

# BigScience.dk activities 2021-2024

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Uddannelses- og  
Forskningsministeriet  
—  
Styrelsen for Forskning  
og Uddannelse



**TEKNOLOGISK  
INSTITUT**



Danmarks  
Tekniske Universitet

# 2020: 10-year anniversary



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## CERN

*"As an ILO function they punch well above their own weight"*

- Anders Unnervik, indkøbschef, CERN



CERN arbejder med grundforskning inden for partikelfysik ved studier af kolliderende højenergi partikelstråler. CERN finansieres af 20 medlemslande, der betaler et bidrag proportionelt med deres BNP. Med konstruktionen af LHC (Large Hadron Collider, operationel fra 2011) kan kollisioner mellem protoner eller blyioner med energier op til 7 tera-elektronvolt studeres. Partikler trækkes desuden ud i diverse andre testfaciliteter og bruges af besøgende forskere til studier af materialer og strukturer på atomart niveau og til kerneforskning.



*Interview med  
Anders Unnervik  
indkøbschef, CERN*

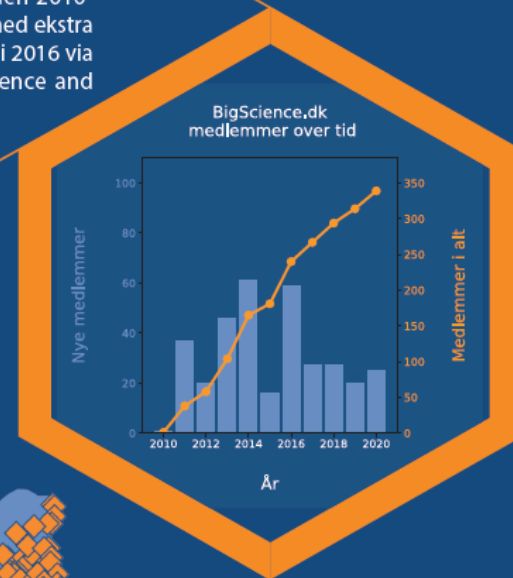


CERN works with fundamental research within particle physics by studying colliding high-energy particle beams. The beams are directed to test facilities, where materials and structures on the atomic level are examined.

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## BigScience.dk-netværket

På kortet ses, hvordan medlemmerne er spredt i hele landet, og grafen viser netværkets vækst i perioden 2010-2020. Udviklingen er gået særligt hurtigt i årene med ekstra ressourcer 2013-2014 via Vækstmotorprojektet og i 2016 via Interregprojektet "ESS & MAX IV Crossborder Science and Society".



# Match between our member's offers – and Big Science demand

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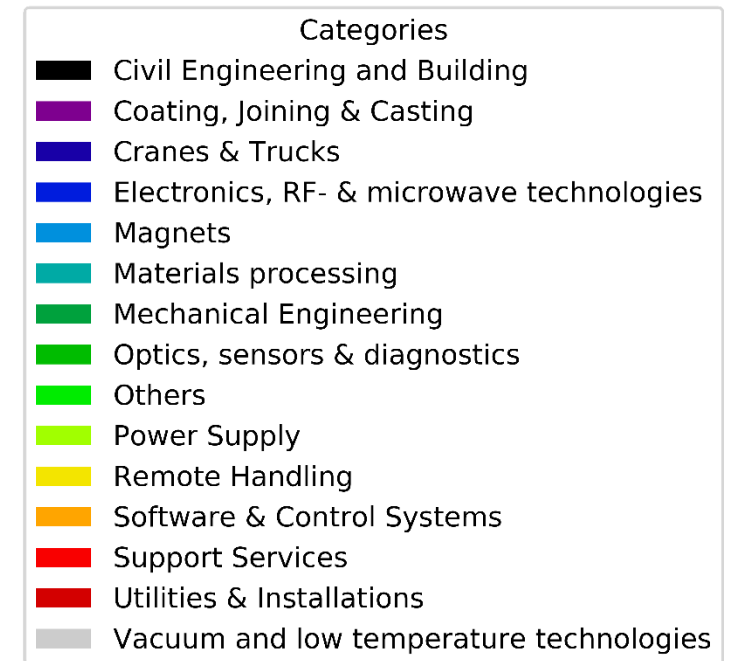
## Categories across members and tenders



Members



Tenders



# BigScience.dk - new framework contract 2021-24

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**Vision:** Danish companies will bring home contracts from Big Science worth DKK 180 mio pr. year (CHF 26,5 mio) – including DKK 100 mio. from ESS.

