

## **Wafer Metrology Centre (WMC) – an upgradeable solution for the challenging task of minute measurement in chip manufacturing**

***A project within the EUREKA EURIPIDES<sup>2</sup> & PENTA programmes***

Paris, 13 October 2020 - The co-labeled EURIPIDES<sup>2</sup> and PENTA Wafer Metrology Centre (WMC) project led by an SME, aims to provide manufacturers with new and more flexible tools to check the miniscule features on electronic chips during the production process. Designed for measurements during quality control, the integrated WMC hardware and software platform will be easily able to evolve as new applications, designs and demands on performance continue to grow.

Silicon chips are everywhere in our digital world: in computers, phones, cars, medical devices, industrial machines, LED lights – the list is vast. And each of these tiny chips (or ‘integrated circuits’ (ICs)) contains hundreds of millions, or even billions, of electronic transistors, measuring just billionths of a meter (nanometers) in size.

Consequently, chip manufacturing is highly intricate, requiring extreme precision to ensure chips operate correctly and reliably. Yet there is constant pressure to deliver higher performance at lower cost, to produce ever-more complex chips based on new designs and materials, and to reduce production faults to just a few parts in million.

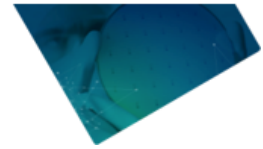
Wafer metrology plays a key role in achieving these goals. It is the technology used to measure the components and wires on chips as they are ‘printed’ or ‘etched’ onto pieces (wafers) of silicon or other materials. But current wafer metrology tools often lack the flexibility to evolve to meet changing requirements and new applications, which is where the WMC comes in.

The partners in the WMC consortium are developing a modular metrology and inspection tool platform for a wide range of semiconductor applications. They will also create new optical sensors which, combined with existing sensors, will allow the platform to cover a full range of production steps. These include wafer manufacturing processes, front-end, back-end and packaging metrology and inspection. In addition, the platform will provide a software editor to create customized filters, and a scalable interface which links to an advanced data-mining solution that turns raw data into meaningful input for decision-making.

Among key applications areas will be Si (silicon), SiC (silicon carbide) and GaN (gallium nitride) based ICs for power devices, LEDs and MEMS (micro electro-mechanical systems). Most importantly, a high degree of standardization in the platform will enable it to be quick and easy reconfigured even in the



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field to meet changing requirements and applications. This is a unique advantage compared to existing metrology solutions and will allow the European project partners to compete effectively with incumbent global players in this important market.

#### About EURIPIDES

EURIPIDES<sup>2</sup> is a EUREKA Cluster promoting the generation of innovative, industry-driven, pre-competitive R&D projects in the area of Smart Electronic Systems. EURIPIDES<sup>2</sup> is the innovation hub for smart sensors, smart power modules, electronic hardware platforms and more generally electronic product integration and embedded systems for automotive, aeronautics and space, security, medical electronics, smart everywhere (cities, home, wearable) and industrial electronics. EURIPIDES<sup>2</sup> facilitates access to national funding in Europe and beyond. As a EUREKA Cluster, the network is open to participants worldwide.

More on EURIPIDES<sup>2</sup>: <https://www.euripides-eureka.eu>

#### About PENTA

[PENTA](#) is a [EUREKA](#) cluster whose purpose is to catalyse research, development and innovation in areas of micro and nanoelectronics enabled systems and applications. Guided by the [Electronic Components & Systems \(ECS\) Strategic Research Agenda \(SRA\)](#) key application areas and essential capabilities, the PENTA programme enables the development of electronic solutions to help drive the digital economy through the formation of collaborative ecosystems along the ECS value chain. This creates the opportunity for rapid competitive exploitation and a strong impact on European societal challenges. PENTA supports SMEs, large corporations, research organisations and universities to work together in project consortia by facilitating access to funding, fostering collaborative work and creating consortia in areas of mutual industrial and National interest.

PENTA is operated by AENEAS.

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

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

#### About WMC

WMC is an RD&I project consortium involving 5 partners from 3 countries, Germany, Switzerland, and the Netherlands. The project partners are: sentronics metrology GmbH (project coordinator), CSEM, Fraunhofer-Gesellschaft – institutes IZM ASSID, IAF and IPA, Lyncée Tec SA and Nedinsco B.V .

More on WMC: <https://penta-eureka.eu/project-overview/penta-call-4/wafer-metrology-center/>