SKANSKA

CAMPUS ESS

Campus ESS

Beställare: European Spallation Source

Totalentreprenör: Skanska Sverige, Region Hus Syd

Yta: 18.700 kvm (BTA)

Cynthia Andersson

Skanska Sverige AB –
Hållbaraffärsutveckling, Malmö

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ESS Campus, roll i projektet: ”Sustainability Manager” (övergripande ansvar för miljö- och hållbarhetsfrågor i projektet)

Sophie Lilja

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ESS Campus, roll i projektet: BREEAM-samordnare

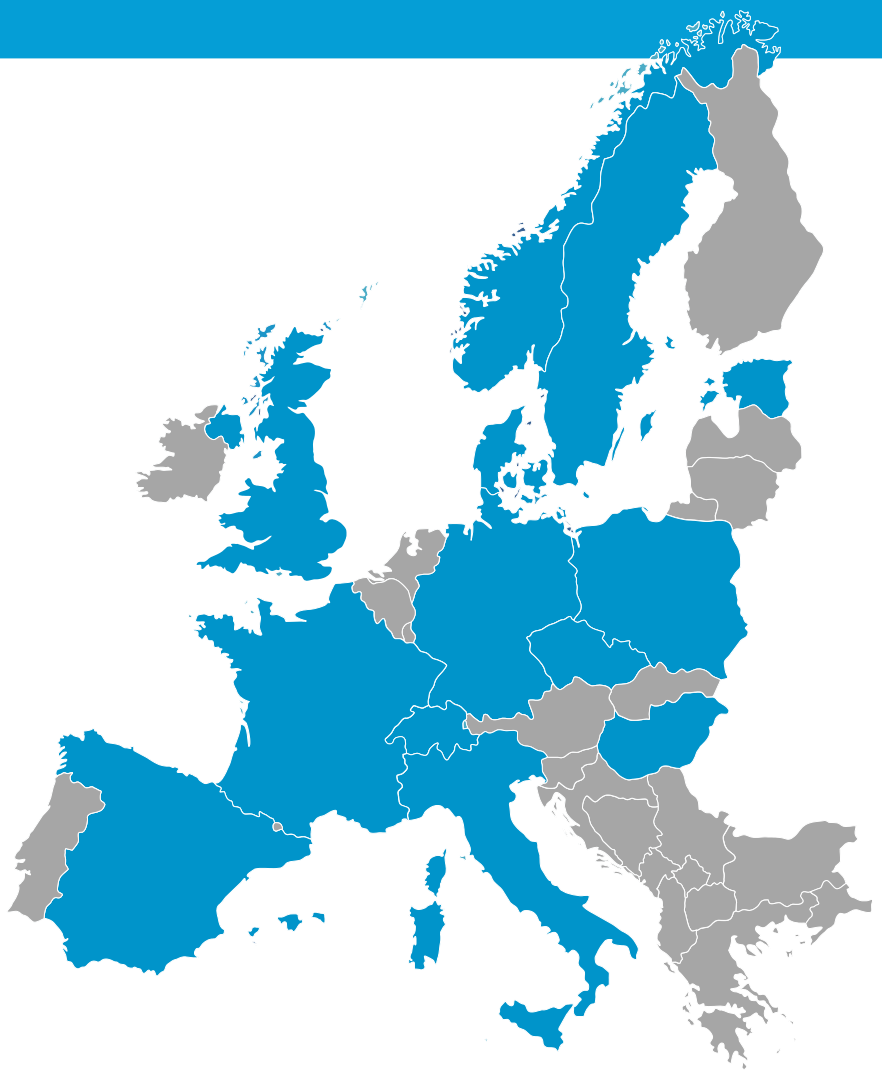
European Spallation Source

Skanska ESS CONSTRUCTION