## Main activities:



# Activity 1: More offers from Danish companies

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- ▶ Disseminating tenders/possibilities in newsletters and direct contact
- ▶ Presentation and discussion of market needs at webinars
- ▶ "How-to-guides" for companies on how to engage with ESS, CERN, ITER and ESO



## Activity 2: Promote Danish companies to Big Science organisations

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- ▶ Arrange events bringing together BSO and companies (e.g. DK@CERN)
- ▶ Represent member companies at Big Science trade fairs
- ▶ Publish newsletters and succes stories in English.
- ▶ Develop online, searchable competence catalogue with Danish suppliers



# Succes stories from CERN



**BigScience.dk**  
GENVEJEN TIL BIG SCIENCE MARKEDET

Forside Om os Bliv leverandør Big Science organisationer Big Science Academy

Members of the network Success stories

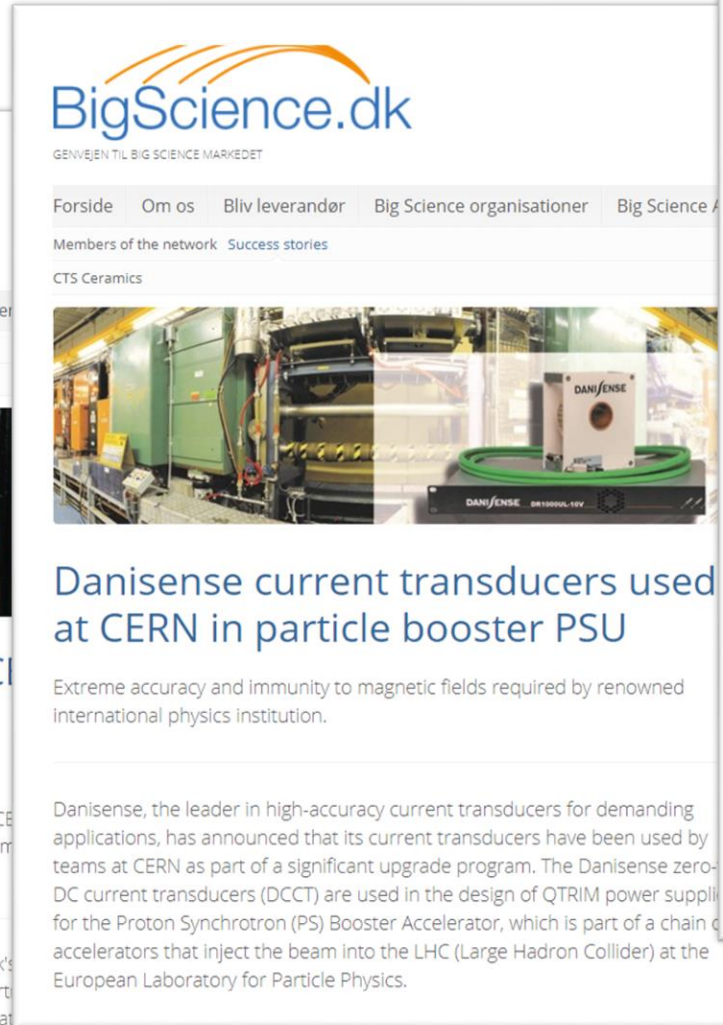
CTS Ceramics



## Development collaboration with CERN led to a high-tech order for CTS Ceramics Denmark

In 2020 CTS Ceramics Denmark delivered 5 custom-made actuators to CERN while 15 more are expected to be delivered for a total contract value of more than half a million DKK

Custom-made piezoelectric actuators are one of CTS Ceramics Denmark's competencies. The company, previously called Noliac, entered into a partnership with CERN in 2014 to develop actuators that can withstand high temperatures. CERN wanted to test crystal collimation as part of the Large Hadron Collider (LHC) upgrade, using piezoelectric actuators.

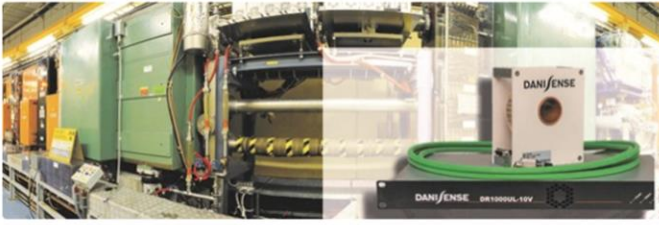


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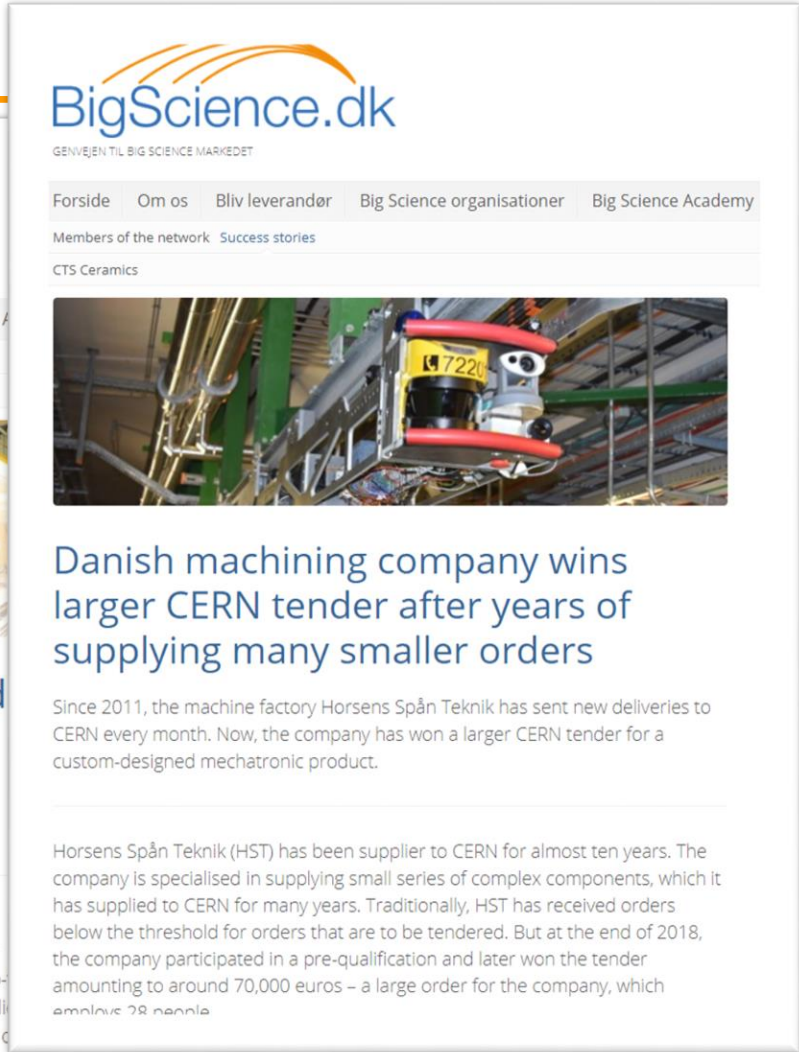
CTS Ceramics



