DESIRE 4EU

DESIgning & REcycling sustainable Electronic boards for European circular economy

Newsletter Issue #2

September 2025

DESIRE4EU - TOWARDS A SUSTAINABLE GREENER ELECTRONICS

In this issue discover:

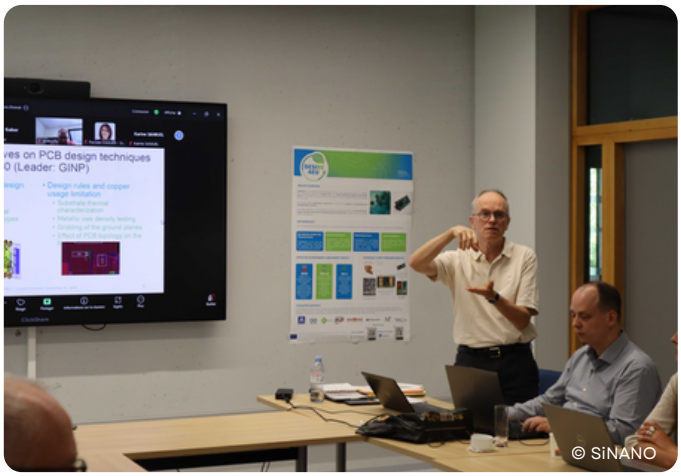
- The annual consortium meeting
- Advisory Board visit
- Spotlight on Research: Vincent and Zoltan's latest work
- Conferences & Events: Where we've been and what's coming next
- And much more...

DESIRE4EU Annual General Assembly

We are pleased to provide an overview of our recent general assembly held on September 19th in Grenoble. This productive meeting brought together our dedicated team to review past achievements, strategize for future, and ensure alignment on critical objectives.
The discussions covered a wide range of topics, from an in-depth look at our first year's progress to detailed planning for the upcoming review and next steps of each work packages.

First Year Overview and Work Packages Updates

The meeting started with an overview of the progress achieved during the first year of our project. This part highlighted the significant milestones reached and the challenges overcome. Each Work Package (WP) presented updates, showcasing individual contributions and collaborative successes. This collective review showed the robust progress across all fronts and reinforced our commitment to excellence.



DESIRE4EU Annual General Assembly

Actions for the Next Period

Looking ahead, the meeting outlined key actions and strategic priorities for the next period. Detailed discussions were held to define clear objectives and allocate resources effectively. This forward-looking part ensures that our efforts remain focused and aligned with our the project goals, driving innovation and impact in the coming months.

A significant portion of the morning session was dedicated to the preparation for our upcoming review. The goal is to guarantee a smooth and successful review process, allowing us to present our achievements and future plans effectively.

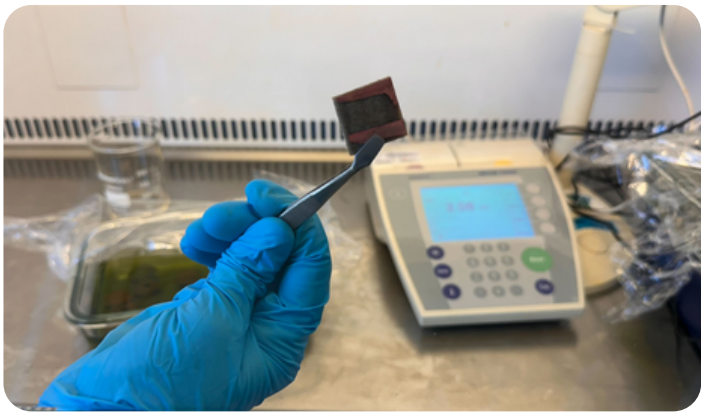
Responsible Electronics Portfolio Discussion

The meeting included a special discussion concerning the ReTronics portfolio, serving as a follow-up to Work Package 6. This discussion delved into strategic aspects of our project portfolio, ensuring its coherence and effectiveness. Discussions were held regarding potential collaborations and joint actions with other portfolio projects. A key highlight was the planning of the annual portfolio meeting, to be organized in Grenoble in February 2026, promising an exciting opportunity to engage with other projects in the portfolio.

DESIRE4EU Annual General Assembly

Visit of IGE's Laboratories

Following the morning session and lunch, the consortium members had opportunity to visit the laboratories of the Institute of Environmental Geosciences (IGE). This visit offered a valuable opportunity to observe ongoing research and development activities, enhancing their understanding of the practical applications and scientific progress associated with the project.



