



MAKERERE UNIVERSITY

COLLEGE OF ENGINEERING, DESIGN, ART AND TECHNOLOGY

NEWSLETTER

CEDAT

April- June 2026: Issue: 2

Creativity and Professional Readiness

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- From May 4–15, 2026, the Margaret Trowel School of Industrial and Fine Art (MTSIFA) unveiled Biomorphic Abstraction in Textile Surface Design, an exhibition by Assoc. Prof. Venny Nakazibwe at the Makerere Institute of Heritage, Conservation and Restoration/Makerere Art Gallery.
- The Integrated Smart Systems Group (ISSG) at Makerere University's School of Engineering hosted its annual poster presentations, showcasing collaboration between the Departments of Electrical and Computer Engineering.

Principal's Remarks



Dr. Edmund Tumusiime developed Uganda's first solar-powered water pump, a groundbreaking innovation that addresses critical community needs for sustainable water access. This achievement reflects our college's commitment to practical solutions that improve livelihoods while advancing renewable energy adoption.

As we close the quarter, April to June 2026, I am proud to reflect on the remarkable achievements of our students and faculty at CEDAT. True to our mandate of Teaching, Learning, Research, and Outreach, these pillars continue to shape the foundation of our work. The highlight of this period was the inaugural VCM Design Week 2026, hosted by the Department of Visual Communication and Multimedia (DVCM) from June 1–6 at the Makerere University Art Gallery. The exhibition celebrated the creativity, innovation, and professional readiness of our junior designers of the pioneering 2023 cohort in the Bachelor of Visual Communication, Design and Multimedia (BVCM).

Beyond student achievements, our staff continues to demonstrate excellence in innovation and research. Dr. Edmund Tumusiime developed Uganda's first solar-powered water pump, a groundbreaking innovation that addresses critical community needs for sustainable water access. This achievement reflects our college's commitment to practical solutions that improve livelihoods while advancing renewable energy adoption. In addition, faculty-led research projects across departments continued to generate knowledge that strengthens our academic reputation, contributing directly to national development priorities in engineering, design, and technology.

Another key highlight of this period was the high-level meeting led by Makerere University Vice Chancellor, Prof. Barnabas Nawangwe, to deliberate on strategies for enhancing graduate education and research output. The deliberations highlighted the SWOT of the College in regard to graduate training, focusing on the student numbers, the existing infrastructure, and resources.

This quarter has demonstrated how academic innovation can fuel youth empowerment, cultural enrichment, and national progress. As a college, we remain committed to nurturing talent, fostering entrepreneurship, and positioning Makerere University as a hub for design innovation and sustainable development.

**Prof. Moses Musinguzi ,
Principal, College of Engineering,
Design, Art and Technology (CEDAT)**

EDITORIAL TEAM >>

Prof. Moses Musinguzi, Principal | Assoc. Prof. Dorothy Okello, Dean SoE | Assoc. Prof. Amanda Tumusiime, Dean MTSIFA | Assoc. Prof. Anthony Gidudu, Dean, SBE | Ms. Harriet Musinguzi, Principal Comm. Officer | Mr. Alex Isemaghendera , IT Officer | Mr. Pius Kikomeko, CO, SoE | Ms. Eunice Rukundo, Deputy Chief-PRO

Uganda's first Solar Water Pump: Makerere innovation to drive industrial transformation

Makerere University's College of Engineering, Design, Art and Technology (CEDAT) has unveiled Uganda's first solar-powered water pump, locally developed by Dr. Edmund Tumusiime from the Department of Mechanical Engineering. Driven by a locally developed synchronous motor, the innovation marks a major milestone in Uganda's engineering capacity and demonstrates the potential of homegrown solutions to drive industrial transformation and sustainability.

Uganda's agricultural transformation hinges on one critical factor; reliable access to water. Despite the country's heavy spending on imported irrigation technologies, smallholder farmers continue to suffer devastating losses due to climate change. Imported pumps remain expensive, difficult to maintain, and largely inaccessible. This gap has inspired a groundbreaking innovation led by Dr. Edmund Tumusiime, Lecturer of Mechanical Engineering at Makerere University, whose team has successfully developed Uganda's first fully locally manufactured solar-powered water pump. The initiative is funded by the Secretariat of Science, Technology & Innovation – Office of the President (STI-OP). "This innovation demonstrates how engineers must lead Uganda's industrial transition," said Dr. Edmund Tumusiime.