## Danisense current transducers used at CERN in particle booster PSU

Extreme accuracy and immunity to magnetic fields required by renowned international physics institution.

Danisense, the leader in high-accuracy current transducers for demanding applications, has announced that its current transducers have been used by teams at CERN as part of a significant upgrade program. The Danisense zero-DC current transducers (DCCT) are used in the design of QTRIM power supplies for the Proton Synchrotron (PS) Booster Accelerator, which is part of a chain of accelerators that inject the beam into the LHC (Large Hadron Collider) at the European Laboratory for Particle Physics.




**BigScience.dk**  
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CTS Ceramics



## Danish machining company wins larger CERN tender after years of supplying many smaller orders

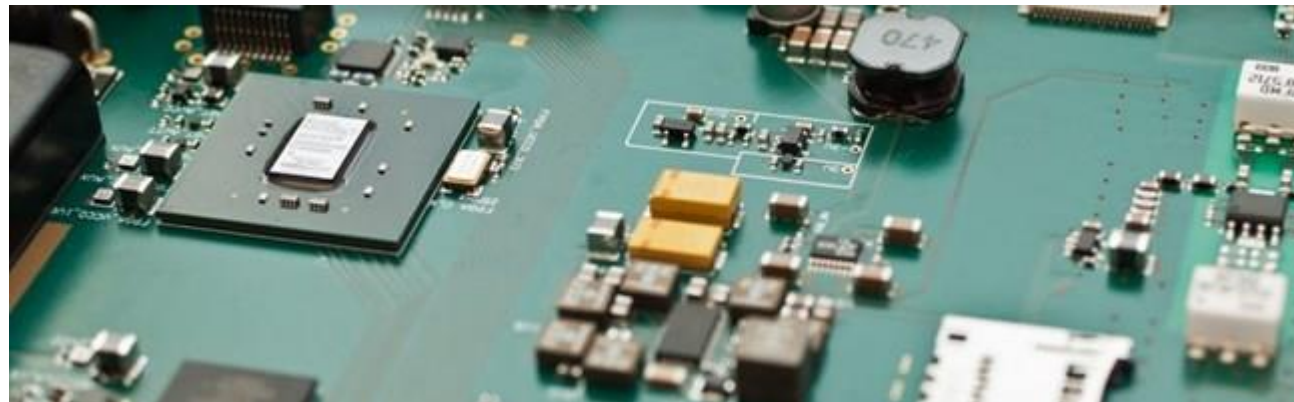
Since 2011, the machine factory Horsens Spån Teknik has sent new deliveries to CERN every month. Now, the company has won a larger CERN tender for a custom-designed mechatronic product.

Horsens Spån Teknik (HST) has been supplier to CERN for almost ten years. The company is specialised in supplying small series of complex components, which it has supplied to CERN for many years. Traditionally, HST has received orders below the threshold for orders that are to be tendered. But at the end of 2018, the company participated in a pre-qualification and later won the tender amounting to around 70,000 euros – a large order for the company, which employs 28 people.

## Activity 3: Facilitate stronger offers from danish companies

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- ▶ Offer technical knowledge to companies
- ▶ Assist companies in matching technology and setting up R&D collaborations
- ▶ New initiative to get more Danish technical students to go to Big Science organisations
- ▶ Training of company staff to meet Big Science requirements

