CITC 2023 Results

CITC

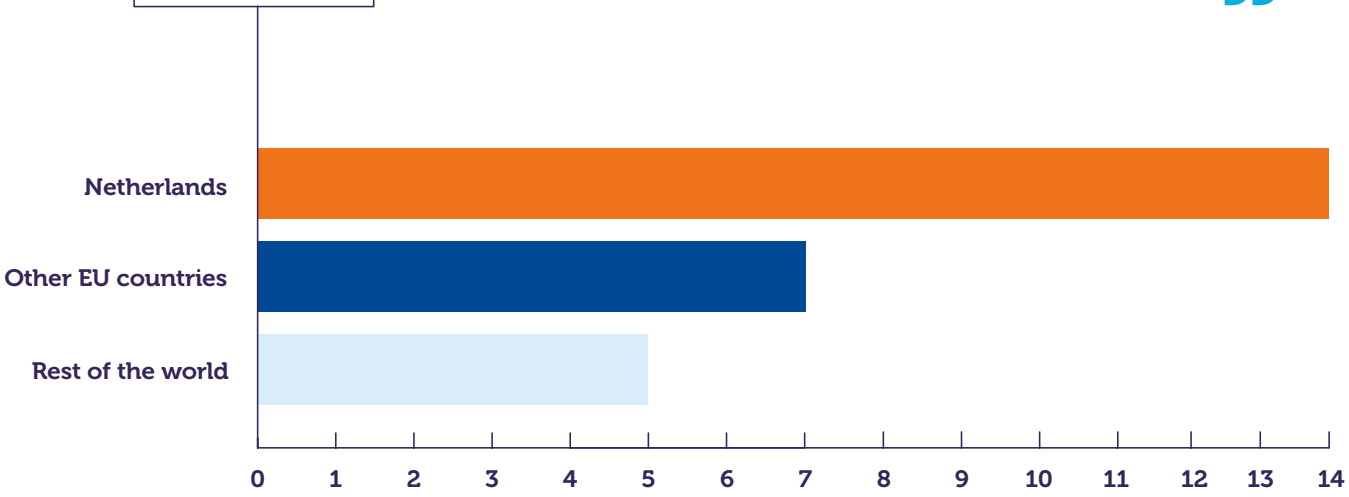
Chip Integration
Technology Center

TEAM

26 people work for CITC

31%

69%



Asked to describe his CITC internship in three words, Marco De Martini opts for family, inquisitiveness, and high-tech.

"The CITC team is small, which makes it more dynamic to talk to everyone. The colleagues were open and very welcoming. What I also liked is that everyone is open to each other's work. Over lunch, we had broad conversations, both work-related and beyond".

CORE ACTIVITIES

Our core activities are providing access to

Innovation

Infrastructure

Education

ACCESS TO INNOVATION

Spoken at conferences: **7**

Published scientific articles: **3**

New strategic partnerships: **5**

Patents: **1**

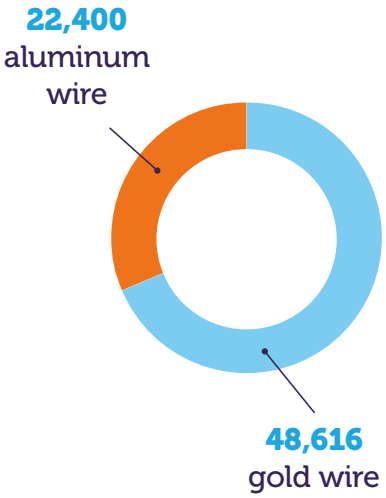
New participations in European projects: **3**

Submitted growth fund projects: **4**

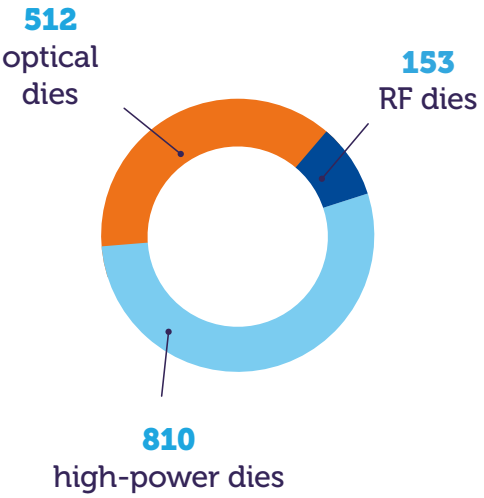
Generated measurement data: **1.6 TB**

Integrated photonics systems built: **268**

32,280 wirebonds made with **71,016 mm** wire



1,475 placed dies



ACCESS TO INFRASTRUCTURE

144,000 euro
invested in our lab

New equipment:
5

39
Company visits to our labs

3
Permanent guest researchers

Peter Czurratis, Managing Director of PVA TePla, intensified cooperation with CITC in 2023:

