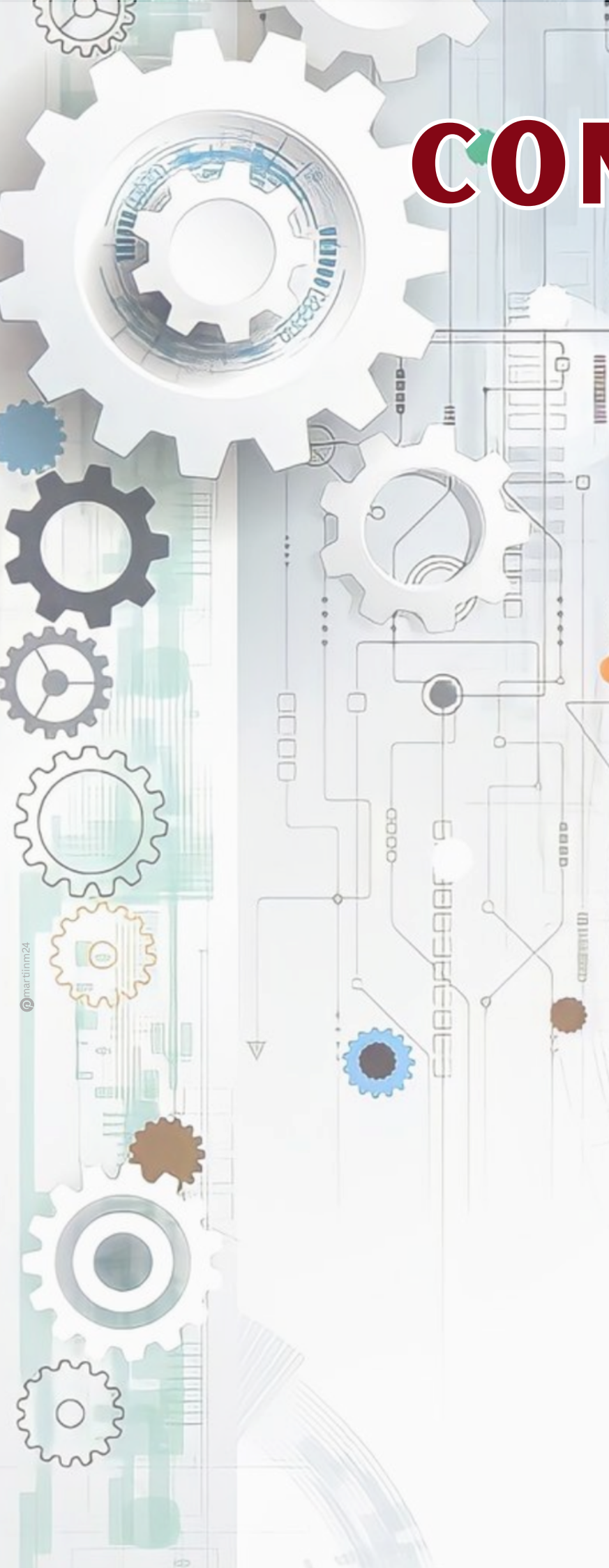
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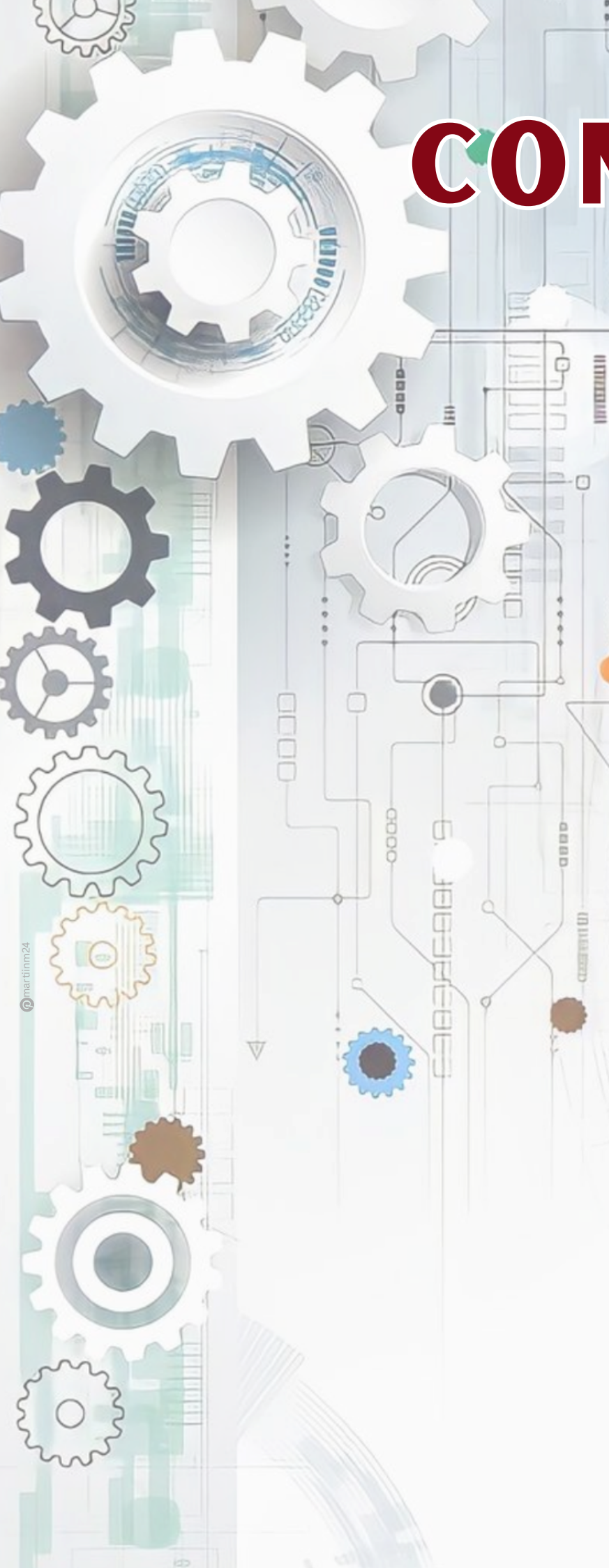