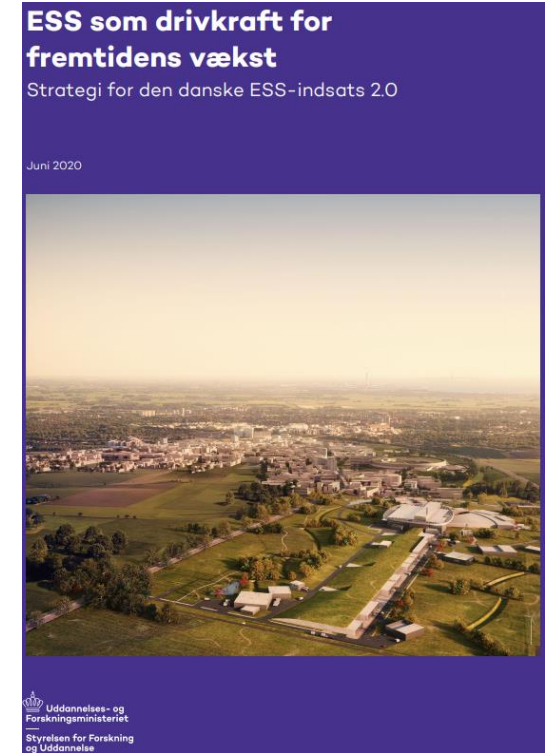




# Activity 4: Improve framework for offers from Denmark

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- ▶ Be active Industrial Liaisons Officers
- ▶ Make strategy for improved Danish return from ESS
- ▶ Collect and review return figures for Denmark



# Industrial Liaison Officer – link between Big Science and Danish suppliers



**Peter Frank**  
ILO for ESO  
Network manager



**Arne Jensen**  
ILO for ESS



**Søren Bang Korsholm**  
ILO for F4E (ITER)



**Nikolaj Zangenberg**  
ILO for CERN, ESRF & European-XFEL



**Jonas Okkels Birk**  
ILO for ILL



**Henrik Bak Jeppesen**  
Co-ILO på CERN & ESRF



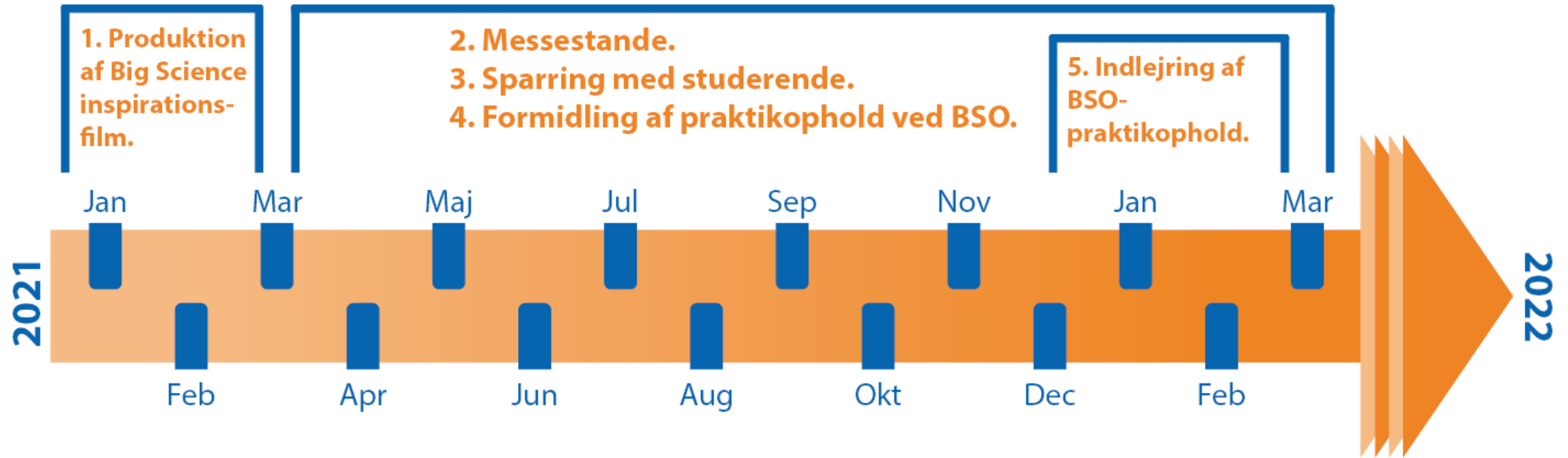
## New activity: More students to Big Science Organisations

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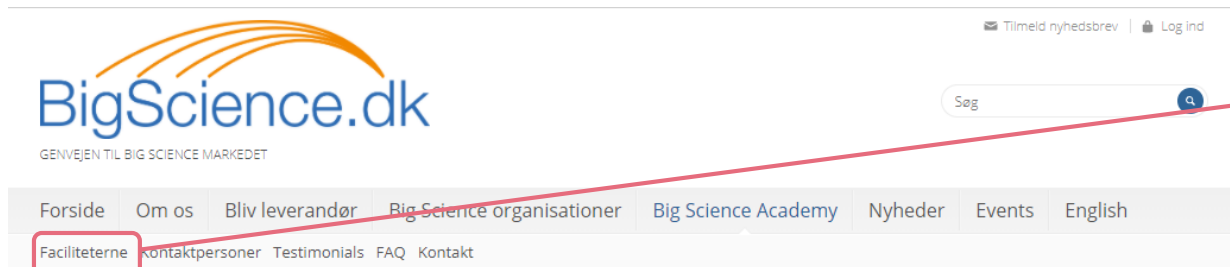


# Pilot project – focus on CERN

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# Big Science Academy – new section on BigScience.dk homepage



## Big Science Academy

Studerende ved erhvervsakademier, professionshøjskoler og universiteter kan udnytte praktik-, studieopholds- og jobmuligheder ved de europæiske Big Science-faciliteter (fx CERN, ESS, ITER/F4E, ESO) i samarbejde med danske uddannelsesinstitutioner.