Time for Fruitful Networking

The day concluded with a coffee break and an opportunity for free exchanges. This informal session allowed the consortium members to network, discuss ideas, and foster collaborations in a relaxed setting. Such interactions are invaluable for strengthening our community and generating new perspectives.

Advisory Board & Ethics: Key Discussions from September 19th Meeting

On September 19th, we had the pleasure of welcoming two members of our Advisory Board to our project meeting. Their participation brought valuable perspectives and reinforced the importance of external guidance in shaping our work. The discussions focused on two key aspects: The role of the Advisory Board in supporting our strategic orientation, and an in-depth dialogue on ethics, ensuring that our project not only advances innovation but also respects the highest ethical standards.
These exchanges are essential to keep us aligned with our long-term vision and to guarantee that our research and outcomes remain impactful, responsible, and sustainable.

Yannick Menard, Advisory Board Member

First, **Yannick Menard** from BRGM presented his vision of how microorganisms can contribute to extracting metals from e-waste, followed by a dedicated Q&A time allowing the consortium members to engage directly with his expertise.
Yannick Menard's contribution provided valuable external perspectives and stimulated thoughtful discussions, enriching the overall dialogue of the meeting.

Ethics Discussion with Peter Troxler

One of the most critical part of the afternoon was the ethics discussion, led by **Peter Troxler**, another member of our Advisory Board from Rotterdam University of Applied Sciences. This session delved into the ethical challenges that arise when designing technology for a more bio-based, circular economy.
This discussion reinforced our commitment to maintaining the highest ethical standards in all our work.

The discussions surrounding the Advisory Board and ethics were essential in shaping our strategy. The insights gained from these sessions will undoubtedly guide our future actions and reinforce our commitment to responsible and impactful work.
We look forward to implementing the recommendations and continuing these vital conversations.

Revolutionizing Electronics: Vincent Grennerat's Commitment to a Sustainable Future

In an era where technological advancement often conflicts with environmental sustainability, the work of researchers like Vincent Grennerat stands out as a pillar of innovation. A dedicated educator and a visionary scientist, Vincent Grennerat is at the forefront of efforts to revolutionize the electronics industry, particularly through his impactful contributions to the DESIRE4EU project. His research focuses on a critical challenge: enhancing the circularity of electronics to mitigate the escalating problem of Waste Electrical and Electronic Equipment (WEEE) and address the pressing issue of resource scarcity. This article delves into his academic journey, his specific research within DESIRE4EU, the broader impact of his work on energy and sustainable transitions, and how interdisciplinary collaboration is shaping his innovative findings.

Decades of Expertise: Vincent Grennerat's Path to Circular Electronics :

Before embarking on his PhD, Vincent Grennerat dedicated two decades to teaching at the Institute of Technology of Grenoble-Alpes University (UGA). His experience spans bachelor's and master's degrees, with a primary focus on embedded systems, particularly digital electronics and real-time systems. His engineering prowess led him to design several PCB assemblies for diverse digital applications, ranging from consumer electronics to the highly demanding aerospace sector, notably through his involvement within the Grenoble University Space Center (CSUG).

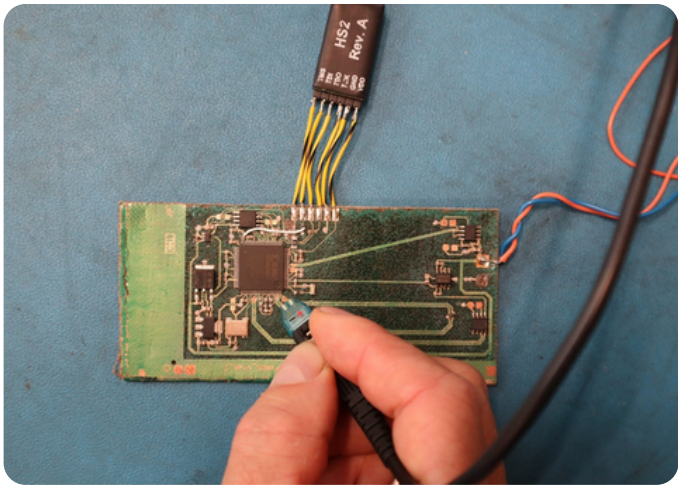
In 2022, Vincent Grennerat started his part-time PhD, balancing it with his ongoing academic commitments at Grenoble INP and UGA. His doctoral research aims at enhancing the circularity of electronics in order to drastically reduce the current and upcoming volume of Waste Electrical and Electronic Equipment (WEEE), while simultaneously confronting the critical challenge of resource scarcity.
His research activities are mainly conducted at the CROMA laboratory (DHREAMS team) and the G2Elab (Power Electronics team).

