

Communication module breakthrough advances smart metering

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At this week's European Utility Week, held in Amsterdam from Nov. 4 through Nov. 6, imec, iMinds, and their partners in the iMinds ICON-project CoPlaSM present the results of the two-year project (initiated in January 2013) to realize and validate proof of concept of a multi-standard communication module for smart meters.

The sharp increase in decentralized renewable electricity production, such as the case with solar panels, creates the need for a smart two-way electricity grid. To guarantee stability in the [smart grid](#), continuous real-time monitoring through smart meters is required, both in the grid infrastructure and at the consumer side. The European Union is betting high on smart meters, aiming for 80 percent of the electricity meters to be smart by 2018. Moreover, the global market of smart meters is estimated to grow from \$7 billion in 2012 to \$35 billion in 2022.

Within the CoPlaSM project, the fundamentals for a highly reliable software-upgradeable multi-standard communication module have been built. When coupled with a utility meter, this communication module turns the meter into a [smart meter](#). The multi-connectivity of the module, compatible with wireless machine-to-machine standards, coax cable, and power line communication (PLC), will enable a one-size-fits-all solution, with shorter time-to-market, lower unit price, cheaper logistics and easier and uniform installation.

The technical requirements of the communication module were defined by distribution system operators Eandis and Infrax, based on a

stakeholder requirement analysis and research performed with end-users (performed by iMinds research groups SMIT at VUB and MICT at UGent). The ASIC design company AnSem developed a software-defined PLC-solution. The module consists of AnSem's multi-standard PLC analog front-end chip combined with NXP's licensable ultra-low power CoolFlux BSP baseband processor core. It features competitive cost, performance and power consumption with current state-of-the-art, single-standard dedicated solutions. The PLC-IP and chip is demonstrated with the G3- and Eandis proprietary protocols on a Field Programmable Gate Array (FPGA) platform and is available for developers of [smart home](#) and smart grid applications through AnSem.

Imec, the iMinds research group IBCN at iMinds-UGent and iMinds-VUB are currently generalizing the architecture and software to create a module for multi-standard wireless and wireline communication, with expertise from the different industrial partners. AnSem, Eandis, Elster Energy ICT, Infracx and Laborelec provide reference operating conditions to validate the performance of the system and evaluate the suitability of different wireless and coax communication standards for smart grid applications. Moreover, based on an overall system complexity analysis, energy consumption and production cost of the multi-standard communication module for smart meters are estimated. For the dissemination of the results, the CoPlaSM partners are supported by Smart Grids Flanders to present the project to Flemish stakeholders.

Provided by IMEC

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