Det er en chance for at tilegne sig unikke kompetencer og viden samt for at få en oplevelse for livet i spændende internationale miljøer.

Big Science Academy (BSA) gør det lettere at få overblik over mulighederne og guider dig på vej til dit ophold. BSA er det danske bindeled mellem Big Science-faciliteter, uddannelsesinstitutioner og virksomheder.

BSA drives af BigScience.dk som er et Big Science-leverandørnetværk af danske virksomheder. Teknologisk Institut og DTU er partnere bag BigScience.dk.

Indsatsen finansieres af Styrelsen for Uddannelse og Forskning og Karl Pedersen og Hustrus Industrifond.

## CERN, ESS, F4E, ESO

- Internship
- Student projects
- Jobs

CERN

ESS

ITER/F4E

ESO

ESO har hovedkvarter i Garching (tæt på München), Tyskland, samt har en række faciliteter, der er placeret tre steder i det nordlige Chile. Læs mere om ESO og Garching.

**Praktikophold**  
Er du interesseret i praktikophold ved ESO, så kontakt din studievejleder. Hvis studievejlederen ikke kender til praktikophold på ESO bør denne tage kontakt til Danmarks Industrial Liaison Officer for ESO, Peter Frank.

**Studieophold**  
ESO tilbyder løbende fx internships for hovedopgavestuderende og andre studieopholdsmuligheder. Læs mere HER.

ESO har et studentship programme for ph.d.-studerende. Læs mere HER.

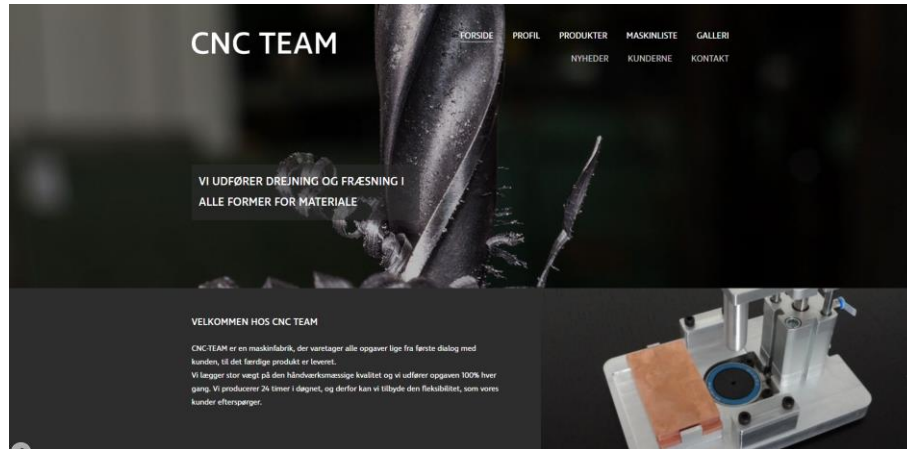
**Job**  
ESO har stillingsopslag for stillinger i både Tyskland og Chile. Læs mere HER.

# Companies

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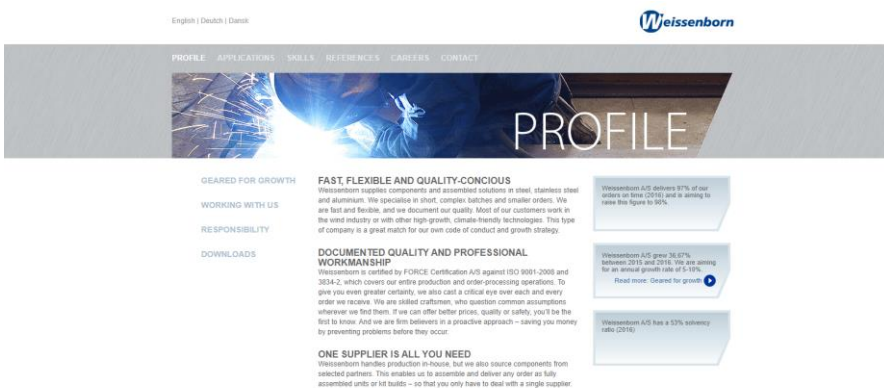
# Danish companies at DK@CERN – Mechanical manufacturing

## CNC TEAM



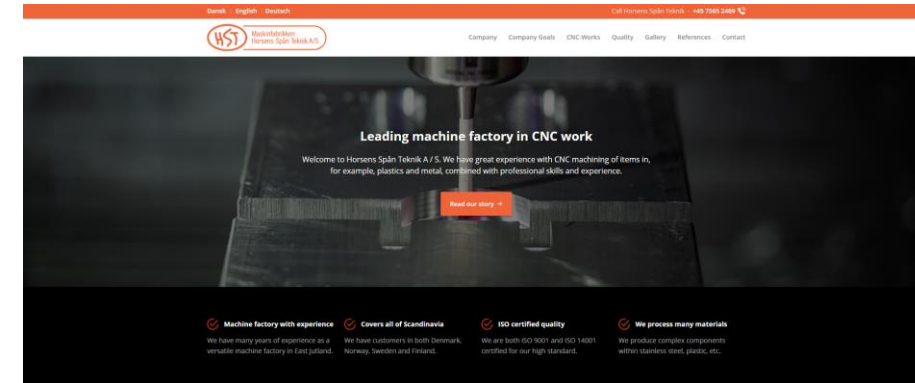
The screenshot shows the CNC TEAM website. At the top, there is a navigation menu with links for 'FORSIDE', 'PROFIL', 'PRODUKTER', 'MASKINLISTE', 'GALLERI', 'NYHEDER', 'KUNDERNE', and 'KONTAKT'. The main heading is 'CNC TEAM'. Below it, a large image shows a CNC machine in operation. Text on the page reads: 'VI UDFØRER DREJNING OG FRÆSNING I ALLE FORMER FOR MATERIALE'. A sub-heading says 'VELKOMMEN HOS CNC TEAM'. The main text describes the company as a machine factory that handles all tasks from initial customer contact to delivery of finished products. It mentions that the company produces 26 times a day, 7 days a week, and can fulfill orders with 100% accuracy.