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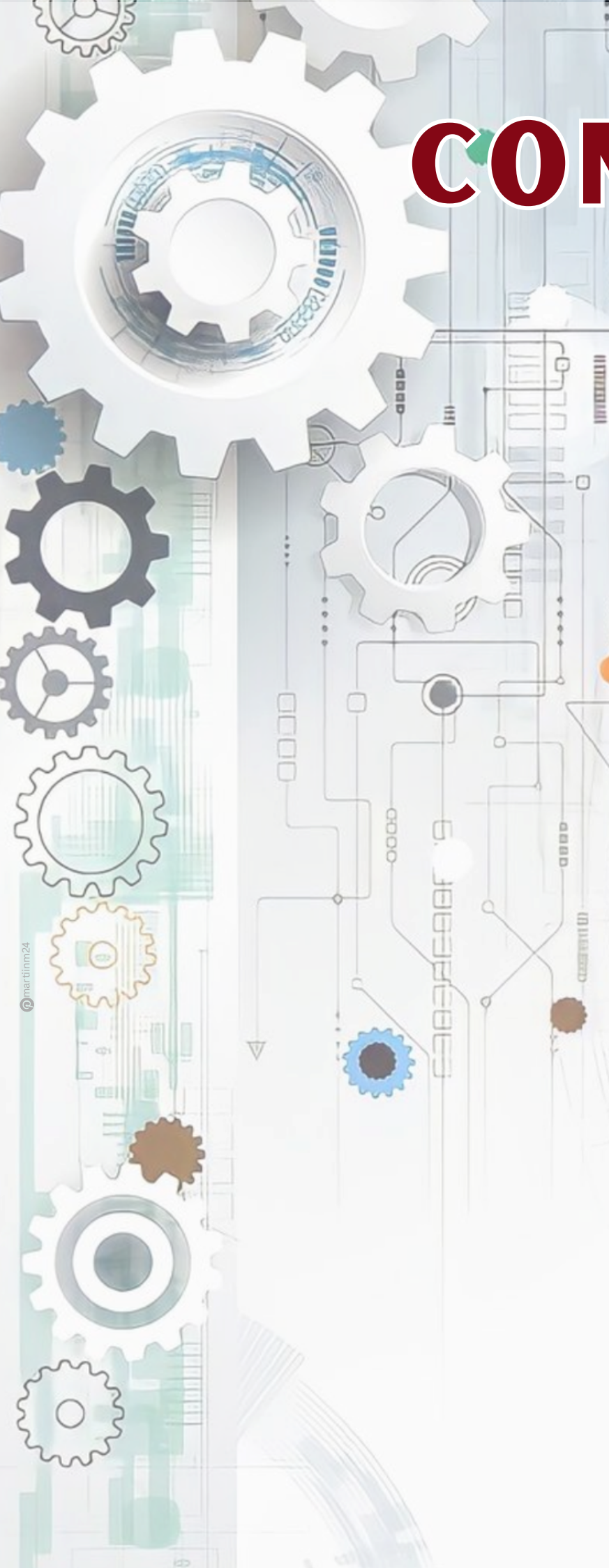
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