CERN Career event 2022

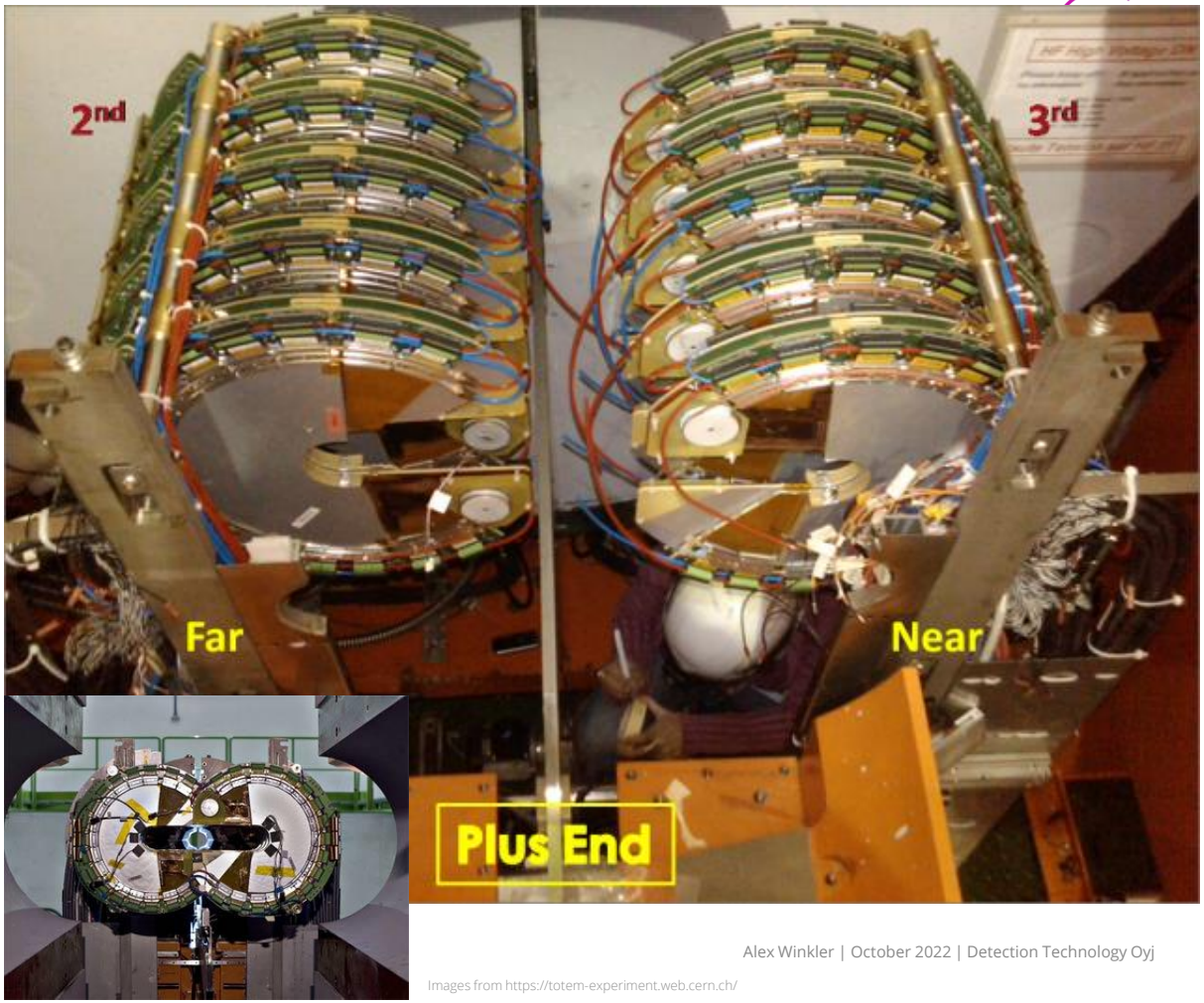
Alex Winkler | October 2022 | Detection Technology Oyj

Alex Winkler

Career

- Until 2010: Studied physics at the Friedrich Schiller University of Jena (MSc of Physics and Photonics)
- 2008-2009: Exchange to University of Helsinki (UH) to focus on nuclear and particle physics
  - Started at the TOTEM experiment (TOTal cross section, Elastic scattering and diffraction dissociation Measurement at the LHC, IP5)
  - Helped installing the last detectors of the T2 telescope