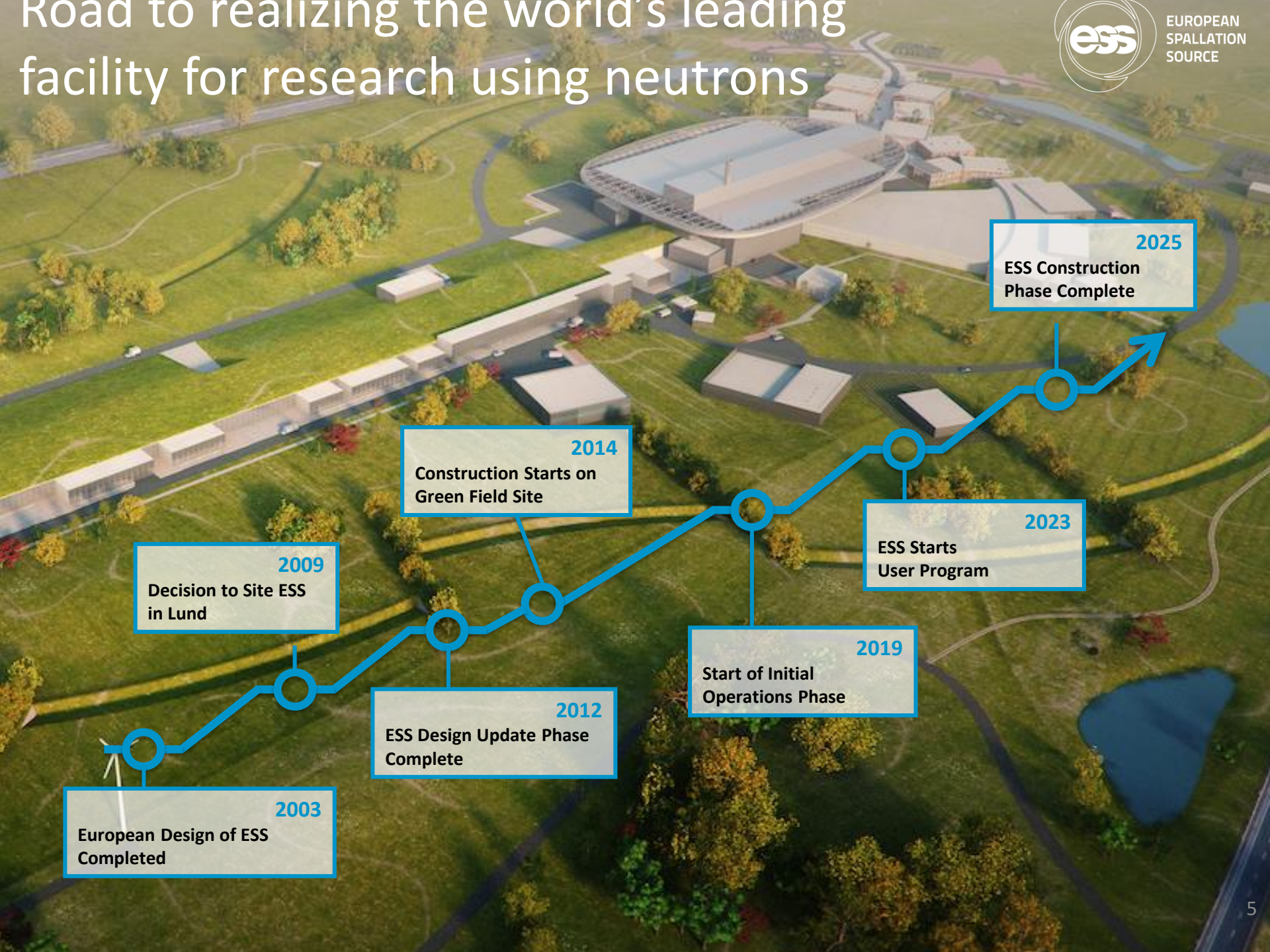
ESS – One of Europe's largest research infrastructure projects

Skanska ESS CONSTRUCTION

- A European research center, built in Lund with Data Management in Copenhagen.
- ESS is an ERIC – A European Research Infrastructure Consortium
- 13 European member countries + 2 observers
- In-kind and cash contributions
- Sweden & Denmark are hosts:
  47,5% of construction
  15% of operations
- 2-3000 visiting researchers per year
- Construction cost: 1.843 B€



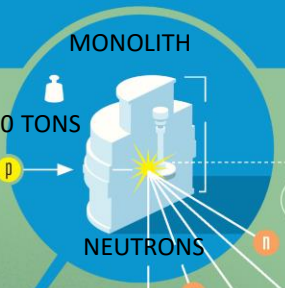
Road to realizing the world's leading facility for research using neutrons