Revolutionizing Electronics: Vincent Grennerat's Commitment to a Sustainable Future

DESIRE4EU: Vincent Grennerat Reimagines PCB Design

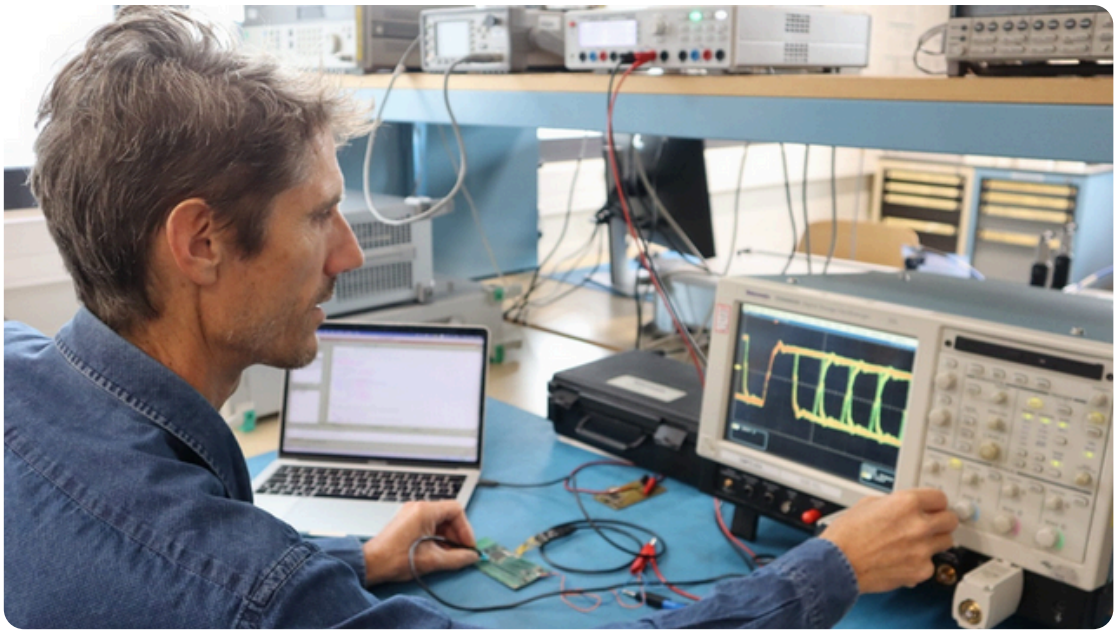
Within the DESIRE4EU project, Vincent Grennerat's research is focused on PCB design rules. The design of PCBs follows some common engineering design rules mainly driven by IPC standards, voltage and current capabilities, EMC and thermal constraints, reliability, alongside economic considerations. From an eco-design perspective, Vincent Grennerat is exploring new design rules for PCBs in order to reduce their overall ecological impacts throughout their entire life cycle, from cradle to grave. At the PCB scale, this involves a significant reduction of copper usage in the different layers of the PCB. This means actively seeking alternative solutions to decrease the number of copper layers and minimize the amount of copper in each layer, in some kind of "just enough material" approach.
This innovative perspective often creates conflicts with traditional rules of thumb of PCB designers and is potentially necessitating the development of new assistant tools to be included in common PCB CAD tools.

"Vincent's research focuses on a critical challenge: enhancing the circularity of electronics to mitigate the escalating problem of Waste Electrical and Electronic Equipment (WEEE) and address the pressing issue of resource scarcity."



Another aspect of his work is related to the use of bio-sourced materials, a key area of exploration within the DESIRE4EU project. While these substrates are designed to be compatible with standard PCB industry tooling, some adaptations to existing design rules could be necessary to fully take advantage of these new materials properties.
So far, Vincent Grennerat has successfully developed various demonstrators, including an FPGA board, patch antennas, and a photovoltaic inverter to explore new or adapted design rules. These demonstrators allow him to proceed to the evaluation of the performance of the design (signal integrity, electromagnetic compatibility -EMC-, efficiency, thermal dissipation, etc.) and to validate or invalidate rules.

