

Infineon launches European Union projects for power electronics and artificial intelligence

45 partners from 12 countries are collaborating in the €60m project ALL2GaN for 'Affordable smart GaN IC solutions for greener applications'.

Infineon in Villach, Austria is launching two European research projects involving 98 partners from 18 countries, with total funding over three years (until April 2026) of €130m from industry investments, grants from the individual countries involved, and the European Key Digital Technologies research program.

The project ALL2GaN (*Affordable smart GaN IC solutions for greener applications*) is about easily integrated energy-saving chips made of gallium nitride. They have the potential to improve energy efficiency by 30% in a wide range of applications and thus save an extrapolated 218 million tons of CO₂ worldwide.

The project AIMS5.0 (*Artificial Intelligence in Manufacturing leading to Sustainability and Industry 5.0*) focuses on artificial intelligence (AI) to create resource-efficient manufacturing across industries as well as optimize supply chain management in Europe.

Through the 'Green Deal', the European Union (EU) aims to make Europe the first climate-neutral continent by 2050. Smart, low-emission technologies with a digitally strong, competitive and sustainable industry in Europe are hence needed more than ever. Research and innovation in pacemaker technologies such as power electronics are crucial catalysts in the implementation of the Green Deal, it is reckoned.

"Investments in key technologies are essential for achieving the climate targets. This can be achieved through research, cooperation with the best partners and innovations with real impact - as extrapolated here with a savings potential of 218 million tons of CO₂," says Infineon Technologies Austria AG's CEO Sabine Herlitschka. "With these two projects, we are doing just that. Together, we can develop sustainable products and processes faster and make a decisive contribution to decarbonization and digitization," she adds. "The results strengthen industry and Europe as a location in global competition. They bring more strategic autonomy for Europe and our society, secure supply chains and are a turbo for an energy-efficient future."

New generation of energy-saving chips reduces emissions

Led by Infineon Technologies Austria AG, ALL2GaN brings together 45 partners from 12 countries with a total budget of about €60m. The aim is to fully exploit the energy-saving potential of highly efficient power semiconductors made of gallium nitride, to integrate them easily and quickly into many applications, and thus to reduce emissions.

GaN chips: energy efficiency reduces CO₂ footprint

Generating, controlling and using energy efficiently is a decisive lever for CO₂ reduction. The less energy that is wasted, the lower the emissions. Intelligent technologies and semiconductor materials such as GaN play a key role. They deliver more power in a small space, convert energy highly efficiently and thus minimize the CO₂ footprint in digital devices.

Variable 'toolbox' for fast integration

Following the development of cost-efficient GaN chips at Infineon-Villach, the research team is now working on a crucial milestone: the GaN power semiconductors will be modular and easily embedded in many applications through the integration toolbox. The research extends from individual chip elements, high-performance GaN modules, to chip designs and novel system-on-chip approaches. The advantage: variably adaptable GaN system solutions mean faster integration into applications, rises in energy efficiency, and a drop in CO₂ emissions.

Telecommunications, data centers and server farms can benefit from the new, highly integrable GaN chip generation 'Made in Europe', as can e-mobility, renewable energies and highly efficient smart grid solutions. Projections show that this new GaN chip generation can reduce energy losses in applications by an average of 30% (roughly equivalent to 218 megatons of CO₂ saved worldwide).



From left to right: Johannes Schoiswohl, senior VP & general manager Business Line EPIC, Division Power & Sensor Systems, Infineon Technologies Austria AG; Infineon Technologies Austria AG CEO Sabine Herlitschka; Henriette Spyra, section head Innovation and Technology, Austrian Ministry for Climate Protection; and KDT JU programme manager Francisco Ignacio.

"GaN technologies are paving the way for applications that drive decarbonization. Applications such as mobile charging, data-center power supplies, residential solar inverters and onboard chargers for electric vehicles are at the tipping point," says Adam White, division president Power and Sensor Systems, at Infineon Technologies AG. "With the All2GaN research project, energy-saving chips made of gallium nitride can now be developed even faster and easily embedded in many applications thanks to the integration toolbox," he adds. "The research project opens up enormous application potential and creates sustainable benefits."

Green Industry 5.0 with artificial intelligence

In AIMS5.0, research is being conducted on smart AI technologies for resource-efficient manufacturing in Europe. A 53-partner strong consortium of producers, suppliers, research institutions and AI specialists from 12 countries is thus paving the way for an economical, ecologically sustainable Industry 5.0 and the European Green Deal. Led by Infineon Technologies AG in Munich, the project has funding of €70m.

AI technologies bring efficiency boost

Efficiency is one of the main economic principles and can be further improved through safe AI methods. More efficiency in processes brings lower resource consumption in manufacturing, better product quality and also robust supply chain management through intelligent networking along the value chain. In line with the Industry 5.0 approach, the skills of employees are being qualified for AI use and young students are already being introduced to the required AI skills in practice by academic partners.

The AIMS5.0 team is taking a common AI approach across industries and applications for the first time. It is about the development and production of hardware and software components and a secure AI networking platform. The results are aimed at strengthening manufacturing in mechanical engineering, semiconductors, electronics as well as in the automotive industry and creating resilient supply chains in Europe.