Bridging the Irrigation Gap

Dr. Tumusiime's journey into this innovation is rooted in his academic background in Fluid Mechanics. Years of teaching and research revealed a disconnect between theory and practical application in Uganda's development context, which led to the conceptualization of a solar water pump. This was also supported by Uganda's National Development Plan IV, which highlights a pressing challenge: the lack of



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affordable and maintainable irrigation systems for farmers. Unlike imported pumps, which often lack spare parts, this innovation ensures every component can be locally produced and easily replaced. Powered by solar energy, the pump is especially suited for rural farmers who are not connected to the national electricity grid, and with abundant sunlight across Uganda, solar power offers a reliable and sustainable energy source for irrigation.

"All project's infrastructure was sourced locally though highly fragmented," said Dr. Tumusiime

Building a Complete Value Chain

A major strength of this innovation is its comprehensive approach to localization. Instead of assembling imported parts, Dr. Tumusiime's team designed and locally produced over 90% of pump component parts including impellers, shafts, couplings, motor, and solar inverter. Tooling and production systems have also been developed to support mass production. The pump operates at a head of 85 meters, drawing water from wells up to 120 feet and supporting elevated storage systems for irrigation. The manufacturing

processes are scalable, allowing for expansion into mass production once specialized infrastructure is established. This approach reduces import dependence, lowers costs, and positions Uganda to build a sustainable pump & motor industry powered by local innovation.

Driving Affordability, Jobs, and Industrial Growth

Imported solar pumps reaching similar depths cost over UGX 3.5 million. Dr. Tumusiime's team aims to cut this by more than half through local manufacturing, making irrigation more affordable for smallholder farmers. Beyond cost savings, the project will create jobs across manufacturing, assembly, distribution, and maintenance, while boosting demand for raw materials like bronze and plastics to support local industries. Moreover, the techniques developed extend beyond water pumps, enabling production of consumer goods and industrial machinery. This concept industrial symbiosis where one innovation stimulates multiple sectors, underscores the greater impact of this initiative.

Overcoming structural & Technical Challenges

The project has faced hurdles. Reliance on a part-time workforce slowed development, while fragmented facilities created logistical difficulties. Lack of specialized equipment, such as die-casting and precision moulding machines, further limited progress. The team has had to adopt alternative methods, showing resilience and ingenuity. However, full commercialization will require centralized facilities, advanced machinery, and a dedicated workforce to scale production.



A Catalyst for Uganda's Future

The solar water pump is not only a breakthrough but a step toward self-reliance, sustainability, and inclusive growth. By tackling affordability and accessibility, the innovation could transform irrigation for smallholder farmers while building a manufacturing ecosystem powered by local talent. Aligned with Uganda's STI agenda, the project shows the strength of homegrown solutions in addressing national challenges. With investment in infrastructure, skilled manpower, and supportive policy, it could scale into a national success story, boosting agriculture, creating jobs, and reducing imports.

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University leadership engages with CEDAT faculty to chart strategies for scaling up graduate training and strengthening research capacity.

PROF. NAWANGWE MEET: To deliberate on strategies for enhancing graduate education

The Vice Chancellor Prof. Barnabas Nawangwe led a high level meeting at CEDAT to deliberate on strategies for enhancing graduate education and research output. He emphasized that Makerere has built significant capacity, with over 1,200 PhD holders and approximately \$250 million annually in research funding. He gave assurance to staff that the forthcoming graduate structures will address challenges such as limited space, inadequate facilities, and the

sustainability of academic journals.

"Makerere has the capacity our challenge is to strengthen structures that support graduate education." — Prof. Barnabas Nawangwe, Vice Chancellor

Graduate Training at CEDAT

CEDAT Principal Prof. Moses Musinguzi reported that the college hosts over 537 graduate

students, supported by 61 PhD holding staff. He highlighted supervision pressures and infrastructure gaps, proposing interventions such as specialized research rooms, ICT laboratories, and master's research grants.

