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VIRTUAL MECHATRONICS LABS WEEKLY MAGAZINE



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The Future of Engineering: How Virtual Mechatronics Labs Are Revolutionizing Learning

Virtual Mechatronics Labs (VMLs) are revolutionizing engineering education by offering immersive, cost-effective learning experiences. Traditionally, mastering mechatronics required expensive labs, but VMLs use VR, AR, and cloud computing to create interactive digital environments.

Students and professionals can design, test, and refine robotic systems from their laptops, experimenting with sensors, motors, and control systems—without physical hardware. These labs enable real-world simulations, troubleshooting, and hands-on training in a risk-free setting, bridging the gap between theory and practice in automation and smart manufacturing.



About Us-

Virtual Mechatronics Labs at DeKUT

Based at Dedan Kimathi University of Technology (DeKUT), Kenya, Virtual Mechatronics Labs (VML) is a premier hub for training and research in industrial automation, robotics, digital twin technology, and Industry 4.0. Our mission is to provide innovative, immersive learning experiences in mechatronics engineering through advanced virtual technologies.

Training & Certification

At the Siemens Centre, we offer hands-on, industry-focused training aligned with the latest trends in automation and emerging technologies. Our practical curriculum equips participants with the skills needed to excel in the fast-evolving world of digital and industrial automation.

WE OFFER SPECIALIZED TRAINING IN THE FOLLOWING KEY AREAS:

1

Siemens PLC Programming & Industrial Automation (S7-1200, S7-1500, TIA Portal): Master PLC programming and automation to optimize production processes.

2

SCADA Systems & IIoT for Smart Manufacturing: Design systems to collect, analyze, and visualize data for efficient operations

3

Human-Robot Collaboration & Industrial Robotics (ABB, KUKA, xArm7) Learn to program and optimize robots for productivity and safety

4

Digital Twin Technology for Predictive Maintenance & Virtual Commissioning Use Digital Twin tech to predict maintenance and optimize performance in Industry 4.0.

5

AR & VR for Industrial Training: Simulate environments for hands-on training and skill development without physical equipment.





PROVEN TRACK RECORD WITH LEADING INDUSTRIES

Virtual Mechatronics Labs has a proven track record of training professionals from some of the most respected organizations in Africa and beyond. Our training programs have empowered employees from leading companies, including:

- ISUZU East Africa – Robotics and automation for
- Kenya Pipeline Company (KPC) – Industrial IoT and predictive maintenance solutions
- Kenya Ports Authority (KPA) – Smart logistics and warehouse automation systems
- Kenya Electricity Generating Company (KenGen) – Implementing Digital Twin and AI for power plant
- West Kenya Sugar Company – Maintenance planning and predictive maintenance using cutting-edge technologies

At VML, we offer flexible and cost-effective training solutions tailored to your organization's needs. With customized classes for groups of 10, our courses span 5 to 30 days, balancing depth and efficiency. Competitive pricing ensures value, and participants earn globally recognized Siemens Mechatronics Systems Certification (SMSCP) upon completion, equipping them with industry-relevant expertise in automation and digital technologies.

Key Benefits of Virtual Mechatronics labs

1 Cost Effectiveness

2 Sustainability

3 Scalability

4 Accessibility and Flexibility

5 Safety & risk-free Experimentation

6 Enhanced Learning Experience

**WHY CHOOSE
VIRTUAL MECHATRONICS LAB?**

- VML offers Unmatched expertise in virtual mechatronics
- VML offers Immersive learning experiences
- VML offers Streamlined processes
- VML offers a new realm of innovation
- VML offers enhanced educational efficiency

VISIT US TODAY

REVOLUTIONIZING EDUCATION IN AFRICA

[@Virtual Mechatronics Lab](#) [@VRAfrica_Dekut](#)

Why choose Virtual Mechatronics labs

Virtual Mechatronics Labs (VMLs) are transforming engineering education by offering interactive, risk-free environments for designing, simulating, and testing mechatronic systems. Traditionally, hands-on labs were costly, space-limited, and posed safety concerns.