Revolutionizing Electronics: Vincent Grennerat's Commitment to a Sustainable Future



Towards a Sustainable Energy Future: The Influence of Vincent Grennerat's Research

While some of Vincent Grennerat's activities within the power electronics team at G2Elab are not directly related to the DESIRE4EU project, he emphasizes the critical importance of addressing PCB eco-design for power electronics applications. He highlights the fact that the 2050 net-zero carbon target implies a huge electrification of our societies, which will be driven thanks to power electronics. Analysts in the WEEE sector expect a tremendous growth in the power electronics market during the next quarter-century, of course with resources depletion and WEEE consequences.
Consequently, a key research area for Vincent Grennerat involves tackling power-electronics-specific design rules, like through-PCB cooling or layout on two-layers PCBs in compliance with EMC norms. This is conducted with a photovoltaic inverter demonstrator, which has been (re)designed on bio-sourced PCB. This work directly contributes to developing more sustainable solutions for the energy transition.

The Power of Collaboration: Vincent Grennerat's Interdisciplinary Approach

Vincent Grennerat believes that his work would not be the same without the interdisciplinarity brought by the DESIRE4EU project. The pursuit of a more circular life cycle of the PCB took another dimension when working with UCL lifecycle specialists, IGE bio-chemists, and with Meshlin composite manufacturer: the search for new design rules is now also constrained by the copper life cycle, the end-of-life bio-leaching process, the composite properties, etc. Furthermore, Vincent Grennerat thinks that the outcomes of his work will be significantly shaped by the industrial and economic environment brought into the project by Arduino (digital board designs) and by the expertise of Alba PCB in PCB large scale manufacturing.

DESIRE4EU at the International Spring Seminar on Electronics Technology (ISSE 2025)

The 2025 edition of the International Spring Seminar on Electronics Technology (ISSE) was a hub of inspiring exchanges between academia and industry, shaping the future of electronics. The DESIRE4EU consortium played a leading role, championing the cause of sustainable innovation.
From the very beginning, the tone was set by the welcoming speeches from **Attila Geczy** and **Oliver Krammer**.

"At the core of the discussions, DESIRE4EU proudly championed themes central to our mission: sustainability, green electronics, bio-based solutions, and low-cost technologies."

The event was highlighted by two keynote lectures delivered by prominent members of our consortium:

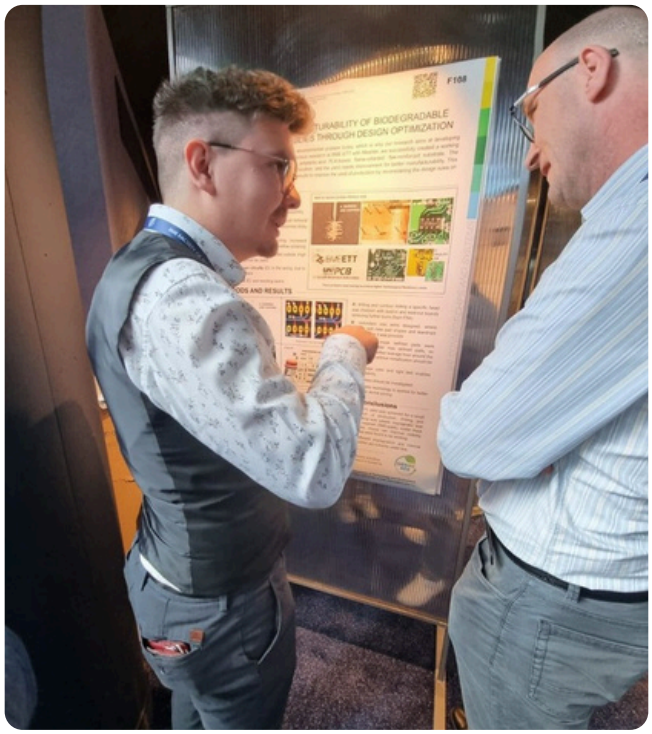
- **Pascal Xavier,** DESIRE4EU coordinator, presented innovative approaches in electronics to address global environmental challenges.
- **David Cuartielles,** from Arduino, emphasized the crucial role of open-source educational tools and the potential of emerging industrial technologies in education.