"CITC is an upcoming and leading research center focused on new semiconductor wafer technologies and new trends in packaging and systems integration. Their cooperation with semiconductor companies and universities provides us with an excellent research platform for defining our future roadmap for the next generation of acoustic microscopes."

ACCESS TO EDUCATION

45 students
trained in Semiconductor Packaging University Program

680 hours
of training provided

Guiding of:
- 9 interns and graduation students: 4 secondary vocational, 4 bachelor, 1 master
- 1 EngD student, 3 PhD students

Guest lectures for students:
- 35 primary school
- 550 secondary school
- 350 Bachelor and 112 Master

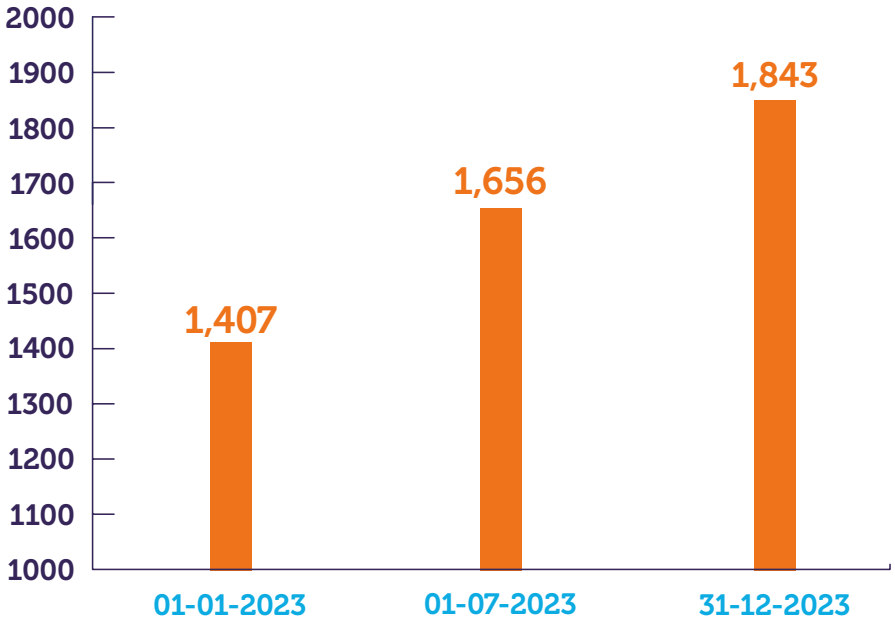
Bachelor student Mahad Saeed followed the Semiconductor Packaging University Program and is now doing his final internship project at CITC:

"Theory and practice in the minor were very well balanced. What I particularly liked was that we worked on real problems. And it was a plus that the industry professionals all had their specialties, which gave me good insight into what people in the industry are doing."

MARKETING

Increase of 31%

Number of followers on LinkedIn



13,875 visitors to our website

Itamar Harris from Universidad Tecnológica de Panamá followed the Semiconductor Packaging University Program:

"The U.S. is interested in locating one or more semiconductor OSATs in Panama. We want to be well prepared and are happy that CITC offered us the chance to take a look at the semiconductor industry in Europe."

Participated in **28 events**

- **Exhibitions and conferences: 13**
- **Self-organized: 4**
- **Other events: 8**
- **Innovation/ trade missions: 2**
- **Online: 1**

2023: READY FOR GROWTH

In 2023, CITC's main ambition was to grow. Growth in all kinds of areas: in the number of colleagues, in (lab) space, but especially in challenging innovative projects and in the number of students that we train and coach. When Mark Luke Farrugia took over as general manager in March, this ambition was further refined.