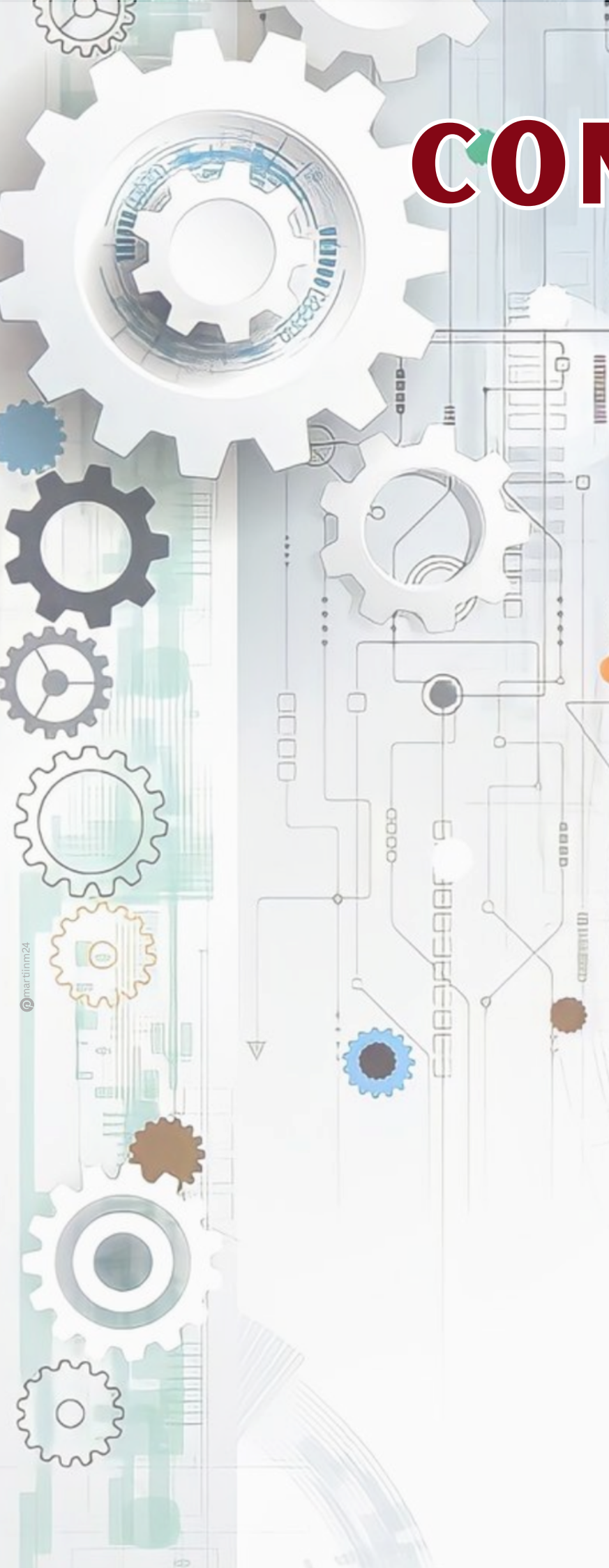
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ENSIGHT

