# Product description
*NCC Data Center*

# Concept

As one of the largest actors in the Nordic construction industry, NCC Construction plays a leading role in shaping the future of our society.

After building one of Europe's largest data centers, Facebook in Luleå, we are now preparing ourselves and the market for the rapidly growing demand for data storage.

Part of this work has been to design a concept for a multipurpose data center that will shorten lead times in the development of new projects. This concept can be used both when NCC Construction acts as the developer of a facility as well as when NCC Construction acts as contractor only.

The concept is the result of a co-operation between NCC Construction and Data Center specialists Enaco. It uses best practices from both small and large data centers with robust and efficient technical solutions that will work throughout the Nordic region.

## Concept

The triple focus for the concept NCC Data Center is energy usage efficiency, flexibility and reliability.

### Energy usage efficiency

- The concept is designed for a PUE level below 1.15.
- The concept is designed for waste heat recovery, e.g. to district heating systems.
- It will be possible to use self-produced power, e.g. solar panels or wind power.
- The concept will be certified in accordance with LEED or BREEAM depending on location and customer requirements.

### Flexibility

- The concept is flexible in size, a pay as you grow principle.
- Raised floor in the data hall.
- Cooling system with liquid coolant gives flexibility in both layout and waste heat recovery.
- It can easily be divided for different users with different needs.

### Reliability

- A well-integrated design based on best practices and local conditions
- Locating a Data Center in Sweden offers many advantages:
- Sweden is ranked as number three, after US and UK, in The Data Centre Risk Index 2013.
- Europe´s lowest electricity prices
- Stable and green grid
- Stable political and economic conditions
- Cool climate perfect for Data Centers
- Well-functioning building process
- NCC Construction has been in operation for more than one hundred years.

# Location



Suitable areas for location of NCC Data Center in Sweden

## Location

NCC can offer our Data Center concept to several locations in Sweden. The Stockholm area is, understandably, a very attractive location. There are also a number of sites in the northern part of Sweden that have been thoroughly investigated and prepared for new Data Center locations on behalf of Business Sweden and its local member organizations. The sites are ready-to-build and they meet the high demands for access to renewable power and high connectivity.



Example of ready-to-build site
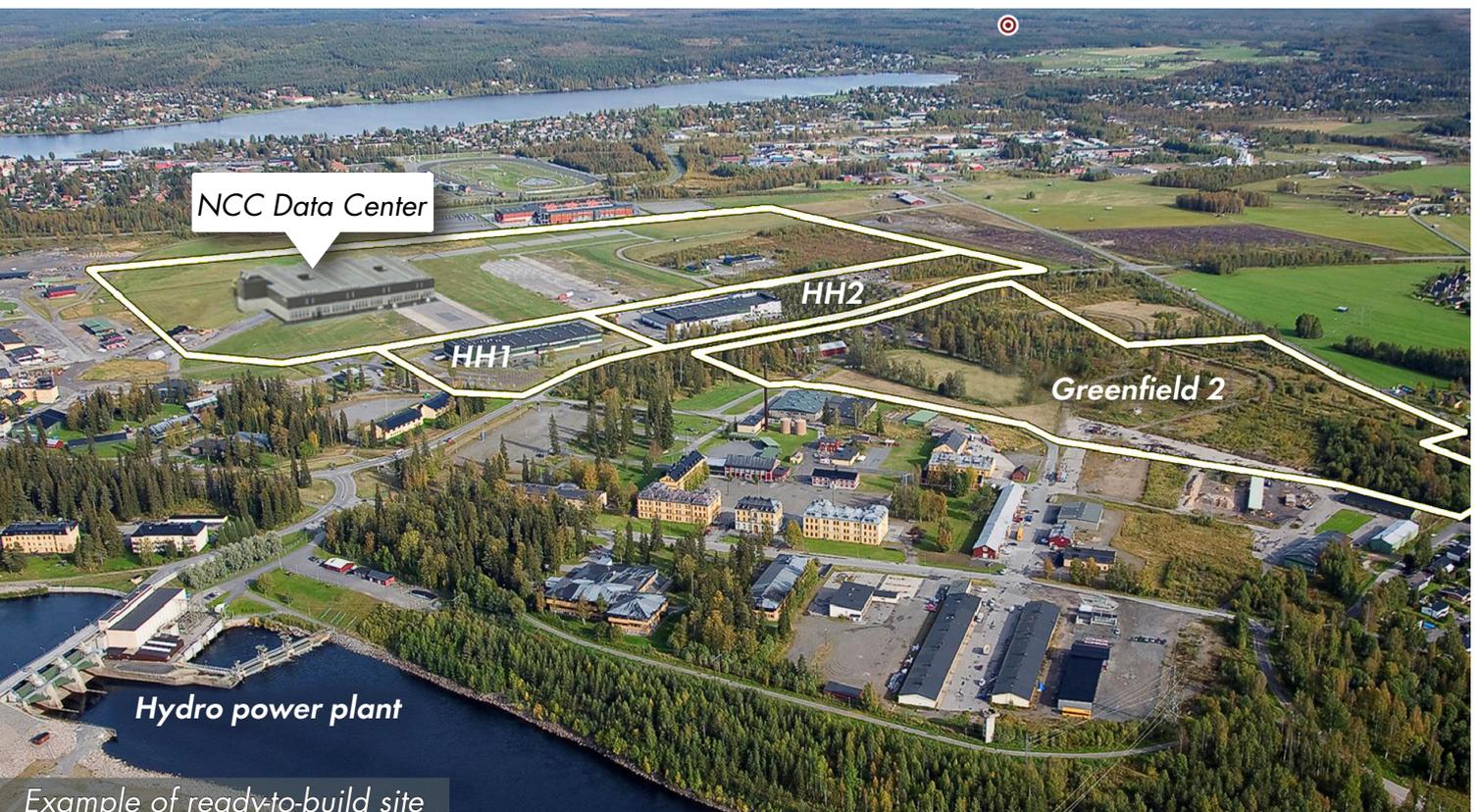
# Property



