Press release

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World's First LoRa SoC from STMicroelectronics is Making Farming Smarter

- *LoRa Long-Range Low-Power Wide-Area Networking (LPWAN) to automate rubber-tapping plantation in Hainan, China in first-of-its-kind design-win*

- *Automation and monitoring improve yields 2-3x over manual tapping while significantly reducing injury risks to workers*

China, September 17, 2021 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has announced a design win for STM32WLE5*, the world's first LoRa System-on-Chip (SoC). The customer application, developed by automated rubber-tapping specialist CIHEVEA, uses the low-power networking to revolutionize the automation of extracting latex from rubber trees. CIHEVEA has equipped more than 200,000 rubber trees within its Hainan rubber-tree plantation with its innovative solution to improve rubber-tapping productivity and output capacity.

The ST LoRa SoC acts as a highly efficient, low-power communication hub and control center for the Rubber Tapping Robot from CIHEVEA. The robot also includes two precision motors and a series of environmental sensors that monitor weather conditions, including temperature, air pressure, and humidity. Clamped to the tree, the STM32WLE5 transmits the sensors' data to a mesh gateway via a dedicated LoRa application network server, where the server can monitor, test and debug, and coordinate the robots in the field. Once all pre-set conditions are met, the SoC triggers the rubber tapping motors to perform autonomous cutting, which usually happens very early in the morning.

Leveraging the cost-effective, high-efficiency STM32WLE5 and LoRa networking, CIHEVEA's novel solution increases latex yield by 2-3x while minimizing damage to trees, prolonging the trees' productive lifespan. In addition to improving yields and extending asset lifetimes, the rubber-tapping robot also resolves chronic labor challenges, as tree tapping can be difficult and dangerous for human workers.

The STM32WLE5 is an ultra-low power multi-modulation wireless SoC microcontroller that combines an Arm® Cortex®-M4 core running at 48 MHz, a sub-GHz radio allowing long range connectivity, and a proven collection of ST-designed peripherals. Delivering high-performance while operating from a package as small as 5mm x 5mm (UFBGA), the STM32WLE5 is both cost-effective and meets the robustness and performance requirements of the agriculture industry. The STM32WLEx microcontroller is also an open platform supporting LoRa®, (G)FSK, (G)MSK, and BPSK modulations.

"The fully-automatic, intelligent, rubber-tapping system is a revolution for the rubber industry. With the increased use of platform technology and the ability to communicate via the low-power LoRa network technology provided by the STM32WLE5, the smart rubber-plantation platform system is creating a new rubber-plantation ecosystem, moving away from traditional high-intensity, heavy-pollution, inefficient, production methods and is ushering in a new era of green environmental-protection, high-efficiency, digital transformation," said XU Zhen Kun, Vice Chairman of CIHEVEA.

"While rubber trees are a sustainable source of an important material widely used in industrial, transport, and agriculture sectors, improving rubber-tapping efficiency, and increasing latex yield has long been a goal of rubber producers and using the STM32WL5 and its LoRa networking is a natural fit," said Arnaud Julienne, Vice President, Microcontrollers and Digital ICs Group, AI/ IoT competence center and Digital Marketing, Asia Pacific Region, STMicroelectronics. *"Moreover, our unique and broad portfolio of products and solutions in connectivity, sensing, and large portfolio of power-management and motor-control solutions is well suited to the full range of smart farming domains, including tracking, irrigation systems, tractors, and livestock position and health monitoring.*

You can also read our blogpost at https://blog.st.com/rubber-tapping-robot/

About STMicroelectronics

At ST, we are 46,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An independent device manufacturer, we work with more than 100,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of the Internet of Things and 5G technology. Further information can be found at www.st.com.

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