DESIRE4EU at the International Spring Seminar on Electronics Technology (ISSE 2025)

During the conference, **a special session of DESIRE4EU** was organized, providing a dedicated platform to present the project's objectives, current progress, and future perspectives.
Our warmest congratulations go to Vincent Grennerat, who received an award for his impactful work a well-deserved recognition of his contribution to the field.

A special thanks also goes to Gergo Havellant, who brilliantly represented DESIRE4EU with a poster presentation, showcasing our progress in a tangible way.

ISSE 2025 was an excellent opportunity to strengthen ties within the international electronics community and reinforce our shared vision.



We extend our warmest thanks to the Budapest University of Technology and Economics for their flawless organization, as well as to all the speakers and participants for their outstanding commitment.

Together, we continue to advance toward a more sustainable and innovative future.
Thank you to everyone who made this event so memorable.

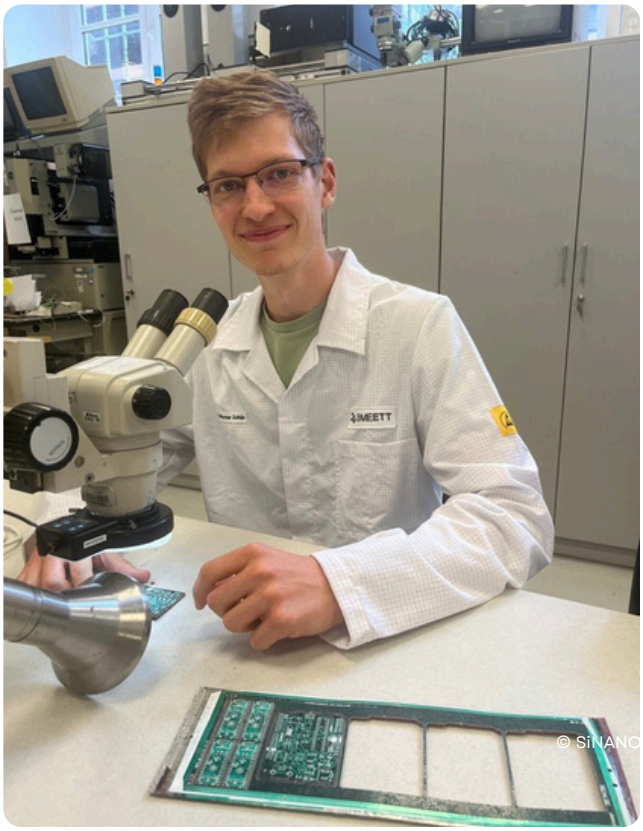
Zoltan Tafferner's Research Impact on Sustainable Technologies

As part of the DESIRE4EU project, we had the opportunity to interview Zoltan Tafferner, a PhD student at Budapest University of Technology and Economics whose work focuses on improving the sustainability of electronic components. His expertise in electrical engineering and his research on low-temperature solders and conformal coatings play a crucial role in developing more environmentally friendly solutions for the electronics industry. This interview explores his background, his contributions to the DESIRE4EU project, and his vision for the future of sustainable electronics.

Academic and Professional Background

Before starting his PhD, Zoltan obtained a bachelor's and a master's degree in electrical engineering from the Budapest University of Technology and Economics. His bachelor's work focused on the finite element modeling of VO2 nanostructures, exploring the electrothermal conditions required for the metal-insulator phase transition. During his master's, he worked at Bosch first as a trainee and later as a hardware engineer, specializing in PCB design and SiC MOSFET characterization. He also conducted research on the applicability of generative AIs in electrical engineering and electromigration in solder joints, publishing several papers on these topics. Currently, he pursues his PhD at the Budapest University of Technology and Economics under the supervision of Dr. Attila Géczy.

"With my research, I seek to improve the technological maturity, before such a transition could happen in electronics."