Renewed Commitment

The deliberations concluded with a pledge to strengthen graduate training, enhance infrastructure, and position CEDAT as a driver of innovation and national development. Makerere's leadership reaffirmed that scaling up PhD training, reviving journals, and commercializing innovations are central to transforming Uganda through knowledge and technology.



Creativity and Professional Readiness in Design: The Inaugural VCM Design Week



Junior Designers, the 2023 Cohort exhibited their innovations during the design week at MTSIFA

The VCM Design Week 2026, was a six-day exhibition organized by the Department of Visual Communication and Multimedia (DVCM). Held from June 1–6 at the Makerere University Art Gallery, the event showcased the creativity and professional readiness of junior designers from the Bachelor of Visual Communication, Design and Multimedia (BVCM) program, with special recognition of the inaugural 2023 cohort. Several people turned up to appreciate the commendable work done by students. "Innovation is a continuous journey", said Prof Musinguzi

The exhibition also attracted national leaders. Robert Mukiza, Director General of the Uganda Investment Authority, commissioned the inaugural showcase on June 1st 2026, affirming institutional support for young innovators.

Moses, CEDAT Principal. He advised students to transform their ideas into practical solutions for society.

The exhibition also attracted national leaders. Robert Mukiza, Director General of the Uganda Investment Authority,

commissioned the inaugural showcase on June 1st 2026, affirming institutional support for young innovators. Later, on June 5, Allan Kasujja, the Director of the Uganda Media Centre, praised the students' creativity and pledged to connect their work to markets, strengthening Uganda's creative economy.

Organizers highlighted the exhibition's impact on national development, pointing to youth empowerment, market linkages, investment attraction, cultural enrichment, and academia-industry collaboration.

Exhibition in pictures



Benefits of Carbon Offsetting in Brick Production:

A research dissemination at CEDAT



Junior Designers, the 2023 Cohort exhibited their innovations during the design week at MTSIFA

CEDAT recently convened a research dissemination session to share findings on the role of carbon offsetting in Uganda's brick industry. The discussion highlighted how sustainable practices in brick production can reduce emissions, create economic opportunities, and support national climate goals. By bringing together researchers, faculty, and stakeholders, the event underscored CEDAT's commitment to advancing solutions that balance industrial growth with environmental responsibility.

The Makerere Research and Innovations Fund (MakRIF)-supported project on "Carbon Offsetting Measures for Traditional Fired Clay Brick and Mudbrick Production in Uganda" offers

significant benefits for communities and the environment. By reducing emissions from traditional clamp kilns (Tanulu), the initiative promotes cleaner air, healthier living conditions, and more sustainable construction practices. Improved kiln designs, efficient fuel utilization, and regular emission monitoring can lower production costs while minimizing the industry's environmental footprint.

The study by Dr. Nathan Kibwami and Dr. Musa Manga with a team including Joan Nabawenda, Olivia Nyangoma, Denis Rukidi, Claire Ruhweza, and Sherly Ankunda proposed practical strategies for offsetting them. The dissemination workshop on April 10, 2026, provided a platform for stakeholders to discuss findings and explore implementation pathways.



"We need local solutions for our local problems."
— Ms. Evelyn Nyachwo, MakRIF

Biomorphic Abstraction in Textile Surface Design



Assoc. Prof. Venny Nakazibwe with colleagues and guests at the opening of her exhibition, Biomorphic Abstraction in Textile Surface Design, held at Makerere Art Gallery May 4th, 2026

From May 4–15, 2026, the Margaret Trowel School of Industrial and Fine Art (MTSIFA) unveiled Biomorphic Abstraction in Textile Surface Design, an exhibition by Assoc. Prof. Venny Nakazibwe at the Makerere Institute of Heritage, Conservation and Restoration/ Makerere Art Gallery. The showcase explored butterfly imagery as a symbol of transformation, blending nature,

design, and cultural expression. The opening ceremony was graced by Prof. Henry Alinaitwe, Vice Chancellor (Finance & Administration), who praised Nakazibwe's creativity and emphasized the therapeutic power of art. CEDAT's Deputy Principal, Prof. Kizito Maria Kasule, also commended the exhibition for its originality and its balance of scholarship with studio practice.