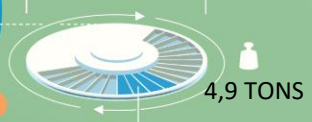


The ESS Machine

Skanska ESS CONSTRUCTION

EUROPEAN SPALLATION SOURCE





602,5 M

ION SOURCE

HYDROGEN MOLECULE

ACCELERATOR

EXPERIMENTAL HALL 1

TARGET

LABS/OFFICES

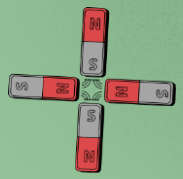
SAMPLE (MATERIAL)

NEUTRON BEAMS

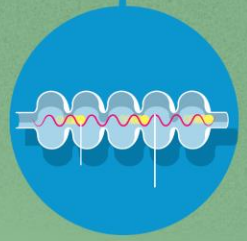
EXPERIMENTAL HALL 2

96% OF SPEED OF LIGHT

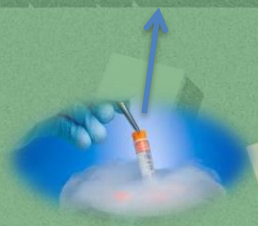
INSTRUMENT



MAGNETS FOCUS THE PROTON BEAM



ELECTROMAGNETIC FIELDS ACCELERATE THE PROTONS (VIA KLYSTRONS)



THE TUNNEL BECOMES SUPERCONDUCTING WHEN COOLED WITH LIQUID HELIUM (-271^{0}C)

EXPERIMENTAL HALL 3

NEUTRONS BRING INFORMATION ABOUT THE MATERIAL'S STRUCTURE AND DYNAMICS (ON A MOLECULAR LEVEL).

HEALTH

With neutrons, we are able to **study the building blocks of the human body** by understanding how proteins, enzymes and other biological material work on the molecular and atomic level.

This includes research on DNA molecules and proteins that control aging and cancer, organs like muscles and teeth, and constructing better medical implants.

ENERGY

Neutrons enable the potential for **developing more environmentally friendly products** and processes.

Fuel cells driven by hydrogen, materials used for solar power, and telephone batteries are some of the areas that benefit from neutron technology.

FOOD

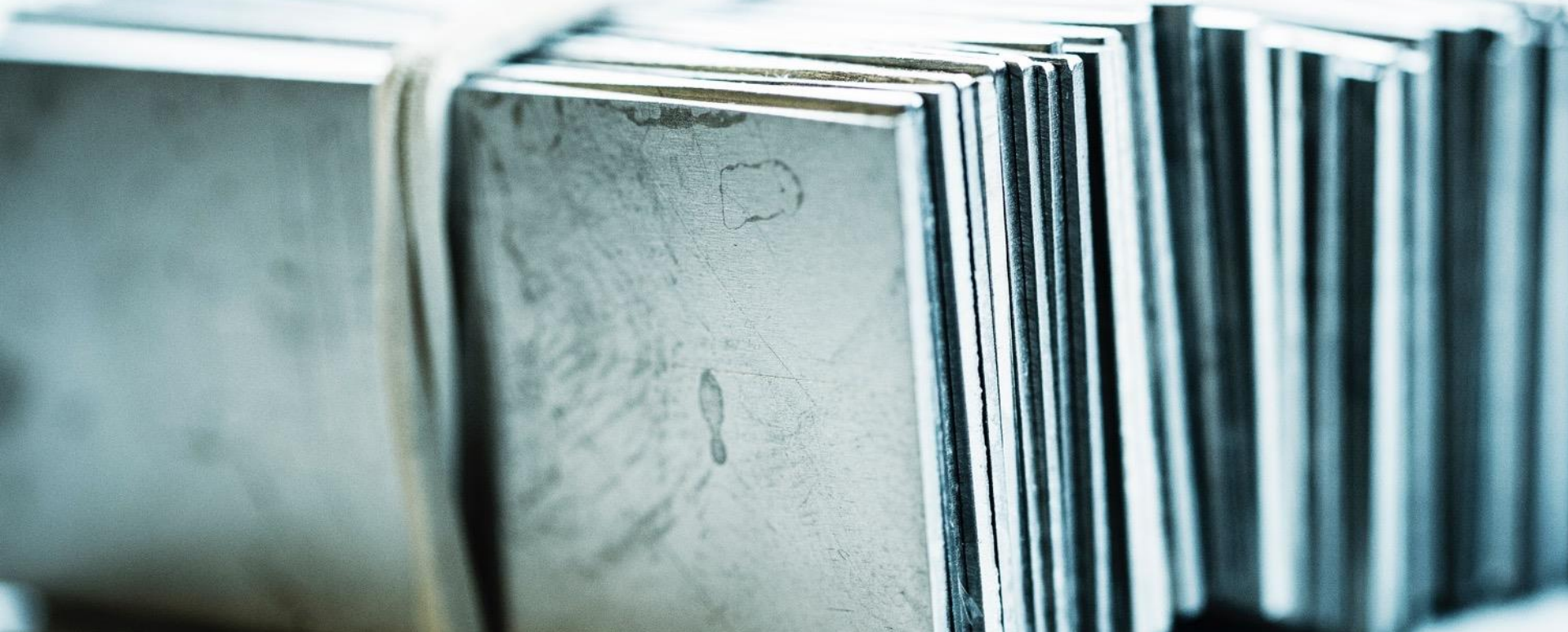
Consumers demand safe and healthy food, creating a need for companies to understand **the complex structure of food and ingredients.**

