PRESS RELEASE

Greater transparency for climate protection: Massive interest in a reliable way to assess the product carbon footprint for the IT industry

Net Zero by 2030: That is the ambitious goal of leading IT companies for their products' carbon emissions, calculated across the entire semiconductor value chain. On behalf of the SEMI Semiconductor Climate Consortium, researchers at Fraunhofer IZM are working on a strategic roadmap for the product carbon footprint (PCF). The PCF will become the vehicle for a realistic calculation of the carbon emissions covering the full sweep - from the production of a single semiconductor to the hardware running in major data centers.

The IT industry is grappling with climate change. A substantial part of its carbon dioxide emissions happens during the complex production of the semiconductors that all IT devices depend on. A new report by the SEMI Semiconductor Climate Consortium (SCC), drafted with considerable input from the Fraunhofer Institute for Reliability and Microintegration IZM, has set its sights on exactly this issue. The report aims to lay the groundwork for greater transparency and easier comparisons between the product carbon footprint (PCF), in the semiconductor and IT industry.

The current standard, the Corporate Carbon Footprint (CCF), covers the emissions of entire companies. By contrast, the PCF takes a far closer look by analyzing the footprint on the level of actual products. It helps identify the causes of emissions along the complete value chain – from making the individual semiconductor to equipping entire data centers – and seize the opportunities for reducing harmful emissions.

Ambitious goals creating pressure to act

Providers of cloud services, operators of data centers, or suppliers to the auto industry are just some of the actors who are feeling the heat of ambitious climate goals. They depend on reliable data and indicators they can compare across the industry. The experts at Fraunhofer IZM have spoken to more than 25 semiconductor and IT enterprises, and their findings are plain: The carbon footprint of making semiconductors accounts for a substantial share of the total emissions of IT hardware production. Interest in reliable PCF data has grown rapidly in the last few years. Without such PCF figures that are reliable, cross-comparable, and actionable, companies will struggle with calculating specific reductions in emissions. Oftentimes, this means that potential opportunities for improvements are left unused.

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Shared standards are key

A first report, after analyzing the needs of the participating companies, revealed how crucial transparent data, uniform calculation methods, and standardized exchange formats are for the industry to make real headway in bringing down emissions. Platforms like Catena-X[1] are already being used in the automotive industry to share data in a secure and standardized way. With support from the Federal Ministry for Economic Affairs and Energy, it is being brought to the semiconductor industry as part of the Semiconductor-X project. The move can be a model for other fields of industry, and Fraunhofer IZM specialists are again contributing to the project's efforts.

With the „Product Carbon Footprint Strategy and Methodology Development Report", the SEMI Semiconductor Climate Consortium is releasing the first truly comprehensive survey of the PCF in the semiconductor industry or the IT industry at large. The paper is taking a close look at current guidelines and standards for computing and communication technology and using the insights to propose a strategic roadmap for the creation of a PCF calculation method tailored specifically to the needs of the semiconductor industry.

Action on the ground expected by 2027

The strategy paper will be released to the members of the Semiconductor Climate Consortium, marking the first phase of the entire venture. In a second phase, its recommendations will be put into action by March 2027. Fraunhofer will be at the helm, facilitating the process, reconciling the interests of the partners involved, and coming up with the best practices for assessing the carbon emissions of individual semiconductor parts.

This initiative is just one of many efforts under way at Fraunhofer IZM that all aim to make the product carbon footprint in the IT industry more reliable, more meaningful for actual industry practice, and more actionable. Whether notebooks, desktop computers, or entire data center hardware is concerned: the ambition is to help the IT industry on its route to a more climate-friendly future.

For more information about the Semiconductor Climate Consortium:
https://www.semi.org/en/industry-groups/semiconductor-climate-consortium

[1] More information about CATENA-X: https://catena-x.net/use-case-cluster/sustainability/

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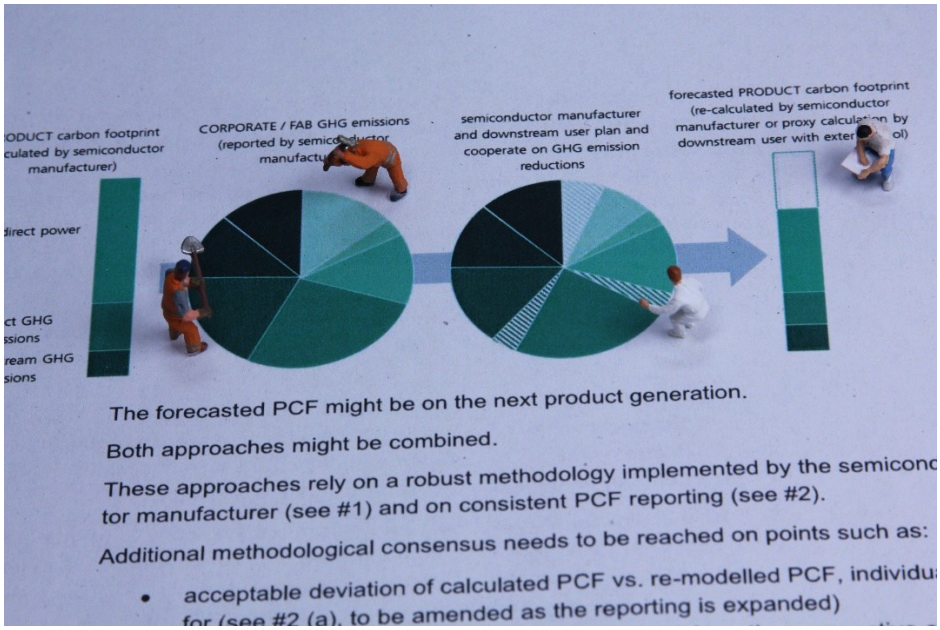

Calculating the exact carbon balance for major IT enterprises. © Fraunhofer IZM / Artur Templiner I Bildquelle in Print quality: www.izm.fraunhofer.de/pics.

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