FROM THE EDITOR

Assalamu'alaikum warahmatullahi wabarakatuh and greetings

It is with great honour and excitement that we present the first-ever edition of the Kulliyyah of Engineering's e-newsletter. This marks a new chapter in our efforts to strengthen engagement and showcase the vibrant academic and professional life within our Kulliyyah.

This newsletter is envisioned as a platform to highlight key achievements, research innovations, student activities, staff appreciation, and collaborative initiatives that reflect our commitment to excellence and holistic development. It is a space where we celebrate our people and their contributions to the engineering world and beyond.

We hope this publication will inspire greater connectivity among our students, staff, alumni, and partners. Your feedback, ideas, and stories are most welcome as we continue to grow this initiative together.

Thank you for your support and participation. May this newsletter serve as a meaningful reflection of our shared values and aspirations.

Dr. Muhammad Hafiz bin Jahare
Editor-in-Chief



FROM THE DEAN'S DESK

Assalamu'alaikum warahmatullahi wabarakatuh and warm greetings to all members of the Kulliyyah of Engineering (KOE) community—our students, academic and administrative staff, alumni, industry partners, and friends of the Kulliyyah.

It gives me great pleasure to welcome you to the first edition of the Kulliyyah of Engineering e-Newsletter. This inaugural issue marks an important milestone in our journey as a dynamic and forward-looking engineering faculty within the International Islamic University Malaysia (IIUM). The launch of this e-newsletter reflects our commitment to strengthening communication, fostering a shared sense of purpose, and celebrating the collective achievements of our KOE family.

In an era defined by rapid technological advancement and global interconnectedness, effective communication is no longer a luxury—it is a necessity. This e-newsletter serves as a dedicated platform to keep our stakeholders informed of key developments, academic and research milestones, student achievements, community engagement initiatives, and strategic collaborations with industry and international partners. More importantly, it is a space to tell our story: who we are, what we stand for, and how we aspire to shape the future through engineering education and innovation.

At KOE, we take pride in our mission to produce holistic, competent, and ethically grounded engineers, guided by the IIUM vision for tawhidic epistemology and vision for ummatic excellence. Our programmes are designed not only to meet rigorous professional and accreditation standards, but also to nurture engineers who are conscious of their responsibilities to society, the environment, and the ummah. Engineering, in our worldview, is not merely about solving technical problems—it is about serving humanity with wisdom, integrity, and compassion.

This e-newsletter also comes at a time when KOE continues to strengthen its role as a hub of impactful research and innovation. Our academics and postgraduate students are actively contributing to cutting-edge fields such as sustainable engineering, biomedical signal processing, artificial intelligence, smart systems, and Industry 4.0 technologies. At the same time, we remain firmly rooted in community engagement, translating knowledge into meaningful outreach programmes that benefit schools, local communities, and underserved groups. These efforts reflect our belief that true excellence is measured not only by publications and rankings, but by positive societal impact.

To our students, this platform belongs to you as much as it does to the faculty. Your academic pursuits, leadership roles, entrepreneurial initiatives, competitions, and volunteerism are integral to the vibrancy of KOE. I encourage you to see this e-newsletter as a source of inspiration and a reminder that your journey here is part of a larger mission to become engineers who lead with purpose and values.

I would also like to record my sincere appreciation to the editorial team, contributors, and all those involved in bringing this first issue to fruition. Your dedication and creativity have made this vision a reality. May this e-newsletter continue to grow in quality, relevance, and reach, becoming a unifying thread that connects generations of KOE members—past, present, and future.

As we move forward, let us continue to work together in the spirit of collaboration, excellence, and trust. May Allah SWT bless our efforts, guide our intentions, and grant us success in fulfilling our amanah as educators, learners, and engineers for the betterment of society.

Thank you, and I hope you find this inaugural issue informative, engaging, and inspiring.

Wassalamu'alaikum warahmatullahi wabarakatuh.