Installation of detectors in spring 2008

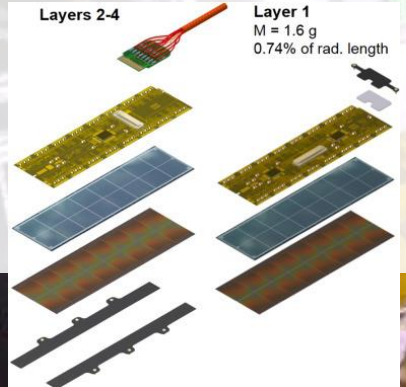


Images from https://totem-experiment.web.cern.ch/

Alex Winkler

Career

- **2010:** Return to UH for writing of MSc thesis
- **2011:** Started PhD studies at the UH
  - Started in instrumentation and partially TOTEM group
- **2014**: Change to CMS group
  - Working in the CMS pixel upgrade group, while changed PhD topic to medical physics
  - Participated in the building and testing of the CMS pixel phase I upgrades (in time and budget)



Images from:
https://cms.cern/news/cms-pixel-tracker-installation
https://doi.org/10.1016/j.nima.2016.06.039

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Career

- 2015: Particle physics for medical applications
  - Appeal of medical physics due to use of radiation physics to help people
  - Med. phys. is technologically 10-30y behind state of the art (LHC)
  - Local hospital had several projects with local industry
  - Got involved due to expertise in instrumentation and detector technologies
  - Projects continued for 2y+
- 2017: PhD defense
  - Application of photon counting detector technologies for neutron therapy (BNCT)
- 2018: Moved to industry (Detection Technology Oyj, R&D)
  - Scouting new technologies, testing & develop technologies that improve radiation detectors for medical, security & industrial applications
  - Responsible for scientific development of the company, teaching/ thesis supervision, academic collaborations, tech. roadmaps, IP developments, …

Detection Technology Oyj

Introduction

This is Detection Technology, a global provider of X-ray detector solutions.

Our journey

1991 Founded in Espoo, Finland by researchers with CERN background

1994 Opened R&D site in Beijing

1997 Established R&D and production site to Oulu region

1999 Opened Hong Kong site

2004 Opened factory in Beijing

2005 Established the US site

2009 Started BSI detector shipments to medical CT systems

2015 Listed on Nasdaq First North market place
Rolled out digital X-Cards and X-GCU
Opened new factory in Beijing

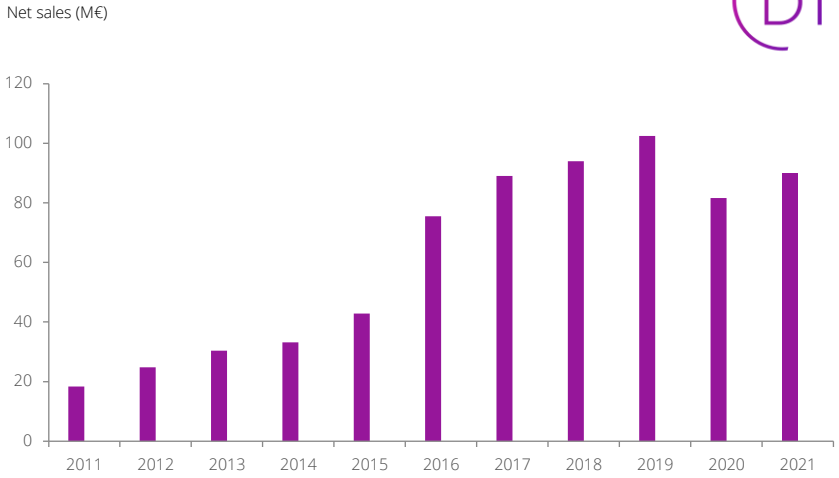
2017 Ahlström Capital became a major shareholder
Introduced X-Tile, a standard CT detector module

2018 Entered CMOS X-ray flat panel detector market
Unveiled Aurora product family
Acquired business of MultiX

2019 Expanded its product portfolio to TDI technology
Established a production and service site to Wuxi

2020 Unveiled Aurora CT, an off-the-self security CT subsystem
Introduced X-Scan ME
Launched the Industrial Solutions Business Unit (IBU)