Neutrons are used to **study enzyme structures and what happens during chemical processes.** The non-destructive analysis techniques can reveal protein and emulsion structures and reduce energy consumption in food production.

NEW MATERIALS

Mobile phone and computer technology are developing fast while new technologies like LED lighting are emerging. **New products full of advanced materials** surround us in our everyday life.

Today's materials must be lighter, stronger, cheaper and sustainable. Neutrons help us not only understand the atomic structure of materials, but also their behavior.



ESS is co-located with Max IV and Science Village in close proximity to Lund

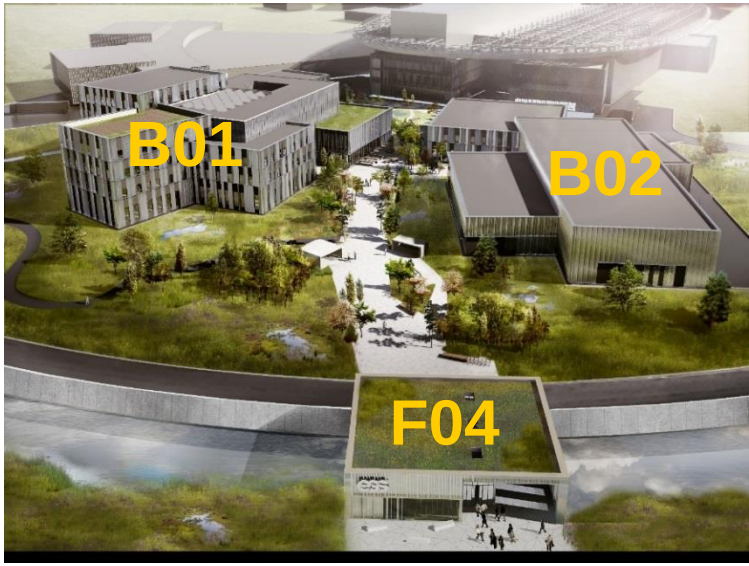
Campus omfattning

- Projektet innefattar nyproduktion av tre byggnader och markarbete.

- Byggnad B01, 12700 m2, kontorsbyggnad, fem sammanhängande huskroppar i två till fem plan.

- Byggnad B02, 5600 m2, labhallar.