Assoc. Prof. Dr. Khairul Azami Sidek
Dean
Kulliyyah of Engineering

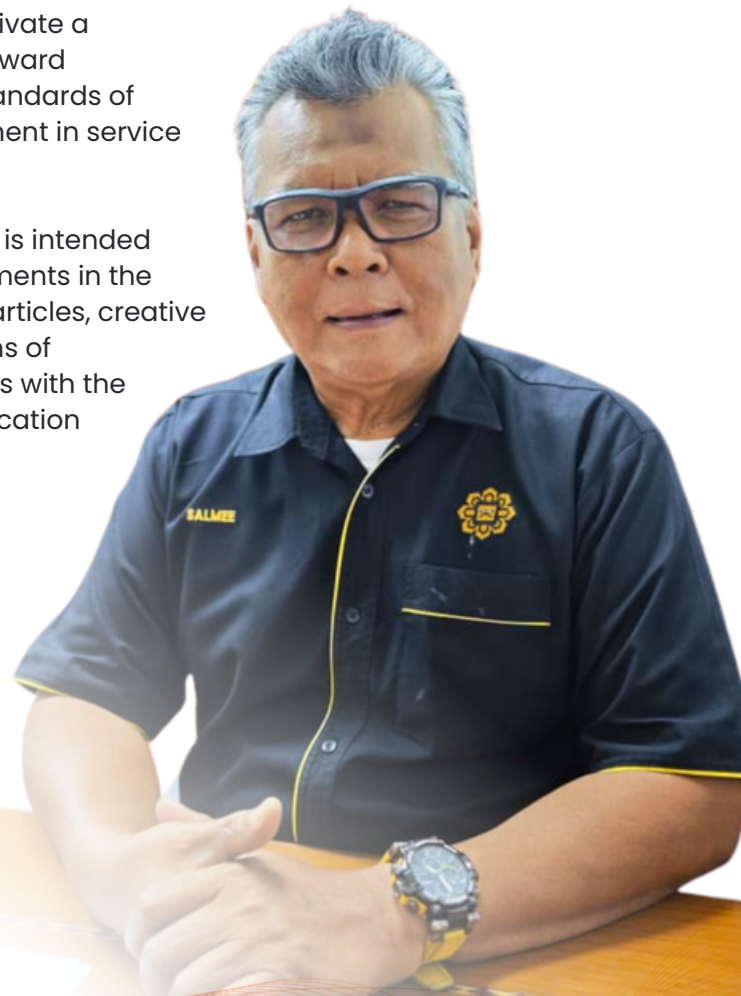
The Acting Senior Deputy Director View

First of all, I would like to express my deepest gratitude to Allah S.W.T. for His grace and blessings, which have enabled us to publish the Newsletter of the Kulliyah of Engineering. Since its establishment in 1998, the Kulliyah of Engineering (KOE) has continued to grow as a centre of knowledge rooted in Islamic values, engineering, and scientific excellence. Over the years, KOE has expanded its academic and research scope across various disciplines, including technical, chemical, electrical, and computer engineering. From its inception until today, the Kulliyah has achieved numerous milestones that have elevated its name and reputation at both the national and international levels.

The true measure of a Kulliyah's success lies in its people. One of the key indicators of success for any university Kulliyah is the strength and contribution of its students and lecturers. Both play an essential role in shaping the progress and achievements of the Kulliyah. When KOE was first established, it began with only a small number of students – yet today, it has grown into a thriving academic community of more than 2,000 students.

Throughout its journey toward success, the Kulliyah has implemented many strategic initiatives aligned with the University's vision and mission. The Kulliyah continues to stand firmly behind the University in its commitment to producing well-balanced graduates. Most recently, the introduction of the Tawhidic Epistemology framework aims to cultivate a Ummah-centric mindset – one that aspires toward Ummah excellence, embodying the highest standards of ethical, intellectual, and professional achievement in service to the Ummah.

In this regard, the publication of the newsletter is intended to capture and commemorate significant moments in the Kulliyah's journey – whether through written articles, creative sketches, intellectual discussions, or other forms of expression that share ideas, reports, and stories with the IIUM community. It is also hoped that this publication will serve as both a record and a legacy of the Kulliyah's achievements, contributing to the continuous growth and excellence of the IIUM Garden of Knowledge and Virtue.



MOHD SALMEE BIN HJ. MOHD SARI
Acting Senior Deputy Director
Kulliyah of Engineering



Photo by ROHANUM JOHARI

KULLIYAH OF ENGINEERING

A Global Centre of Innovative Engineering Education and Research with Values and Professional Ethics

Boiling Water with Sunlight? The Cool Science Behind Solar Vapor Generation



By: Dr Syazwani Mohd Zaki (MME)

Imagine this: you leave a bowl of seawater under the sun, and by evening, you've collected fresh, drinkable water, no fire, no electricity, just sunlight. Sounds like a survival trick from a sci-fi movie, right?

