Microelectronics

CEA-Soitec Collaboration: Shaping the Future of Microelectronics

A Revolution in Chip Manufacturing: **Soitec's patented SmartCut technology cuts wafer emissions by 70% while boosting performance**

RTO – Industry Collaboration: Soitec and CEA-Leti's 30-year partnership enabled a **4-year fast-development process for this new factory**

A Technology for the Future: This SiC-based technology enhances energy efficiency, thermal management, and power density, reducing material waste. For example, **it could extend electric vehicle range to over 500 km, up from 350 km**

"The complementarity of our two organisations was the key to this success. Setting up a full pilot line within our clean rooms was a new stepping stone in our long-term partnership with Soitec, and the results are excellent. By joining forces to work simultaneously on fundamental understandings and practical implementation, ***we've bolstered our organisations' ability to support European leadership in this field."***

Sébastien Dauvé, CEA-Leti's CEO

From CEA Spin-off to Global Industry Leader

Founded in 1992 by four researchers from the CEA eager to leverage Smart Cut™ technology for industrial-scale production of silicon-on-insulator (SOI) wafers, Soitec is one of the first spin-off startups from CEA-Leti. Soitec is now a world leader in semiconductor materials and has been a listed company on Euronext Paris since 1999

cea leti

soitec

An RTO – Industry Collaboration

To Bring a New Technology to the Market

Contributing to the Creation of a New Factory

Located in Bernin (France), Soitec announced 380 M€ investment, with 400 new jobs within 5 years

CEA-Soitec Collaboration: From Lab to Fab

EARTO
IMPACT DELIVERED

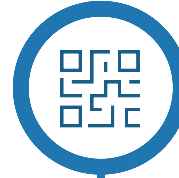
4 Years

Tech Development strengthen by collaborative projects

- Transform, **European project with a large consortium** (33 partners, 7 countries) including Soitec, CEA, Fraunhofer, etc.
- Mobi-SiC, national project involving 6 industrial and 2 academic partners

EARTO Innovation award

The CEA received the **EARTO Innovation award in the Impact Delivered category** for the development of a patented Smart Cut™ process of substrate fabrication in collaboration with SOITEC



Inauguration & Production

Inauguration of the Bernin SmartSiC Factory dedicated to SmartSiC substrates. Support from the CEA-Leti R&D teams to fully qualify the first production runs

TELECOMMUNICATIONS

INDUSTRY

ELECTRIC VEHICLES

Soitec Lab & Pilot line

The Soitec Lab aims to develop with CEA-Leti **process and prototyping activities,** reinforced by a **pilot line** financed with **industrial partner,** Applied Materials and **institutional funding** from the EU & Auvergne Rhône-Alpes Region

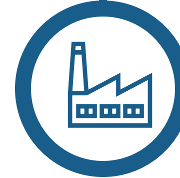
Tech advancements

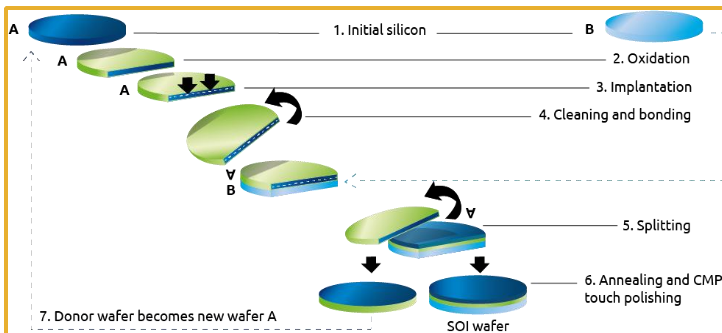
Key milestones reached such as:

- The physical understanding and improved reliability of the technology (smart bonding)
- Validation of the 1st power components in-house at CEA-Leti

Validation

Joint announcement of **Soitec and CEA-Leti of the 1st 200 mm SiC subtrates through smart bonding** at the Conference on Silicon Carbide and Related Materials (ICSCRM 2022) in Davos, Switzerland, and press papers





IMPACT DELIVERED
CEA
1st
CEA-SOITEC – Smart Cut™
cea

Flying-phones in your smart hands

- **Currently 100%** of **smartphones** use Smart Cut™ **new** substrates.
- **More than 1,250 active patents** cover Smart Cut™ process today.
- SOITEC created **more than 300 new direct jobs over the past 5 years.**
- **20 billion RF integrated circuits** based on RF-SOI substrates are now available on the market.

> It only took four years to go from lab to fab. In 2019, we decided on a SmartSiC solution. In 2020, we brought out our first 150-mm wafers, thanks to CEA-Leti. In 2021, we were able to build our pilot line at CEA-Leti. In 2022, we qualified our 200-mm wafers. And today, we are inaugurating the Bernin 4 fab.
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> *Sandrine Chabanet, director for innovation at Soitec, quoted by EETimes Europe, November 20 2023*