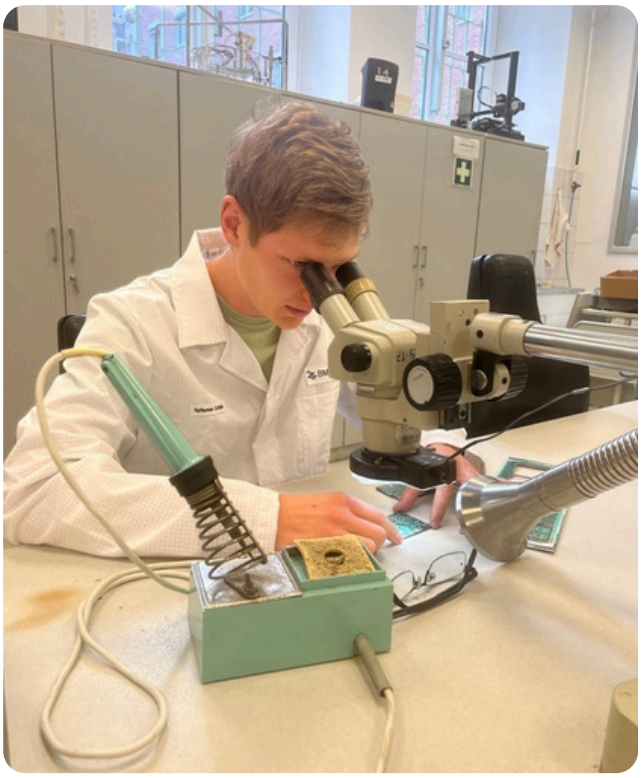


Research Focus within the DESIRE4EU Project

Within the DESIRE4EU project, Zoltan primarily focuses on low-temperature solders and their electromigration behavior. He also explores conformal coatings. The project uses PLA/Flax substrates, which, although biodegradable, are less robust than traditional materials like FR-4. Conventional solders require high temperatures (around 240 °C) that degrade the PLA substrate. This is why Zoltan works on low-temperature solders, such as Sn-Bi, which have a much lower melting point, allowing a reflow temperature reduced to 160-190 °C.

Zoltan Tafferner's Research Impact on Sustainable Technologies

These Sn-Bi solders, although more brittle, are essential for reducing the thermal load on PCBs. His current research focuses on the reliability and material properties of these solders, particularly the phase segregation of Sn and Bi, which could affect reliability. In parallel, he studies the application and measurement of the insulation resistance of biodegradable conformal coatings, in collaboration with the company AB Chimie, to improve the protection of PCBs against the environment, which is particularly important for biodegradable PCBs that are more sensitive to humidity.



"I would like to pursue more topics in the intersection of electronics and chemistry fields, and I think the project is a great opportunity for that."

Impact of Research on Energy and Sustainable Transition

Zoltan believes that it is crucial to have energy and sustainable technology available in our societies. His research aims to improve technological maturity before a major transition occurs in electronics. He hopes that his contribution will help reduce the pressure on industry and society from regulations requiring the use of sustainable technologies. By improving the reliability of solder joints and PCB assemblies in general, it would be possible to create sustainably manufactured, long-term usable products that consumers could rely on for a decade.

Interdisciplinary Aspect of the Project

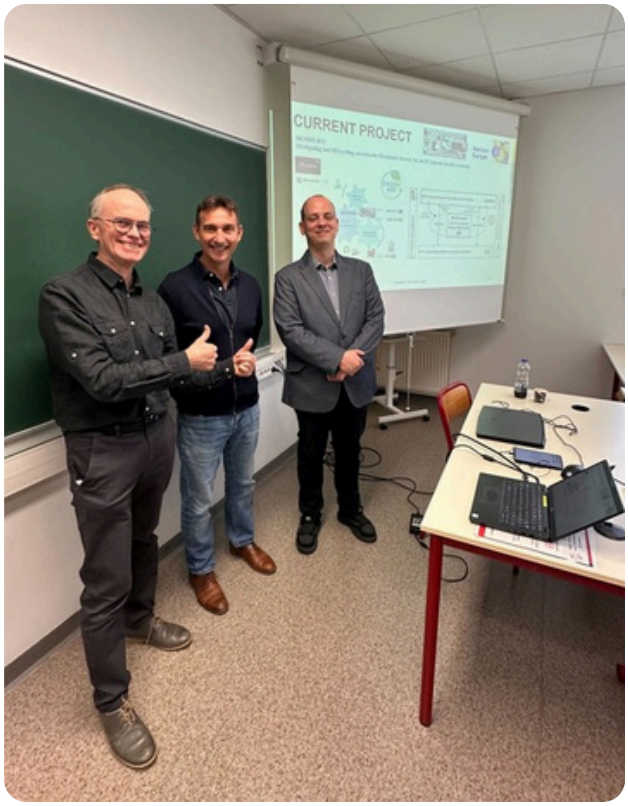
Zoltan appreciates the interdisciplinary aspect of the DESIRE4EU project, which allows him to explore multiple fields of study simultaneously. Currently, he conducts research on two distinct topics: low-temperature solders and conformal coatings. Both themes are at the intersection of electronics and chemistry, a field he finds fascinating. He wishes to delve deeper into topics at the interface of these disciplines and considers the project an excellent opportunity for this. This interdisciplinary approach not only enriches his research but also opens new perspectives for sustainable innovations in electronics.

