IMPACT STORY: Uramba Maker Lab Clubhouse, Centro de Conocimiento e Innovación

Colombia: a New Era in Robotic Energy

How a Young Clubhouse Inventor is Developing a System That Could Triple Battery Life in Humanoid Robots

Luis Mateo Vega Michileno, an alumnus from the Uramba Maker Lab Clubhouse at the Centro de Conocimiento e Innovación Bahía de Buenaventura (Centre of Knowledge and Innovation in Buenaventura Bay) in Colombia, is a young engineer with a passion for robotics and energy systems. He has developed a working prototype of a motor capable of generating energy even while at rest—a breakthrough that could dramatically extend battery life in humanoid robots, as well as other advanced devices.

This is not a futuristic concept. It is the beginning of a practical technology that may reshape how we understand energy autonomy in robotic systems.

After years of building humanoid robots, Mateo succeeded in creating a functional prototype with human-like sensory capabilities and the ability to perform basic household tasks. However, despite the mechanical success, the robots were constrained by a common limitation: battery life. The autonomy was short-lived, because the power supply—rather than robotics—proved to be the greatest challenge.

Determined to address this flaw, Mateo drew on electronics engineering principles he had learned at his Clubhouse and through independent study. His goal: to design a motor that could partially power itself by harvesting energy during operation—not just while braking, like traditional regenerative systems, but even when static or holding a fixed position.

At first, this ambition seemed to clash with the fundamental laws of physics, including energy conservation. Mateo spent long hours working at home and at the Clubhouse, deeply immersed in calculations and experiments. He became physically and mentally exhausted, haunted by thoughts of Newton, Faraday, and Einstein. Concerned for his well-being, his parents encouraged him to take a step back—to rest, recharge, and allow space for reflection.

That break proved essential. One day while daydreaming, the solution appeared to Mateo in the form of a geometric figure—a vision that made sense of the energy dilemma and suggested a way the design could work within the limits of physics. Energized by this insight, he returned to the Clubhouse and fabricated a new prototype using a 3D printer.

Testing confirmed the breakthrough. Instruments and graphs showed consistent energy recovery and improved performance. Repeated trials delivered reliable results. The prototype worked.

However, this success introduced a new problem. The heat generated by the motor began to melt the 3D-printed plastic components. The system needed to be rebuilt with more durable materials—especially metals—to reach its full potential.

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WHAT MAKES THIS SYSTEM DIFFERENT?

- It generates **constant energy**, even when the robot is at rest or in a static position
- It **recovers energy in real time** without compromising power output
- It is **specifically engineered for humanoid robotics**, where space and weight are critical
- It is **extremely compact and lightweight**, indistinguishable in form from conventional motors

Here is a clear example of its uniqueness: if a robotic arm is raised to 60 degrees and remains there, Mateo's motor continues generating energy while holding the position. Unlike conventional regenerative systems that only recover energy during movement or braking, this motor captures energy continuously—even when still.

Although the prototype was made using plastic materials, simulations suggest that a metallic version could **double or even triple battery life**. With this system, a humanoid robot currently operating for 4 to 8 hours could potentially run for **12 to 24 hours** on the same battery.

Importantly, this design is grounded in real-world engineering principles, supported by data from functional tests, and optimized for practical application.

WHERE THE PROJECT STANDS NOW

Mateo has reached a critical turning point. He has developed a viable method for enhancing battery life in advanced electronic systems—robots, drones, medical devices, and more. But to move forward, he needs:

- Access to **metallic materials** to fabricate a durable, high-performance version of the motor
- A **collaborator**, ideally an electrical engineer, to help refine and scale the system
- An **investor, company,** or **organization**—possibly within the Clubhouse Network—willing to support the next phase of development

Says Mateo: "I am willing to open up a strategic stake in the project, which could go up to 40%, depending on the level of contribution and commitment. It is not just about money, but about bringing vision, technical capability, or key networks to take this development to the next level. If you think you could be part of this, let's talk."

This is not speculation or science fiction. It is a working innovation, with verified performance, and a clear path toward global impact. Just as Steve Jobs once launched a revolution from a garage, Mateo Vega is now seeking visionary partners to help shape the future of robotic energy.

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To learn more about the Uramba Maker Lab Clubhouse at the Clubhouse at the Centro de Conocimiento e Innovación Bahía de Buenaventura (Centre of Knowledge and Innovation in Buenaventura Bay) in Colombia, please visit: https://theclubhousenetwork.org/locations/uramba/ and https://www.instagram.com/urambamakerlab/.

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