"With AI research, we are supporting a modern and sustainable industry," says Thomas Morgenstern, executive director Frontend at Infineon Technologies AG. "This benefits the partners directly and subsequently

many other manufacturing sectors. It strengthens the entire industry and know-how location as well as the technological sovereignty in Europe," he adds. "At the same time, the project also develops the AI skills of employees through training and qualification methods and improves human-machine interaction."

Research starts at Infineon site in Villach

The kick-off event and thus the official start of both projects is taking place on 23 May at Infineon's Villach site. Both EU projects are co-funded by the KDT-JU (Key Digital Technologies Joint Undertaking) program of the European Union and the participating countries.

"The two Infineon projects show us very well that in many seemingly specific, individual and technical optimization processes, such as the use of new semiconductor materials for power electronics or the use of advanced AI for the management of complex supply chains, there is enormous potential for achieving sustainability goals," comments Henriette Spyra, section head for Innovation and Technology at the Austrian Ministry for Climate Protection. "These must be uncovered and implemented. Then these pacesetting technologies can act as 'Tech4Green', as drivers for long-term sustainability transformations," she adds.

"The projects make an extremely important contribution to the implementation of the KDT JU portfolio," says KDT JU director Yves Gigase. "They address the top priorities of current European policies, such as the Green Deal. They are about the development of power electronics for energy-efficient applications and European digital autonomy with the introduction of AI in the industrial value chain to increase productivity and more sustainable production," he adds. "With the European Chips Act, the results of these projects will play an even more important role in many digital applications."

ALL2GaN – Affordable smart GaN IC solutions for greener applications

The 45 partners in 12 countries are:

Austria: Infineon Technologies Austria AG, Fronius International GmbH, KAI GmbH, Silicon Austria Labs GmbH, Graz University of Technology, Vienna University of Technology

Belgium: imec, MinDCet NV

Czech Republic: Thermo Fischer Scientific, Brno University of Technology

Denmark: Aalborg University, Ballard Power Systems Europe

Germany: AIXTRON SE, CE-LAB GmbH, Chemnitzer Werkstoffmechanik GmbH, Fraunhofer Gesellschaft (IAF, IMWS, IZM), Heraeus Deutschland GmbH & Co KG, Infineon Technologies AG, IMS Chips, IMST GmbH, NanoWired GmbH, NaMLab GmbH, Chemnitz University of Technology

Greece: Institute of Electronic Structure and Laser, Foundation for Research and Technology — Hellas

Netherlands: Applied Micro Electronics 'AME' B.V., Nexperia BV, Signify, Delft University of Technology, Eindhoven University of Technology

Norway: Delta electronics (Norway) AS

Slovakia: Nano Design Ltd, Slovak University of Technology in Bratislava

Spain: For Optimal Renewable Energy, IKERLAN, University of Mondragon, Premium S.A., Universidad Politécnica de Madrid

Sweden: AlixLabs AB, Chalmers University of Technology, Ericsson AB, RISE Research Institutes of Sweden AB, SweGaN AB.

Switzerland: Attolight AG, Corintis SA, Ecole Polytechnique Fédérale de Lausanne EPFL

AIMS5.0 — Artificial Intelligence in Manufacturing leading to Sustainability and Industry 5.0

The 53 partners in 12 countries are:

Austria: AIT Austrian Institute of Technology, CISC Semiconductor, Infineon Technologies Austria AG, KAI — Competence Center Automotive and Industrial Electronics, PhytonIQ Technology, Research Studios Austria, TTTech Industrial Automation AG, Virtual Vehicle Research, Vienna University of Economics and Business

Germany: Infineon Technologies AG, AI Dig+ Solutions, Bayerische Motoren Werke BMW, Cetto, Fabmatics, Fern-Universität Hagen, Institut für Integrierte Produktion Hannover, Fraunhofer Gesellschaft, Hochschule Stralsund, Hochschule Zittau/Görlitz, Infineon Technologies Dresden, Systeme Systementwicklung, Technische Universität Dresden, Universität Lübeck

France: Pfeiffer Vacuum, Thales Research and Technology

Greece: Idryma Technologies Kai Erevnas, Harokopio University

Netherlands: NXP Semiconductors, Philips Consumer Lifestyle, Rijksuniversiteit Groningen, Semaku BV, Signify Netherlands, Technische Universiteit Eindhoven

Lithuania: Elektronikas un datorzinatnu instituts Riga

Poland: DAC Spolka Akcyjna, Gdansk University of Technology

Sweden: Husqvarna, Luleå University of Technology, Stream Analyze, Skandinaviska Enskilda Banken

Spain: Goimek S. Coop, Ibermatica, Ideko S. Coop, Soralue S. Coop, SAVVY Data Systems, Universidad Politécnica de Madrid

Hungary: AITIA International, Budapest University of Technology and Economics

Italy: Lfoundry, Università degli Studi di Padova, Statwolf Data Science

Turkey: SmartUniversal, Tubitak Bilgem AI Institute. Infineon Technologies Austria AG is a group subsidiary of Infineon Technologies AG.

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