## WEISSENBORN



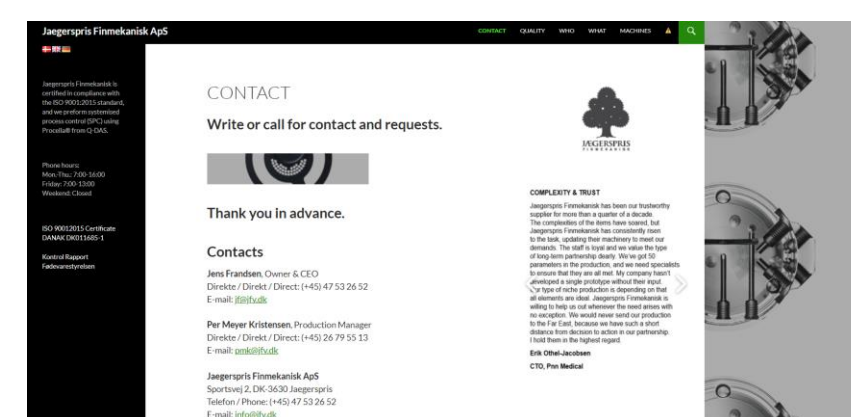
The screenshot shows the WEISSENBORN website. The navigation menu includes 'PROFILE', 'APPLICATIONS', 'SKILLS', 'REFERENCES', 'CAREERS', and 'CONTACT'. The main heading is 'PROFILE'. The page is divided into several sections: 'GEARED FOR GROWTH', 'WORKING WITH US', 'RESPONSIBILITY', 'DOWNLOADS', 'FAST FLEXIBLE AND QUALITY-CONCIOUS', 'DOCUMENTED QUALITY AND PROFESSIONAL WORKMANSHIP', and 'ONE SUPPLIER IS ALL YOU NEED'. The 'FAST FLEXIBLE AND QUALITY-CONCIOUS' section states that Weissborn delivers 97% of its orders on time (2016) and is aiming to raise this figure to 99%. The 'DOCUMENTED QUALITY AND PROFESSIONAL WORKMANSHIP' section mentions that Weissborn is certified by FORCE Certification A/S against ISO 9001:2008 and ISO 14001:2004, which covers their entire production and order-processing operations. The 'ONE SUPPLIER IS ALL YOU NEED' section states that Weissborn handles production in-house, but also sources components from selected partners. This enables us to assemble and deliver any order as fully assembled units or kit builds – so that you only have to deal with a single supplier.

## HST



The screenshot shows the HST website. The navigation menu includes 'Company', 'Company Goals', 'CNC Works', 'Quality', 'Gallery', 'References', and 'Contact'. The main heading is 'Leading machine factory in CNC work'. Below it, a large image shows a CNC machine in operation. Text on the page reads: 'Welcome to Hornslev Spåln Teknik A/S. We have great experience with CNC machining of items in, for example, plastics and metal, combined with professional skills and experience.' A sub-heading says 'Machine factory with extensive experience in CNC machining'. The main text describes the company as a machine factory with extensive experience in CNC machining. It mentions that the company has customers in both Denmark, Norway, Sweden and Finland. It also mentions that the company is ISO 9001 and ISO 14001 certified for its high standard. The company processes many materials, including stainless steel, plastic, etc.

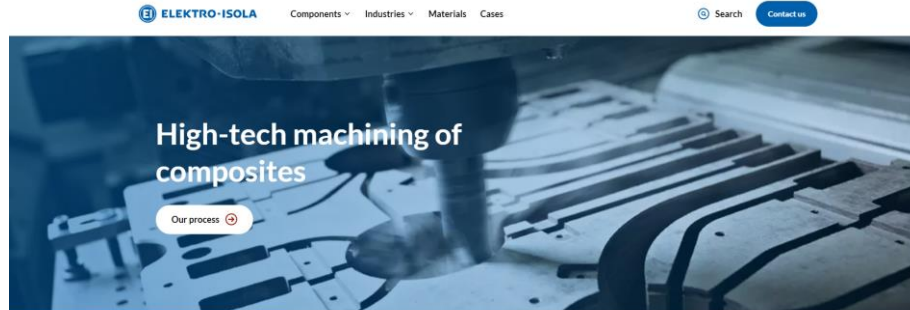
## JAEGERSPRIS



The screenshot shows the JAEGERSPRIS website. The navigation menu includes 'CONTACT', 'QUALITY', 'WHO', 'WHAT', 'MACHINES', and 'A'. The main heading is 'CONTACT'. Below it, a large image shows a CNC machine in operation. Text on the page reads: 'Write or call for contact and requests.' A sub-heading says 'Thank you in advance.' The main text describes the company as a machine factory with extensive experience in CNC machining. It mentions that the company has customers in both Denmark, Norway, Sweden and Finland. It also mentions that the company is ISO 9001 and ISO 14001 certified for its high standard. The company processes many materials, including stainless steel, plastic, etc.