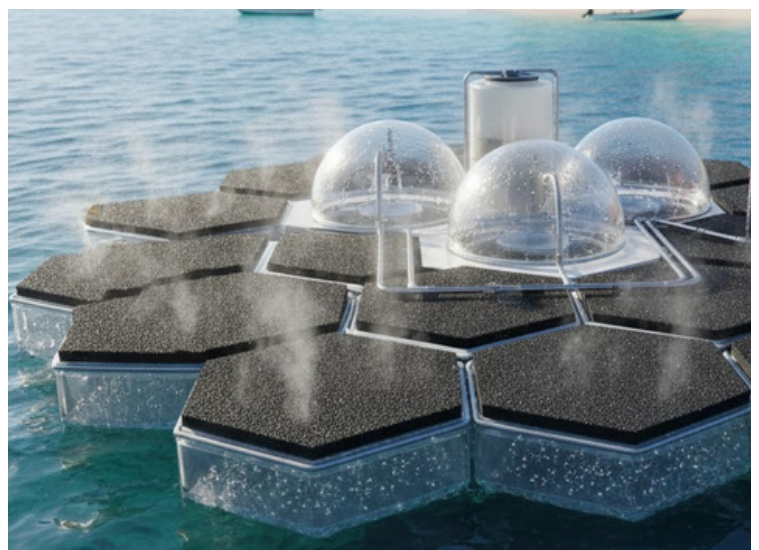
Welcome to the fascinating world of Solar Vapor Generation (SVG) where researchers are literally turning sunlight into steam. At its core, SVG is a clever twist on an age-old process: evaporation. Instead of waiting for the sun to slowly warm a whole body of water, engineers have found ways to focus the heat right where it's needed at the surface. Using special light-absorbing materials, sunlight is captured and converted directly into thermal energy, which vaporises water almost instantly. It's evaporation on steroids, clean, fast, and surprisingly efficient.

Here's the fun part: some advanced SVG systems can achieve over 90% solar-to-vapour efficiency, meaning almost all the sunlight that hits the surface is converted into usable steam. To put that in perspective, most commercial solar panels only convert about 15-20% of sunlight into electricity. Pretty impressive for something that doesn't even need wires. So, what makes it work? The magic lies in the materials. Imagine a floating sponge, soft, porous, and dark in colour, sitting on the water's surface. The top layer absorbs sunlight, heating up fast. The middle layer acts like a straw, pulling up water through capillary action. The bottom layer prevents heat from escaping into the surrounding bulk water. This three-part design ensures maximum heat where it counts.

Researchers have taken this concept to the next level using carbon black, graphene, metallic nanoparticles, and polymer hydrogels. Hydrogels, for example, act like watery jelly that stores and releases water steadily, while 2D nanomaterials can absorb almost every wavelength of sunlight despite being thinner than a human hair. Some prototypes even have self-cleaning and salt-resistant properties, making them perfect for desalinating seawater.

Researchers are developing floating desalination units that could provide fresh water to coastal villages without a single drop of fuel. Researchers at MIT have estimated that when scaled to the size of a small suitcase, the system has the potential to produce approximately 4 to 6 litres of potable water per hour. Furthermore, it is anticipated to operate effectively for several years before requiring the replacement of any components. At this scale and performance level, the system is positioned to deliver drinking water at a rate and cost that is more economical than that of municipal tap water.

Beyond its clever design, what makes SVG so appealing is its simplicity and sustainability. It doesn't rely on electricity grids, expensive filters, or complex maintenance. It just needs sunlight, something freely available almost everywhere. As global demand for clean water increases, technologies like this could play a significant role in addressing water scarcity and supporting off-grid communities. So, the next time sunlight hits your face, think of it as more than just warmth. That same energy could one day power your home, charge your gadgets, and even provide clean water for your glass. Who knew that boiling water with sunlight could be this cool?



STRENGTHENING ACADEMIC TIES THROUGH INDUSTRIAL TRAINING AND RESEARCH COLLABORATION AT MING CHI UNIVERSITY OF TECHNOLOGY, TAIWAN



By: Dr Syazwani Mohd Zaki (MME)

From October 1st to 4th, 2025, the Department of Manufacturing and Materials Engineering (MME), IIUM, strengthened its international collaboration through an academic visit to the Centre for Plasma and Thin Film Technologies, Ming Chi University of Technology (MCUT), Taiwan. The visit was part of the Engineering Industrial Training (EIT) supervision for two of our Materials Engineering students, Aishatun Naajihah Azman Shah and Sharifah Alia, who successfully completed their internship under the guidance of Prof. Park Man Yiu.