Artist's Vision

Assoc. Prof. Nakazibwe described the butterfly motif as a metaphor for life's journey and transformation. She highlighted the importance of handmade art while encouraging students to embrace digital tools such as Adobe and Photoshop. She reaffirmed MTSIFA's commitment to upgrading studios to align with modern trends and called for continued support from university management.

Legacy and Impact

Dr. Nakazibwe, an Associate Professor of Textile Design, has conducted extensive research in visual arts and cultural heritage, revitalizing indigenous knowledge and exploring innovative approaches using local materials like bark cloth. Her exhibition underscores the enduring role of art in shaping culture, education, and industry. The showcase offered audiences a unique opportunity to experience the intersection of creativity, heritage, and transformation.



Ms. Yvonne Tusiimire presented her Thesis before during her PhD defense, April 22, 2026.

PHD Defense: Makerere University Celebrates PhD Milestone in Biomedical Engineering

CEDAT announced the successful PhD defense of Ms. Yvonne Tusiimire on April 22, 2026. Her thesis, "3D Electrospun PLLA Nano Fibrous Membranes Coated with Regenerated Silk Fibron and Silver Nitrate for Burn Wounds," advances biomedical engineering by developing innovative biomaterials to improve burn treatment. Her research demonstrated how engineered membranes can accelerate healing, reduce infection risks, and provide cost effective solutions for patients in low resource settings.

CEDAT Champions Safer, Smarter Construction in Uganda

More than 250 fundis, technicians, and artisans gathered at CEDAT for a two day construction training programme held April 23–24, 2026. Organized in partnership with Hima Cement and other stakeholders, the initiative sharpened practical skills, raised safety standards, and fostered collaboration across Uganda's growing construction industry.

More than 250 fundis, technicians, and artisans gathered at CEDAT for a two-day construction training programme. Organized in partnership with Hima Cement and other stakeholders, the initiative, held from April 23rd to 24th 2026, was the fourth training convened by the Department of Regional and Urban Planning, aimed at sharpening practical skills, raising safety standards, and fostering

collaboration across Uganda's growing construction industry. The training sessions covered building codes, site safety, plumbing, and metalwork. What made the programme unique was its inclusive approach: seasoned practitioners worked side by side with engineering students, creating a rare platform for knowledge exchange. For many participants, this was not just a technical workshop but a transformative experience

that reshaped their view of the construction field.

"I was looking out for opportunities and skills to learn and grow myself as a professional engineer," said Alinda Larry Musiimenta, a first-year engineering student. He explained that the programme highlighted the precision and coordination required on construction sites, particularly around safety and communication.

Safety and Community Responsibility

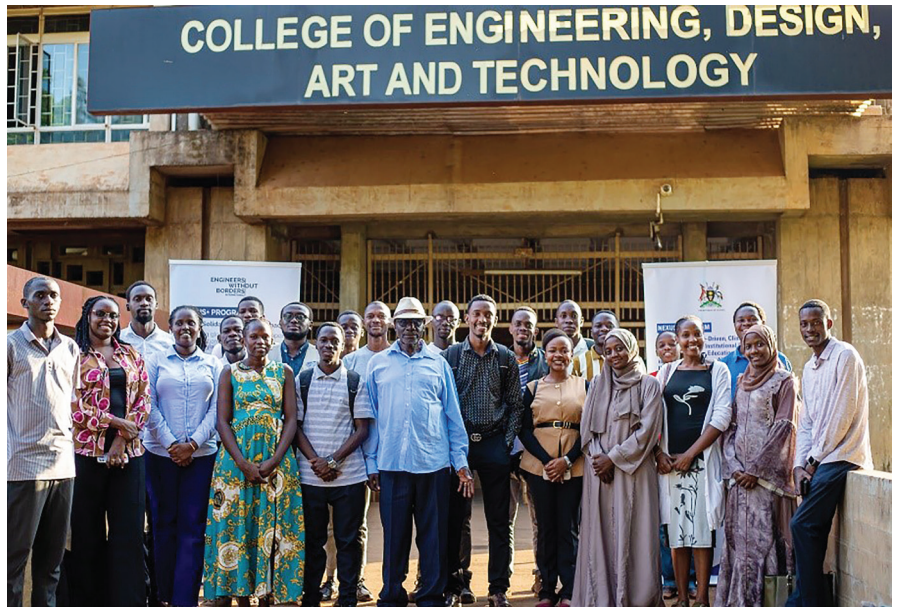
Safety was a recurring theme throughout the sessions. Trainers underscored the importance of interpreting building drawings accurately and safeguarding surrounding communities during construction. Special attention was given to risks faced by children near work sites, highlighting the need for contractors to adopt responsible practices that protect vulnerable groups. This emphasis reflects a growing recognition that construction projects must balance technical excellence with social responsibility.