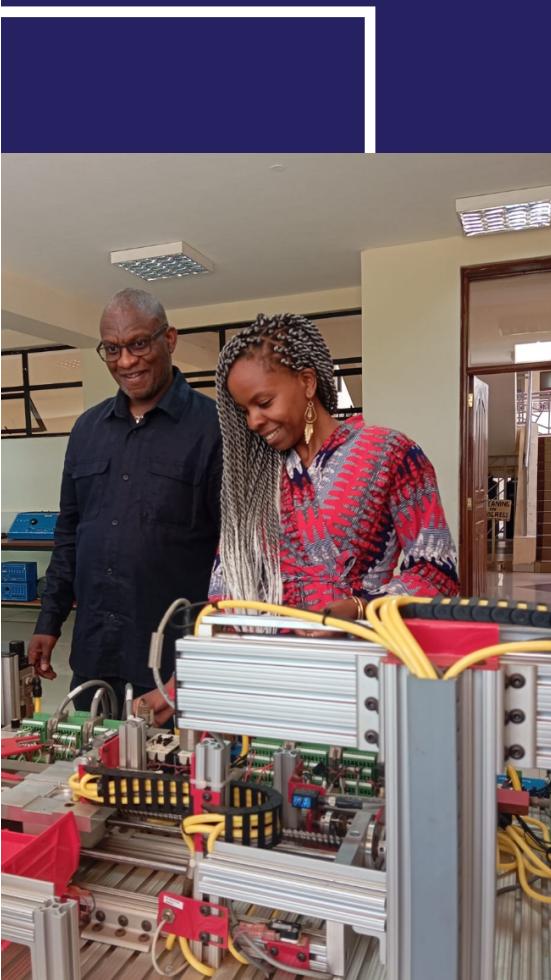
VMLs eliminate these barriers using simulation software, virtual reality (VR), augmented reality (AR), and cloud computing. Learners can experiment anytime, anywhere, modeling and optimizing complex systems.

These platforms enhance understanding of control dynamics, automation, and sensor integration without requiring expensive physical hardware. By bridging theoretical learning with practical application, VMLs prepare students and professionals for real-world engineering challenges in a more accessible, cost-effective, and scalable manner.

Key Events

1.PACCI Senior Program Manager Visits Virtual Mechatronics Lab

In February 2025, Ms. Wincate M. Muthini, Senior Program Manager at PACCI, visited the Virtual Mechatronics Lab (VML) and Siemens Centre to explore groundbreaking innovations in automation, digital twins, and immersive technologies. Guided by Prof. Jean Bosco and Lab



Guided by Prof. Jean Bosco and Lab Technician Nyagah, she gained insights into VML's cutting-edge approach to technical education. Praising the team's dedication and leadership, she emphasized VML's role in advancing technology across Africa.

This visit strengthened ties between PACCI, the African Union, and VML, paving the way for future collaborations that bridge emerging technologies with business enterprises.

2.KenGen Explores Cutting-Edge AR/VR Innovations at Virtual Mechatronics Lab

Mr. Ong'ango Benard Omondi, Project Manager at KenGen, and his team visited the Virtual Mechatronics Lab to explore its innovative Augmented Reality (AR) and Virtual Reality (VR) projects.

Impressed by their application in industrial training, real-time simulations, and troubleshooting, the delegation experienced firsthand AR-based robot communication and VR simulations for hands-on learning.

Praising the lab's work, Mr. Ong'ango emphasized its connection to the future of engineering and project management. The visit underscored VML's role in advancing industrial training through cutting-edge technology.





3.Chuka University Engineering Students Explore Innovation at Virtual Mechatronics Lab and Siemens Centre.

A group of 5th-year Robotics and Control Engineering students from Chuka University, led by Dr. Josephat Machoka, visited the Virtual Mechatronics Lab (VML) and Siemens Centre for hands-on exposure to cutting-edge VR, AR, automation, and software development projects. Guided by Prof. Jean Bosco and his team, they explored dynamic innovations, including 3D prosthetic modeling and immersive VR applications.

Research assistants provided insights into automation and manual processes, enriching their learning experience. Dr. Machoka praised VML's leadership in technical education, and the visit fostered knowledge exchange, industry exposure, and strengthened collaboration between Chuka University and VML.



Prof. Jean Bosco Byiringiro

Prof. Jean Bosco Byiringiro is a leading Mechatronics Engineering expert and Director of the Siemens Centre at Dedan Kimathi University of Technology, Kenya. He founded Virtual Mechatronics Labs and co-established AISMA with UNIDO, championing Industry 4.0 in Africa. A visiting professor in France, he is a Registered Professional Engineer (EBK), Siemens-certified Mechatronics Systems Professional, and ARSO representative in Africa's 4IR Steering Committee.

Education & Honors

PhD (2012)– Mechanical Engineering (Micro/Nano Fabrication), Yeungnam University, South Korea

MSc (2009)– Mechatronic Engineering, JKUAT, Kenya

BSc (2005)– Electro-Mechanical Engineering, University of Rwanda

Knight of the Ordre des Palmes Académiques** – Awarded by the French Government

Key Roles & Experience

Director– Siemens Mechatronics Certification Centre, DeKUT (2018–Present)

Dean – School of Engineering, DeKUT (2015–2016)

Chairman– Mechatronic Engineering Dept., DeKUT (2013–2019)

Research Focus

Industry 4.0– VR, AR, Digital Twin, IoT, AI, Data Mining, Learning Factory

MEMS/NEMS – 3D Rapid Micro/Nano-Mask Fabrication

Publications:[Google Scholar](<https://scholar.google.com/citations?user=7kimLK0AAAAJ&hl=en&oi=ao>)



WHY CHOOSE US?

- Unmatched expertise in virtual mechatronics education
- Immersive learning experiences through innovative integration
- Streamlined processes for enhanced educational efficiency



AUDA-NEPAD
AFRICAN UNION DEVELOPMENT AGENCY



KFW