2021 Introduced Aurora XS for the urban security segment
Introduced X-ACE
Established a talent hub in Nanjing



90 net sales in 2021, M€

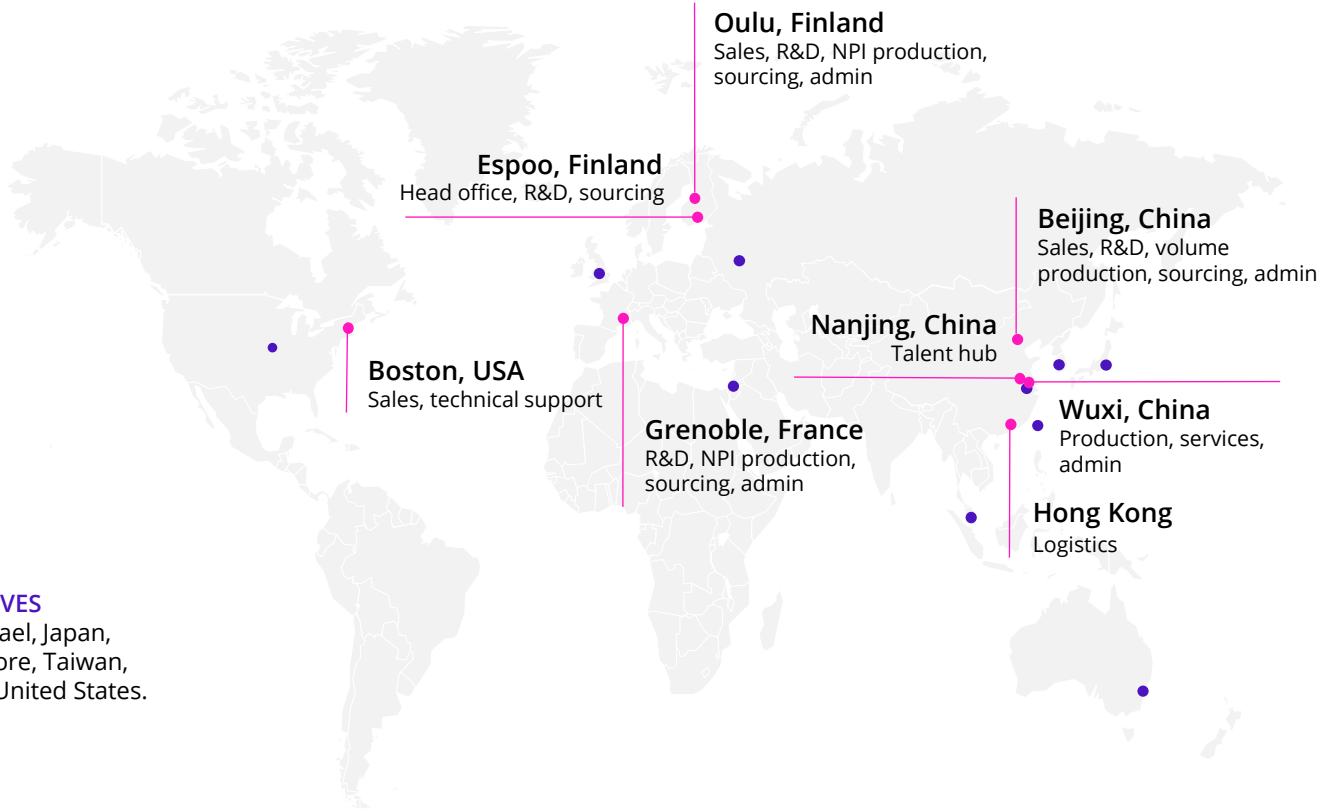
20% estimated global market share

370 active customers in over 40 countries

450 employees in Finland, China, France and USA

DETEC Nasdaq First North Growth Market Finland listed

We provide global service locally



SALES REPRESENTATIVES
in Australia, China, Israel, Japan, Korea, Russia, Singapore, Taiwan, United Kingdom and United States.

One-of-a-kind portfolio of standard solutions

Medical CT detectors › **Security CT detectors** › **Linear detector arrays** › **Linear detector boards** › **Flat panel detectors** › **Photon-counting detectors**

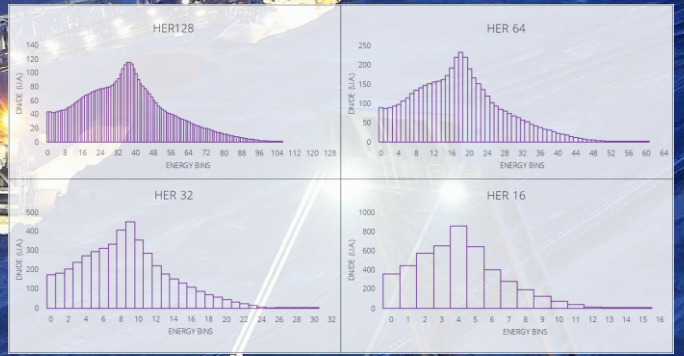
Photon-counting detectors

X-Scan ME

Ready-made photon-counting line cameras that simplify multi-energy imaging for multi-purpose industrial scanning needs.

X-Card ME

Multi-energy X-ray detector board providing premium material discrimination capability.



Why leave CERN/ Research/ Academia?

- During the last 2 years of PhDing noted that academia:
  - Moves too **slow**
  - Too **much administration**
  - To much **politics**
  - **Issues between research groups**
- **Salary** not in relation with work
- Innovations is **often slowed, to match funding calls**
  - Some large progress was made on the side, but finding the progress was "result" in a 3y funding project
  - Getting forward with the progress is left for continuation project (3y later)
- If one want's to do **research** for a topic that is **not mainstream**, then very difficult to find money for it
- Commercial sector promised to not have many of the above issues

Image from https://commons.wikimedia.org/wiki/File:Jen_Simmons_annoying.jpg

How to get out?