# Danish companies at DK@CERN – Polymer materials

## ELEKTRO-ISOLA



Since 1921, Elektro-Isola A/S has been producing and refining some of the best composite materials in the world. Today, our components make up a crucial part of the machinery in wind turbines, body scanners, the aviation and space industry, particle accelerators and other high-tech functions in global society. Read more about us [here](#).

## HAMMEL PLAST



### Injection moulding

1K AND 2K SOLUTIONS

Hammel Plast has a wide range of new machines with robots and automated equipment.

### Tooling

SAMPLING, TESTING AND PRODUCTION

From idea to mass production - we manage all the steps. Our passion is to be involved in the pioneering innovation of the plastic industry.

### Engineering

WE CREATE DESIGNS THAT WORKS

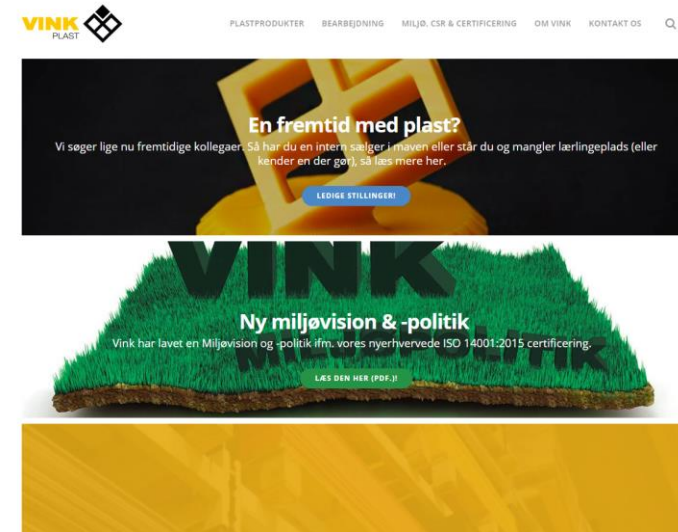
Decades of experience in the plastic industry has prepared us for a future with high demands on a plastic item's lifecycle and functions.

### Aerosol Caps

A PRODUCT BY HAMMEL PLAST

Hammel Plast offers a wide selection, with more than 60 variants of high quality caps. NEW! Available in sustainable and recycled plastic materials.

