

MIRS infrared-sensing technology platform cuts cost of infrared sensors for growing applications in mobile, digital lighting and automotive markets

A project within the EUREKA PENTA programme

Paris, 4 April 2019: MIRS (Midget InfraRed-based Sensor systems), a EUREKA PENTA Cluster project, operated by Industry Association AENEAS, is addressing growing demand for low-cost infrared (IR) sensing systems through development of a technology platform that enables high-volume manufacturing. From thermometers built into smartphones to the detection of people in buildings via sensors integrated in digital lighting systems, IR sensing has vast potential. Sales for infrared detectors are expected to reach approximately 500Mio USD by 2020 with "smart building" and "smart heating, ventilating, and air conditioning (HVAC)" being principle drivers for growth¹.

Furthermore, because the ability to detect heat via IR sensing is so widely applicable, it can be used in many other situations as well. These include medical processes, warning of dangers in the environment, contactless detection of unwanted heat losses or generation in buildings, and detection of pedestrians by self-driving cars. The MIRS project aims to address the many market opportunities by delivering a combination of very small size, high performance and low-cost based on its generic technology platform and extreme miniaturization.

Specifically, MIRS is developing a MEMS (micro-electro-mechanical system) platform that integrates IR sensors and the necessary optics at wafer level (i.e. on the silicon wafers on which chips are made). This platform will provide 70% of the required modules for two key types of sensor: single pixel infrared spot thermometers and infrared pixel-array detectors for people detection.

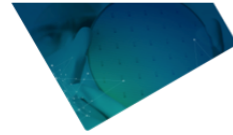
Moreover, by combining both pyroelectric and thermopile sensing, the MIRS platform will open the way to new business opportunities. Thermopile sensors measure radiated energy and are widely applicable, whereas pyroelectric sensors detect changes in radiation and are principally used for motion detection. Bringing them together in a single platform will enable applications in areas such as low-energy products and movement detection without the need for digital signal processing. Furthermore, while the thermopile market is currently relatively small, it is expected to grow at an estimated compound annual growth rate of 30% or more, if costs and size can be reduced.

The MIRS consortium pursuing these goals forms an innovation partnership that spans the entire value chain. It includes organisations and companies from research (CAU, ISIT) and production (XMF, MFI, AIX) through to the market (MELEXIS). Its members bring expertise in all areas from sensor design and CMOS and MEMS integration through to wafer-level packaging with optical integration, as well as know-how in final assembly, packaging, testing and innovative signal processing.

¹ Source : Yole Development estimates, November 2015



PRESS RELEASE



About the PENTA programme (managed by the AENEAS Industrial Association)

PENTA is a EUREKA cluster whose purpose is to catalyse research, development and innovation in areas of micro and nanoelectronics enabled systems and applications - where there is shared national and industrial interest. Based on the Electronic Components & Systems (ECS) Strategic Research Agenda (SRA) key areas and essential capabilities, PENTA programme contributes to the development of electronic solutions with the opportunity for rapid competitive exploitation and a strong impact on European societal challenges. The PENTA project team is supporting SMEs, large corporations, research organisations and universities by facilitating access to funding, fostering collaborative work and creating consortia.

PENTA is managed by AENEAS.

More on PENTA: <http://www.penta-eureka.eu>

More on AENEAS: <https://aeneas-office.org>

About MIRS

MIRS is a RD&I project consortium involving 6 partners from 2 countries. The project partners are: Melexis (Project leader), aixACCT Systems GmbH (AIX), Christian-Albrechts-Universität Kiel (CAU), Fraunhofer-Institut für Siliziumtechnologie ISIT, X-FAB MEMS Foundry GmbH (XMF), X-FAB MEMS Foundry Itzehoe GmbH (MFI). National funding support is provided by Belgium and Germany.

More on MIRS: <http://www.penta-eureka.eu/downloads/ProjectProfiles/penta-project-profile-16014-mirs.pdf>