How did I start looking?

- Fortunately, didn't start looking → **Industry approached me**
- Specialist (PhD) in the field → **You're been searched for**
- **Key is to have connection already before the application process starts**  !
  - **Connection made already** → Research projects with the industry were already ongoing
  - **Relationship with key people** on a technical level → These influence decision makers
  - **Relationship was long** (a few years) → Partner gets to know the researcher with plus/ minus

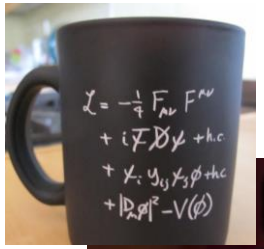
Was it hard?

- Yes → Asked early on to move out from academia → Seemingly no interest
- No → Lost faith that it will happen at all → Then they called me

Which area?

- Perfect match → I'm doing the **same as before** with **more freedom**, but also **responsibility** and **pressure**

Interview questions



Images from https://imgflip.com/memegenerator
https://www.sciencealert.com/this-is-what-the-standard-model-of-physics-actually-looks-like

Did you have to modify your CV a lot?

- Nope → CV & participation in research projects were exactly what the company was looking for
- Yes → Now changing CV, when we apply for project funding together with academia

What about interviews? People don't always understand the physics 'language'

- There was no interview, the job was offered directly, first time salary negotiations
- But, one of the reasons for being hired is that **industry needs people that can translate "physics" to engineering or common tongue** → If you can do that and physics, then you are interesting to the commercial sector

Transition

How was it in the first jobs after leaving CERN?

- Still my first job after CERN/ academia – but also still in academia
- Salary that is worthy of the educational level
- Clear tasks, well developed project management, good cross functional teams, access to more modern technology (i.e. laptops, software, etc.) → If it's justified then its bought

Did your work at CERN help in your new work?

- YES
- Finnish PhD system related: Project work while PhDing in free time, learning a lot of topics, from hands on (screwing in detectors at CERN) to planning how to get enough testing time at certain facilities

Image from https://imgflip.com/memegenerator

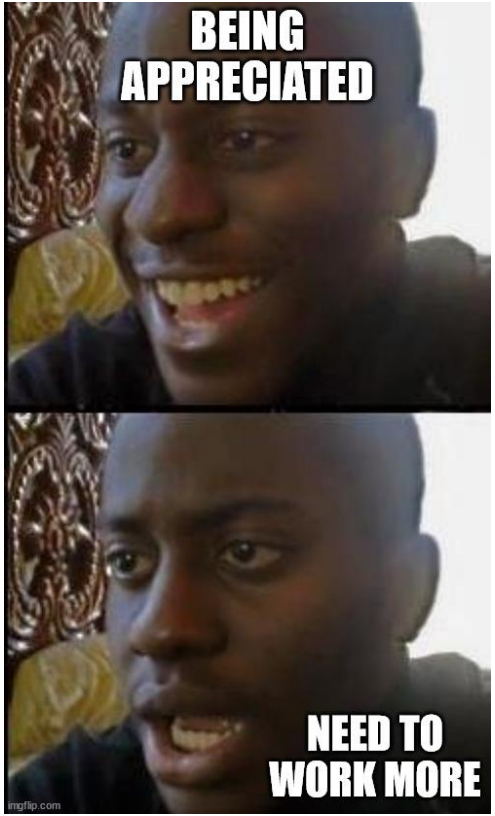
Impression

Successes:

- **Feeling of being appreciated** in the company
- Being consulted on topics for which one is expert
  (E.g. CEO of company frequently asks can you explain why technology X is so supposed to be better than Y)
- **Consultancy asked is actually followed** (mostly)

Disappointments:

- In difficult times, one has to step down/ back. Things may be taken away
  (E.g. fancy software subscription stopped, no more travels, bonuses, etc.)
- **Much more pressure**
- **Priorities change quickly** → One spends a lot of effort to provide good results, by the time they are done, it's not important anymore



But still worth it!

Image from https://imgflip.com/memegenerator

Detection Technology is looking future pioneers and creative minds!

A career with us gives you the opportunity to make a big difference. Changing the world for better will be part of your job role.

We recruit yearly skilled engineers for example following competence areas:

Hardware
Software
Firmware
Algorithm
Test technology

Currently we have openings for:

Design Engineers, FW (FPGA)
Product Manager, Software and Algorithms
System Architect
Senior Design Engineer, Electronics
Analog IC designer (Asia)
Factory Products Engineer (Asia)

Check out all our open positions

Careers – Detection Technology (deetee.com)

Email us if you are interested to work with us careers@deetee.com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