A section of the Fundis, technicians, artisans, and students engage in a practical session.

Nexus+ Training Strengthens Students with Community Driven Engineering Skills

From June 10–12, 2026, Engineers Without Borders–East Africa (EWB EA) facilitated a hands-on training at CEDAT, equipping students from mechanical, electrical, civil, biomedical, and public health disciplines with practical skills in Community Led Asset Resource Evaluation (CLARE). Through lectures, group work, and field-oriented exercises, participants learned to view communities not just as sources of information but as partners in co creating sustainable solutions. Guided by facilitators Justin Otai and Brian Ngure, the program emphasized empathy, collaboration, and innovation qualities that will shape the next generation of community driven engineers.



Students and facilitators from Engineers Without Borders–East Africa during the CLARE training at CEDAT, June 2026

Innovation Shines at ISSG Annual Poster Presentations

On April 29, 2026, the Integrated Smart Systems Group (ISSG) at Makerere University's School of Engineering hosted its annual poster presentations, showcasing collaboration between the Departments of Electrical and Computer Engineering. Led by Dr. Jonathan Serugunda and supported by UETCL, the event brought together students, faculty, and industry experts to bridge academic research with industrial solutions. The vibrant atmosphere highlighted student projects tackling pressing industry challenges, with a distinguished panel commending their confidence and technical rigor. The event concluded with recognition of the top five posters, reaffirming CEDAT's role in nurturing innovative, industry ready engineers.



Students present their posters at the ISSG annual showcase, bridging academic research with industry solutions.

Spotlight on Leadership

Associate Professor Michael Lubwama, Acting Manager of the Makerere University Technology and Innovation Centre (MUTIC), acknowledged for his leadership in advancing innovation and research



Assoc. Prof. Michael Lubwama Appointed Acting Manager of MUTIC

Assoc. Prof. Michael Lubwama, a Mechanical Engineering scholar, was appointed Acting Manager of the Makerere University Technology and Innovation Centre (MUTIC). His leadership is expected to expand the centre's mission of fostering innovation, supporting startups, and driving impactful projects that address national challenges.



Outgoing Chairperson Uwaisenga Gideon (R) hands over the guild gavel to Incoming Chairperson Edwin Aloya during the CEDAT leadership transition ceremony.

CEDAT Student Leadership Handover: A Spirit of Renewal

On May 14, 2026, CEDAT marked the handover of student leadership. Outgoing Chairperson Uwaisenga Gideon reflected on his term as “a journey of many lessons,” highlighting achievements such as securing a chairperson's office, acquiring a college bus, and organizing Mental Health Day and a sports gala. Guild Representative Umar Mwanje emphasized discipline and mentorship, while Incoming Chairperson Edwin Aloya pledged stronger collaboration, better communication, and improved study spaces.

Ms. Ngwicarach Pyerina (2nd Left) honored by colleagues during her farewell ceremony at Makerere University Guest House.



Long serving Ngwicarach Pyerina celebrated on Her Retirement

CEDAT's Department of Geomatics and Land Management bid a warm farewell to Ms. Ngwicarach Pyerina after 20 years of dedicated service. Colleagues praised her mentorship, professionalism, and lasting impact, describing her retirement as the end of an era but a legacy that will continue to inspire.



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