Professional Prospects After PhD

After graduation, Zoltan wishes to pursue an academic career at his university, if the opportunity arises. He considers the DESIRE4EU project an excellent opportunity to realize this aspiration. His goal is to contribute to the advancement of research and education in the field of sustainable electronics, building on the knowledge and experience gained during his PhD.

Dr. Attila Géczy Inspires with Insights on Greener Electronics at FMNT Seminar

The **FMNT** was honored to host an inspiring seminar on September 17, 2025 at Grenoble, France with our partner Attila Géczy from the Budapest University of Technology and Economics (BME). The event, titled “PCBs from Green Substrates: A Possible Path for Greener Electronics,” captivated attendees both on-site in Grenoble and virtually via Zoom.
During the seminar, Dr. Attila Géczy presented his group's extensive research over the past several years, alongside his current work with partners in the DESIRE4EU project. He eloquently demonstrated how the electronics community can actively move towards greener and more responsible technologies, emphasizing the development of biodegradable alternatives for printed circuit boards.



The seminar was a unique opportunity for participants to learn from an expert whose work is at the forefront of the industry. As a respected member of IEEE, IMAPS ELC, and president of IMAPS Hungary, Dr. Attila Géczy's vision for sustainable innovation resonated deeply with the audience.

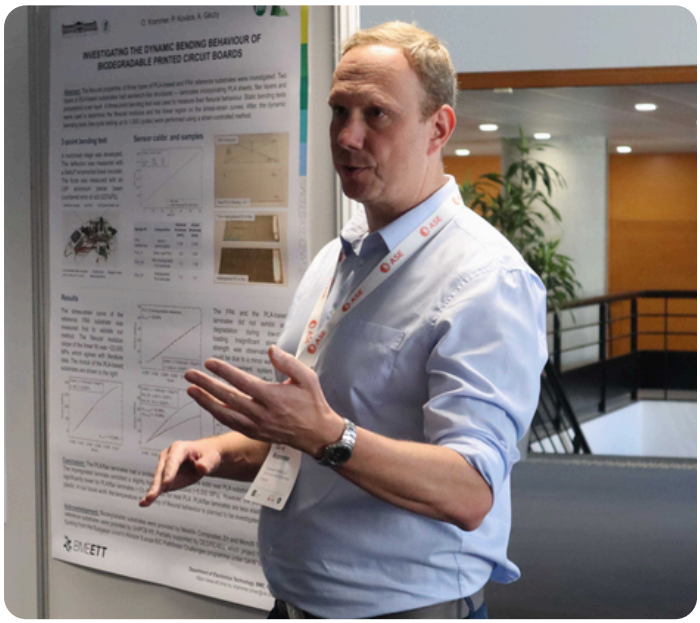
A special thank you is extended to the **FMNT** for the excellent organization of this event.
We are also thankful to everyone who joined the seminar, making this event a rich moment of exchange.
It was particularly encouraging to see so many students showing their interest and engagement in this vital topic, signaling a promising future for sustainable technology.
in eco-design and production.

DESIRE4EU at EMPC: A strategic step to promote our project to manufacturers

From September 16 to 18, we had the pleasure of exhibiting at the European Microelectronics and Packaging Conference (EMPC 2025) in Grenoble. This international forum gathers every year academia and industry around the latest advances in packaging, assembly, and reliability. As one of the leading events in this field, this event was a strategic step toward one of the objectives of DESIRE4EU.
Together with our partners ABChimie, ALBA PCB Group, BME, Grenoble INP, and the SiNANO Institute, we presented our latest samples from PLA substrates to Adruino bio-sourced cards, highlighting the role of every partner in the value chain of these new PCBs.