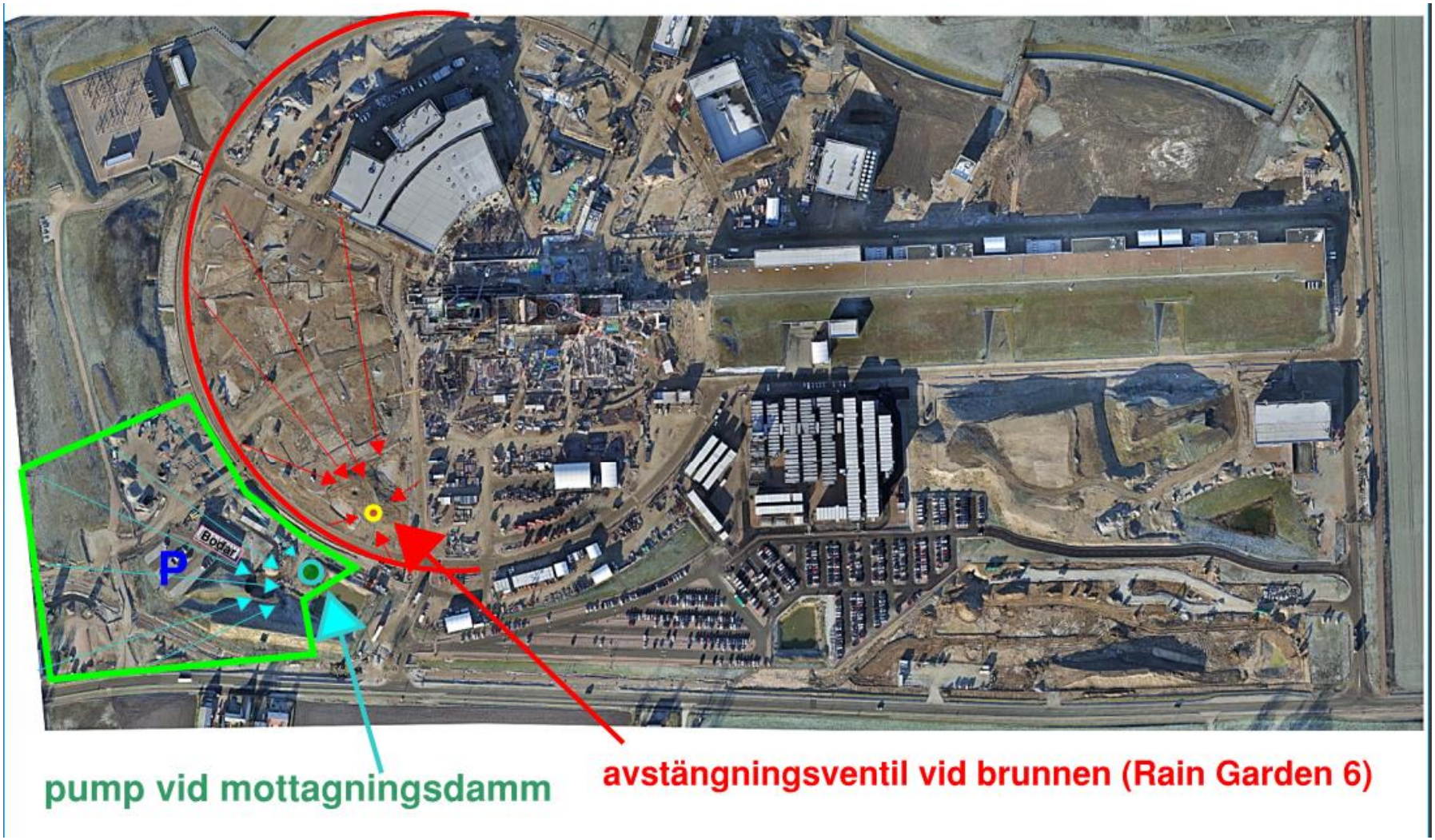
- Byggnad F04, 370 m2, huvudentré ESS.



- Omfattande markarbete med planteringar, raingardens, markbetong mellan byggnaderna, parkering och cykelparkeringar.

Miljökrav i projektet

- Judgement from the European Environmental Court
- ESS beställare krav “Sustainability Requirements Campus”
- Skanska interna krav (VSAA, Gröna Kartan, Grön arbetsplats)


P
Bodarv
pump vid mottagningsdamm
avstängningsventil vid brunnen (Rain Garden 6)

BREEAM

BREEAM International Bespoke 2013 New Construction Assessment Report: Assessment Issue Scoring

BREEAM®

Man	H&W	Energy	Transport	Water	Materials	Waste	LU&E	Pollution	Innovation

Building name	Office building (B.01)
Building score (%)	93,37%
Building rating	Outstanding
Minimum standards level achieved	Outstanding level

ESS Energy policy

ESS Energy Policy

ESS is striving to become a world-leading research facility in sustainability and, as a large energy consumer, is committed to an Energy Concept, consisting of Energy Goals:

- **Responsible**: The energy efficiency of every aspect of operations will be carefully considered in the design phase, and continually monitored and managed in construction and operations phases. The specific target for Responsible is 270 GWh or less annual energy use at full operation.
- **Renewable**: All energy will be from renewable sources.
- **Recyclable**: All recuperated waste heat will be re-used.

The Energy Goals must be met in a way that it is technically reliable and economically reasonable. "Recuperated waste heat" is defined as heat in cooling systems of sufficient temperature for recycling using best available technology.

An Energy Management System will be implemented to ensure that the Energy Goals are met and that an energy culture permeates the organization. The Energy Management System is continually evaluated and improved.

