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Acquisition of micro speaker specialist Arioso Systems by Bosch

Fraunhofer IPMS' spin-off Arioso Systems acquired by Bosch

Bosch is expanding its expertise in MEMS (micro-electro-mechanical systems) micro speakers and strengthening its market position as leading provider of sensing solutions for consumer electronics with an acquisition. Arioso Systems, based in Dresden, Germany, is to become part of the Bosch Sensortec GmbH. Agreements to this effect were signed by Bosch and Arioso Systems. It has been agreed that any project details such as the purchase price will not be disclosed. The acquisition is subject to approval by the antitrust authorities.

Arioso Systems, which was emerged from Fraunhofer IPMS and BTU Cottbus-Senftenberg in 2019, is one of the world's most innovative provider of MEMS micro speaker technology. "It is remarkable that a new technology can go so quickly from concept to spin-off and now already to an acquisition by such a renowned company as Bosch. This underlines the innovative power of the cooperation between Fraunhofer Institute for Photonic Microsystems IPMS and BTU Cottbus-Senftenberg, where all the foundations were laid," says Prof. Dr. Harald Schenk, Institute Director of Fraunhofer IPMS.

The technology is also a beneficial complement to Bosch's MEMS sensor portfolio for wearables and hearables. "The planned acquisition of Arioso Systems further enlarges our sensing solutions expertise for consumer electronics in the field of micro speakers and makes us even more diversified. We are thus consistently expanding our strong position as technology leader in this area," says Dr. Stefan Finkbeiner, CEO at Bosch Sensortec.

The unique and innovative technology concept from Arioso Systems combined with the long-lasting experience from Bosch Sensortec to develop a technology to high-volume consumer electronics market maturity is expected to shape the emerging global MEMS micro speaker market. Manufacturers of TWS (true wireless stereo) earphones and other hearable devices will benefit from a sound generation with significant less power consumption and a smaller form factor, which means an expanded battery run time and easier system integration.

"The whole Arioso Systems team is excited to become part of the most powerful global provider of sensing solutions and to take the next step in expanding our leading-edge technology," says Hermann Schenk, CEO of Arioso Systems. "Joining our forces means we can leverage the full potential of our MEMS micro speaker technology."

Editor

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FRAUNHOFER INSTITUTE FOR PHOTONIC MICROSYSTEMS IPMS

Enabling technology for the internet of tomorrow – strong market growth expected

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The internet of tomorrow will be mobile and audio based, both speaking and listening. Components for smart in-ear devices must be increasingly small, light, efficient and scalable to meet the market's needs. More and more functionalities demand for smaller form factors and expanded battery run time. Market experts are predicting strong growth in micro speaker applications in the years ahead. According to the market experts from Yole, the total market for micro speakers is expected to grow from 9 billion US dollars in 2020 to 11 billion US dollars in 2026, while MEMS micro speakers will have a fast-growing share in it.

About the MEMS micro speaker technology

Arioso Systems developed a novel audio transducer technology, where sound is generated through movement of vertically oriented lamellas inside a silicon chip. Unlike conventional membrane, Arioso Systems technology uses the chip volume rather than surface. Therefore, it is possible to build a miniaturized MEMS micro-speaker to generate up to 120 dB SPL (sound pressure level) out of 10mm² active area. Thanks to the electrostatic actuator of all-silicon MEMS and thanks to its very low capacitance, the Arioso Systems technology allows to save battery for new sensor application in demanding hearable devices such as TWS as well as in other wearables devices.

Further information:

<https://arioso-systems.com/> Video: <https://www.youtube.com/watch?v=BZH051TjwvY>

About Fraunhofer IPMS

Fraunhofer Institute for Photonic Microsystems IPMS stands for applied research and development in the fields of intelligent industrial solutions, medical technology and improved quality of life. Our research focuses on miniaturized sensors and actuators, integrated circuits, wireless and wired data communication, and customized MEMS systems. The novel transducer principle for miniaturized headphones, which was marketed by Arioso GmbH, is based on research conducted by Fraunhofer IPMS together with Brandenburg Technical University (BTU) Cottbus-Senftenberg.

About Bosch Sensortec GmbH

Bosch Sensortec GmbH, a fully owned subsidiary of Robert Bosch GmbH, develops and markets a wide portfolio of microelectromechanical systems (MEMS) sensors and solutions tailored for smartphones, tablets, wearables and hearables, AR/VR devices, drones, robots, smart home and IoT (Internet of Things) applications. The product portfolio includes 3-axis accelerometers, gyroscopes and magnetometers, integrated 6-

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and 9-axis sensors, smart sensors, barometric pressure sensors, humidity sensors, gas sensors, optical microsystems and comprehensive software. Since its foundation in 2005, Bosch Sensortec has emerged as the MEMS technology leader in the markets it addresses. Bosch has been both a pioneer and a global market leader in the MEMS sensor segment since 1995 and has, to date, sold more than 15 billion MEMS sensors.

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For more information, please visit www.bosch-sensortec.com, twitter.com/boschMEMS, community.bosch-sensortec.com, linkedin.com/company/bosch-sensortec/, youtube.com/user/BoschSensortec

About Bosch Group

The Bosch Group is a leading global supplier of technology and services. It employs roughly 401,300 associates worldwide (as of December 31, 2021). According to preliminary figures, the company generated sales of 78.8 billion euros in 2021. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT provider, Bosch offers innovative solutions for smart homes, Industry 4.0, and connected mobility. Bosch is pursuing a vision of mobility that is sustainable, safe, and exciting. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to facilitate connected living with products and solutions that either contain artificial intelligence (AI) or have been developed or manufactured with its help. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiary and regional companies in some 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. With its more than 400 locations worldwide, the Bosch Group has been carbon neutral since the first quarter of 2020. The basis for the company's future growth is its innovative strength. At 28 locations across the globe, Bosch employs some 76,300 associates in research and development, of which more than 38,000 are software engineers.

Additional information is available online at www.bosch.com, www.iot.bosch.com, www.bosch-press.com, [www.twitter.com/BoschPresse](https://twitter.com/BoschPresse).

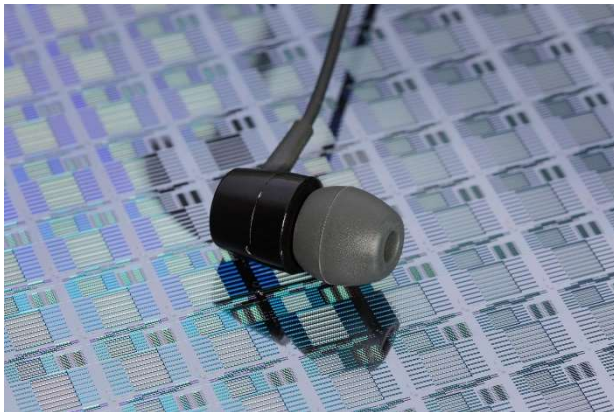
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Images



The new, silicon-based technology for in-ear headphones opens up new application possibilities for hearables.

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The innovative loudspeaker concept is based on the NED technology of the Fraunhofer IPMS and the BTU Cottbus-Senftenberg.

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