As the EIT Coordinator for the Materials Engineering Programme, I had the opportunity to evaluate their internship presentations and witness firsthand their involvement in advanced materials research, particularly in Atomic Layer Deposition (ALD), a frontier technique widely used in thin film technologies and semiconductor applications. It was inspiring to see how both students had developed strong technical knowledge and research confidence through this exposure.



The talk highlighted the development of PVA-chitosan/polyaniline hydrogels for solar-driven water purification, an innovation aimed at addressing global water scarcity using sustainable materials. The engaging discussion that followed, especially with MCUT postgraduate students, demonstrated the shared research enthusiasm between our institutions. My colleague, Dr. Saadah Ahmad So'wi, also from the MME Department, was similarly invited as a Visiting Lecturer to present her research on nanofluids and their applications in thermal management systems. Her session sparked valuable technical discussions and potential research synergies.



Following the evaluation session, I was invited as a Visiting Lecturer to deliver a 50-minute research talk titled "Clean Water from Sunlight: A Breakthrough in Hydrogel Technology."



MING CHI INTERNATIONAL MATERIALS FORUM

Speaker

Prof. Syazwani Mohd Zaki
Assistant Professor, Department of Manufacturing and Materials Engineering (MME)
Kulliyah of Engineering, International Islamic University Malaysia (IIUM)

Prof. Sa'adah Ahmad Sowi
Assistant Professor, Department of Manufacturing and Materials Engineering (MME)
Kulliyah of Engineering, International Islamic University Malaysia (IIUM)

Lecture topic

Prof. Syazwani Mohd Zaki
Clean Water from Sunlight : A Breakthrough in Hydrogel Technology

Prof. Sa'adah Ahmad Sowi
Why Fluids Matter : Exploring Properties, Simulations, and Next-Gen Thermal Applications.

Time
2025/10/02 (THU.)
PM 02:00 - 03:00

Location
薄膜二館3樓 會議室
3F, Thin Film Technologies Building II,
Conference room

Organized by

電漿與薄膜科技中心
Plasma and Thin Film Technology Center

明志科大材料工程系
Department of Materials Engineering, Ming Chi University of Technology

Beyond the lectures, we were warmly hosted by Dr Yiu and Prof. Huang, Head of the Department of Materials Engineering at MCUT. Their hospitality extended to an insightful tour of several cutting-edge research facilities, including the Research Centre for Intelligent Medical Devices, where we had the pleasure of meeting Dr Mani Govindasamy and his team. The exposure to MCUT's advanced laboratories offered us a closer look at Taiwan's strengths in materials innovation, plasma technology, and device fabrication.

A particularly memorable highlight of the trip was the visit to the Plastic Museum operated by the Formosa Group, where Prof. Huang personally guided us through the exhibition. The museum presented a fascinating journey through the evolution of polymers and their integral role in modern technology, an experience that resonated deeply with our background in Materials Engineering.

This visit was not only an enriching academic experience but also a meaningful step towards future collaboration between MCUT and IIUM, particularly in the areas of advanced materials research, student exchange, and joint academic initiatives. We extend our sincere appreciation to Prof. Huang and Dr Yiu for their continued support and warm hospitality. Such engagements affirm the importance of global partnerships in nurturing the next generation of engineers and researchers who will shape a more sustainable future.





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Date: 8th June 2026

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Assalamualaikum wrt. Wbt

Dear Prof/Dr/Sir/Mdm/Ms,

**VERIFICATION OF AUTHOR'S AFFILIATION FOR THE 1ST ISSUE OF KOE
E-NEWSLETTER**

May this letter reach your good self in good health by the grace of Allah *Subhanahu Wata'ala*

With reference to the above matter, the Kulliyyah of Engineering, IIUM would like to verify that all the authors listed in Appendix 1 are affiliated with KOE under various dedicated departments.

We hope that this verification will provide a clear justification to assist the authors in the APAR article submission.

Thank you. *Wassalam.*

ASSOC. PROF. DR. KHAIRUL AZAMI BIN SIDEK

Dean

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Appendix 1

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