The ESS Energy Management System ensures that:

- Relevant legislation and agreements made are complied with
- Energy consumption and efficiency are considered in a life-cycle perspective
- Energy efficiency and conserving measures are continuously improved
- Energy budgets are established, the actuals followed and reported on a project level
- Energy flows are mapped and maintained

Ectogrid

7.3 FÖRDUBBLA ÖKNINGEN AV ENERGIEFFEKTIVITET

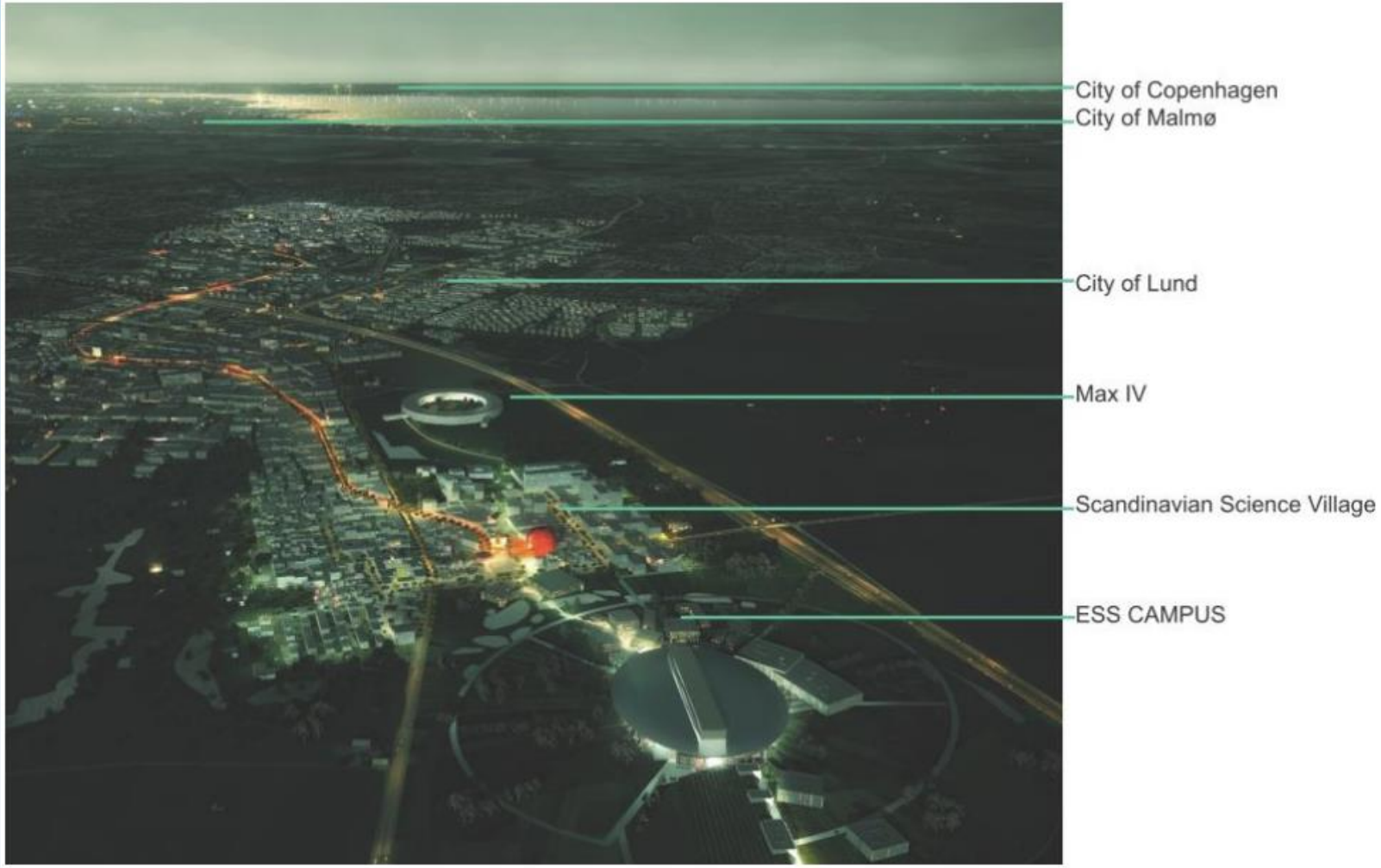
Till 2030 fördubbla den globala förbättringstakten vad gäller energieffektivitet.