Visitors acknowledged the quality of our boards in regards of conventional RF4 PCBs. Although there is still a lot of work to be done to meet actual manufacturers standards, the discussions we had demonstrated the interest of industrials for our ambition to develop sustainable PCBs, addressing both environmental impact and circularity in the electronics industry.

A very good sign for us, as by the end of the project, we aim to secure 10 industrial partners ready to integrate and test our technology within their manufacturing processes. Achieving this requires direct engagement with companies that can validate our solutions under real production conditions.
Then exhibiting at EMPC 2025, with its strong industrial attendance, was a good opportunity to promote our vision for sustainable PCBs. It helped us establish new contacts and to advance to new industrial collaborations, bringing us closer to making our technology a scalable solution for the future of electronics.



DESIRE4EU Advances Collaboration at ReTronics Summer School in Krakow

The ReTronics Summer School, held in Krakow as part of the EIC Responsible Electronics portfolio, offered an enriching forum for learning, exchange, and collaboration. The event brought together researchers and innovators working on more sustainable and responsible approaches to electronics.

The program featured a keynote by Isabel Obieta Vilallonga, who outlined the vision and ambition of the Responsible Electronics portfolio and highlighted the importance of EIC support for research and entrepreneurship. Her address underscored the critical need to accelerate the transition towards more sustainable electronics.

DESIRE4EU was also represented through the contribution of Balázs Illés (Budapest University of Technology and Economics), who presented his research on “Soldering and Sustainability.” His talk explored advancements in low-temperature solders and special alloys, showcasing their potential to reduce energy consumption and shape the next generation of sustainable electronics.

The Summer School combined high-level lectures, workshops, and discussions, offering valuable opportunities for knowledge sharing and new perspectives. It also provided a platform for DESIRE4EU partners, including Feriel Guidoum (Grenoble INP – UGA) and Balázs Illés, to engage with colleagues from across the Responsible Electronics portfolio.

We extend our thanks to Isabel Obieta Vilallonga and the EIC Pathfinder team for the excellent organization and for fostering such a stimulating environment.

DESIRE4EU News & Events

What's already happened since the last Newsletter?

DESIRE4EU was represented at various events by our consortium partners:

(2025 Aug 27) ReTronics Summer School in Krakow (PL): Participation by GINP and BME
(2025. jun 16) Sustain-E Summer School in Grenoble (FR): Participation by UCL and GINP
2025 sep 15-18) The 25th European Microelectronics & Packaging Conference (EMPC 2025). Participation by ALBA, ABChimie, BME, GINP, SiNANO Institute
(2025. sep 11) TEK Days in Gdańsk (PL): Participation by ALBA.
(2025. may 14-18) IEEE ISSE in Budapest (HU): Presentations by BME, GINP, ALBA.
(2025. may 14-16) ADTC Conference in Grenoble (FR): Participation by GINP.
(2025. may 4) Sustainable Seminar at BME VIK in Budapest (HU): Participation by BME.
(2025. apr 29) Lecture – Swinburne University of Technology (remote, AU): Participation by Arduino.
(2025. apr 10) Innoelectro in Budapest (HU): Participation by BME.
(2025. apr 4) WS on TinyML for Sustainable Development in Malawi: Participation by Arduino.
(2025. apr 3) IMEC Partner Week in Leuven (BE): Participation by UCL.
(2025. mar 31) Workshop Eco-Es – DATE in Lyon (FR): Participation by GINP.
(2025. mar 24-26) JCMM in Saint-Étienne (FR): Participation by GINP.
(2025. mar 15) Hackaday Berlin in Berlin (DE): Participation by Arduino.
(2025. mar 11-13) Embedded World in Nuremberg (DE): Participation by ALBA.
(2025. mar 5) BME Future Planner Conference Series in Budapest (HU): Participation by BME.
(2025. feb 26) EDGEAI Conference 2025 in USA: Participation by Arduino.

What's next?

DESIRE4EU will be presented at various events by consortium partners:

Fête de la Science 2025
- Dates: October 3- 13, 2026
- Location: Grenoble

European Researchers' Night
- Dates: 26-27 September 2026
- Location: Budapest

Lopec 2026
- Dates: February 24 -26 , 2026
- Location: Munich

Retronics potfolio annual meeting
- Dates: February
- Location: Grenoble

European Innovation Council

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