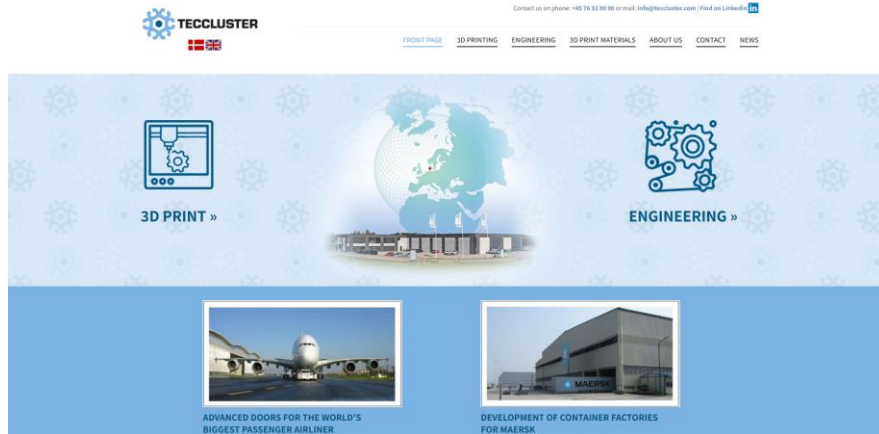
## VINK PLAST



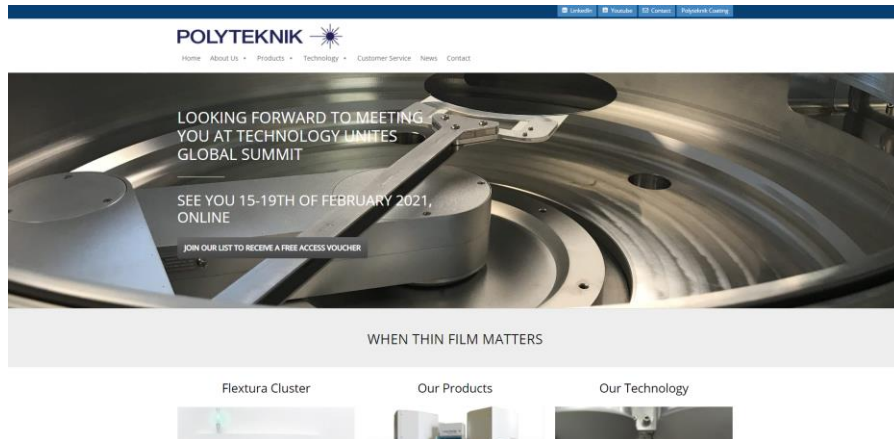


# Danish companies at DK@CERN – Engineering

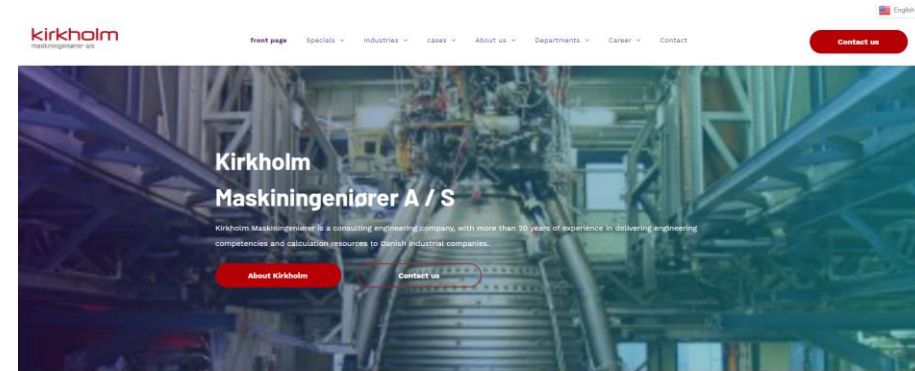
## TECCLUSTER



## POLYTEKNIK

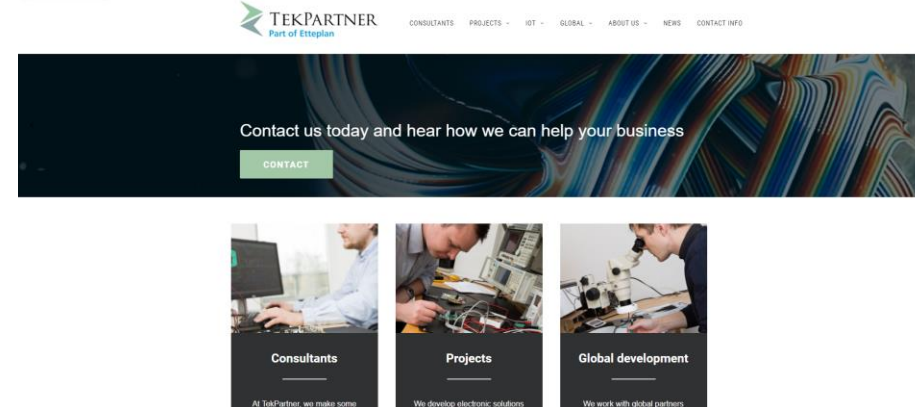


## KIRKHOLM



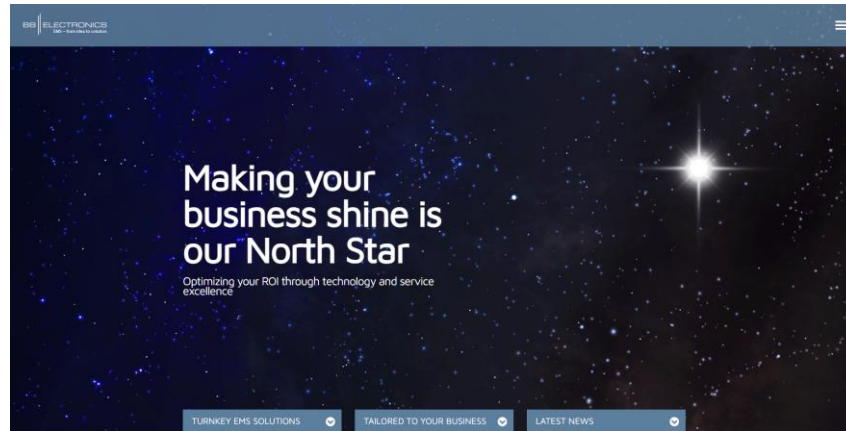
### ABOUT KIRKHOLM WHAT KIRKHOLM CAN DO FOR YOU

## TEKPARTNER



# Danish companies at DK@CERN – Electronics / Water treatment

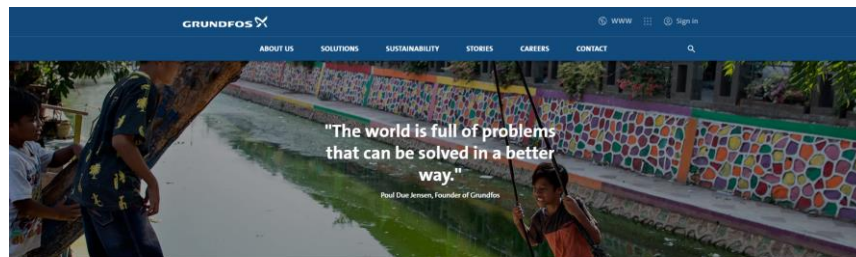
## BB ELECTRONICS



## RE CAB



## GRUNDFOS



## Company pitches

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AF Pipe Solutions

Danfysik

Mark & Wedell

Danish Technological Institute