Återvinna överskottsenergi

- *Överskottet från ESS motsvarar cirka 20 procent av uppvärmningen av Lund som sker med fjärrvärme. Med hjälp av vår innovation ectogrid kommer man kunna ta tillvara på spillvärme från anläggningen och skicka den vidare för att exempelvis värma upp bostäder istället för att spillvärmen försvinner ut i tomma intet.*

EON

Ectogrid



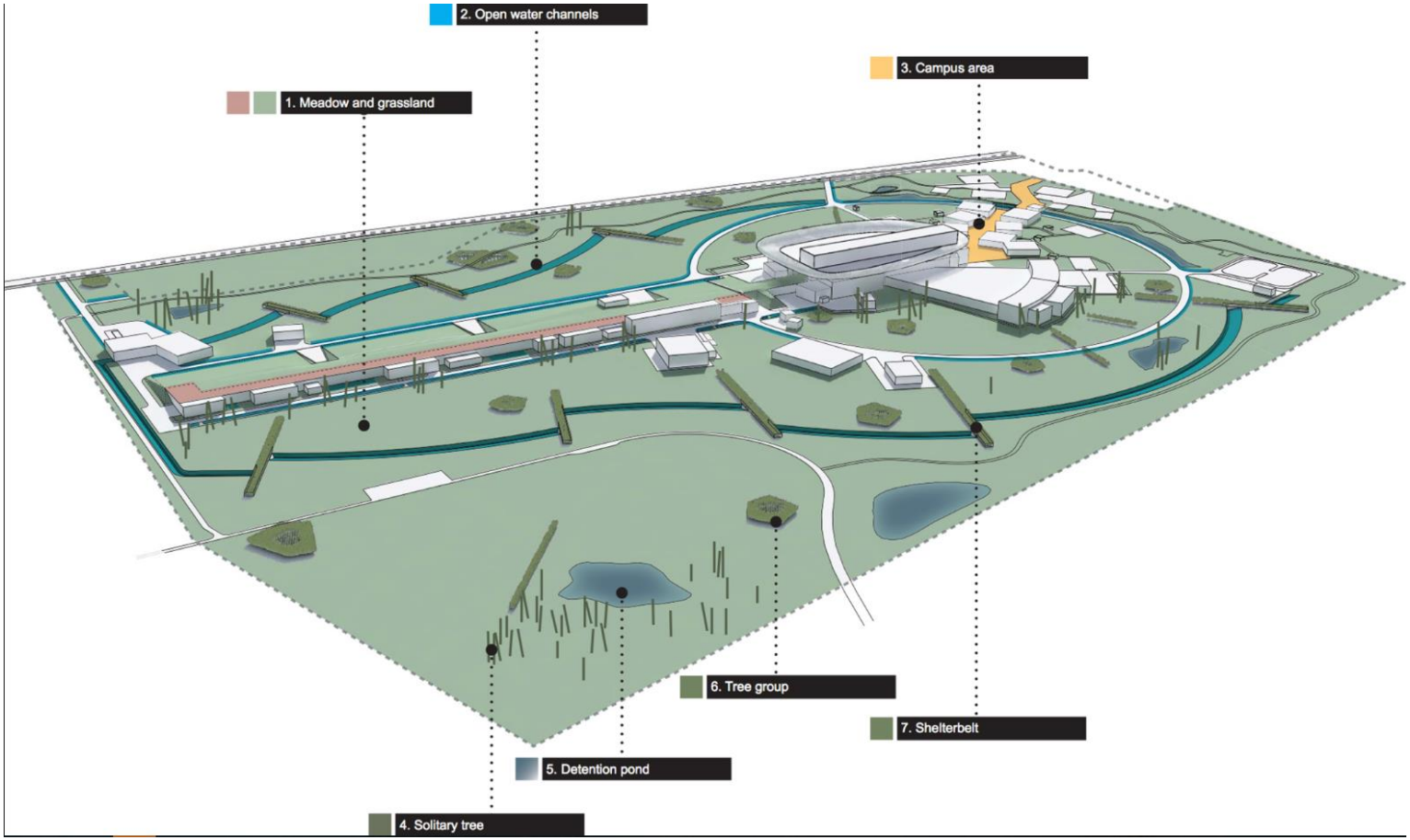
Världens första Ectogrid™ finns i Lund

- *Vi bygger världens första ectogrid på medicon Village i Lund.*

EON

Mark och ekologi

Mark och ekologi



Tack!

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