With unprecedented global attention on the need to strengthen the semiconductor supply chain, CITC, as a young organization, is benefiting from this drive by both industry and governments, providing us with opportunities to find our place in the market.

This year was important for CITC to continue building on the knowledge gained over the past four years and engage with the industry to understand what unique solutions we can offer, now and in the future. This led to the creation of our CITC Technology Roadmaps, which help us, together with our partners, map out our future and strengthen our credentials.

Innovation and infrastructure

In 2023, a new program line was added: Advanced Additive Manufacturing Packaging. We aim to develop a new range of advanced packaging technologies together with our partner Holst Centre. These technologies offer very significant cost saving benefits and a much smaller environmental footprint; qualities that are desperately needed for Europe's ambition to increase its sovereignty in the chip industry and the future of our planet for generations to come.

From March 1, Mark Luke Farrugia took on the role of general manager following the sad passing of CITC founder and first general manager Barry Peet in 2022.

Collaboration is central to our core activities. While further strengthening collaboration with existing partners, including initiating partners NXP, Nexperia and Ampleon, 2023 brought a new slate of collaborating partners, growing the CITC partnership diversity. However, collaboration consists of more aspects than the exchange of knowledge and experience. Sharing facilities with other high-tech companies creates synergy between all organizations. In addition, duplicate investments are prevented.

Education

Shortage of human capital remains a topic that continues to make headlines. CITC works with educational institutions and industry to ensure that talent has ample opportunities to develop the skills in demand regionally and nationally in the industry.

Talent is not age-related and that is why we focus on all education levels: primary and secondary schools, vocational, bachelor and master courses, EngD and PhD students, and professionals. We help spark enthusiasm for science, technology, engineering, and mathematics by giving children the opportunity to try things out for themselves during our events, excursions, and one-day internships.

> Sarah van Dronkelaar, location manager of Weekendschool Nijmegen:
>
> **"My students were very enthusiastic during their visit to CITC. I heard one of them say: I actually wanted to study architecture, but I like chips much better!"**

We offer plenty of opportunities for older students to participate in guest lectures, practical assignments, collaborative projects within the industry and internships. And finally, we offer formal education to bachelor students, PhD students and industry professionals in our accredited Semiconductor Packaging University Program, set up in collaboration with HAN University of Applied Sciences.

In conclusion

Since our foundation 4.5 years ago, CITC has taken significant steps towards its ambition to become a leading partner in the fields of semiconductor and photonics packaging. Looking back at our objectives for 2023, we have indeed grown in almost all areas: we have hired more colleagues, participated in many innovative projects, and trained and supervised a record number of students. We hope and plan to continue this in the coming years. The only downside is that our desired growth in (lab)space has not yet been achieved. This is one of the challenges that must be addressed in 2024.

CITC is a non-profit, joint innovation center specializing in heterogeneous integration and advanced chip packaging technology. We have created an effective ecosystem in which companies, research and educational institutes work on bridging the gap between academics and industry. CITC was founded in 2019 with strategic partners TNO and Delft University of Technology and is supported by local and regional governments. Located on Noviotech Campus Nijmegen, CITC is perfectly situated in the heart of the Dutch semiconductor industry.

ORGANIZATIONS CITC COLLABORATED WITH IN 2023

Companies

- Ampleon
- Deepsight
- DTU Fotonik
- Element-6
- Enzyre
- EPFL
- Etteplan
- Gallium Semi
- Henkel
- IMS
- iPronics
- iTeam UPV
- KDPOF
- Lusospace
- Mini-Circuits
- Nexperia
- NXP
- PHIX
- RJR
- ScioSense
- Thales
- TNO
- Tomoegawa

Educational institutions

- Hogeschool van Arnhem en Nijmegen
- IMC Weekendschool
- KU Leuven
- Onderwijs On Stage
- Radboud University
- ROC Nijmegen
- Sterk Techniek
- TU Delft
- TU Eindhoven

Network organizations

In the Netherlands

- Economic Board
- High Tech NL
- Holland Semiconductors
- Noviotech Campus
- OostNL
- PhotonDelta

International

- Aeneas
- EPoSS
- European Center for Power Electronics
- European Photonic Industry Consortium
- KOTRA
- SEMI Europe

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