NCC Data Center



NCC Data Center main entrance



Deliveries

## Facts NCC Data Center

- Two floor DC on total 20,000 m², scalable from 5,100 m² and up.
- Fully developed 10,200 m² data floor, scalable from 2,500 m² and up.
- Scalable from 2 to 16 MW of critical power
- Scalable from 612 to 4896 racks, height 42 unit, size 600 x 1200 mm
- PUE level <1,15
- Redundancy level N+1
- 10 month construction time
- Waste heat recovery
- LEED certified



# Exterior

| | |
|---|---|
| **Substructure** | Footings and slab on grade. |
| **Superstructure** | Steel beams and columns. Precast concrete deck. |
| **Exterior walls, ground floor** | Precast concrete sandwich panels. 120 mm insulated metal panel walls at generator building. |
| **Roof** | Waterproof membrane. |
| **Fire protection** | According to the Swedish regulations. |

# Building

## Interior

| | | | |
|---|---|---|---|
| **Ceiling, ground floor** | Concrete. Sound insulation in rooms with a high noise level. Acoustical ceiling tiles in offices etc. | **Walls, ground floor** | Painted plasterboard on steel studs, fire and sound rated as required. Concrete firewalls. Concrete walls around stairwell and elevator. |
| **Floor finishes, ground floor** | Linoleum carpets in offices etc. Ceramic tiles in toilets and shower rooms etc. Surface treated concrete in storage rooms and technical rooms. Access floors in electrical rooms. | **Floor finishes, 1st floor** | Surface treated and sealed concrete. Access floors on precast concrete slab. |
| | | **Walls, 1st floor** | Firewalls of Insulated metal panels. Concrete walls around stairwell and elevator. |

## Installations

| | |
|---|---|
| **Heating** | Internal waste heat recovery from data center. Waste heat recovery to local heating distribution systems. |
| **Air treatment** | Traditional HVAC system with heat recovery |
| **Cooling** | Cooling system with liquid coolant and free cooling function. Hot aisle containment with in-row cooling. |
| **Lighting** | LED lighting and option optic daylight system |
| **Fire alarm** | Traditional smoke/heat detectors with early detection system in the server halls connected to the fire brigade. |
| **Fire suppression system** | Flexible to customer demands. |
| **Security system** | Flexible to customer demands. |
| **Power** | Scalable from 2 to 8 2000 MVA transformers. Primary voltage 20 kV, secondary voltage 400 V 50Hz. |
| **Backup power** | Scalable from 3 to 12 generator sets, 3000 kVA |
| **UPS** | Scalable from 2 to 8, 2000 kW |
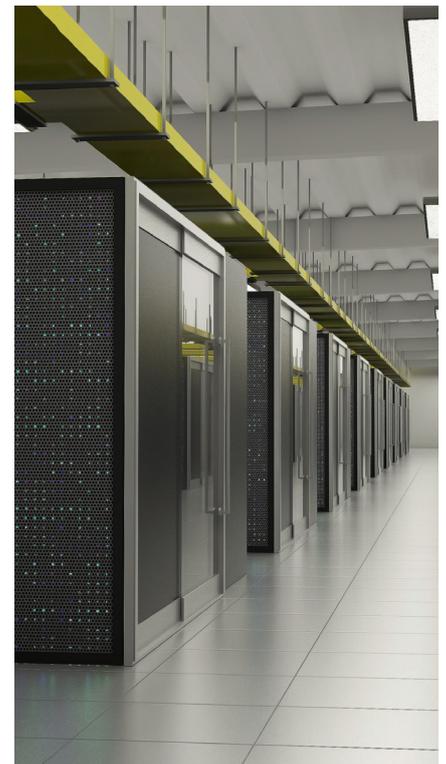
## Options

| | |
|---|---|
| **Wind power** | NCC is one of the larger operators in ongoing wind energy development in Scandinavia. If you need a data center with an innovative, renewable energy profile, or if you need to secure a competitive electricity price, then NCC, with its cluster of companies, is the right partner for you. |

*Wind power*

## Ground floor, technical and staff areas



## First floor, server halls



**Hot aisle containment**

**Server racks**

**In-row cooler**
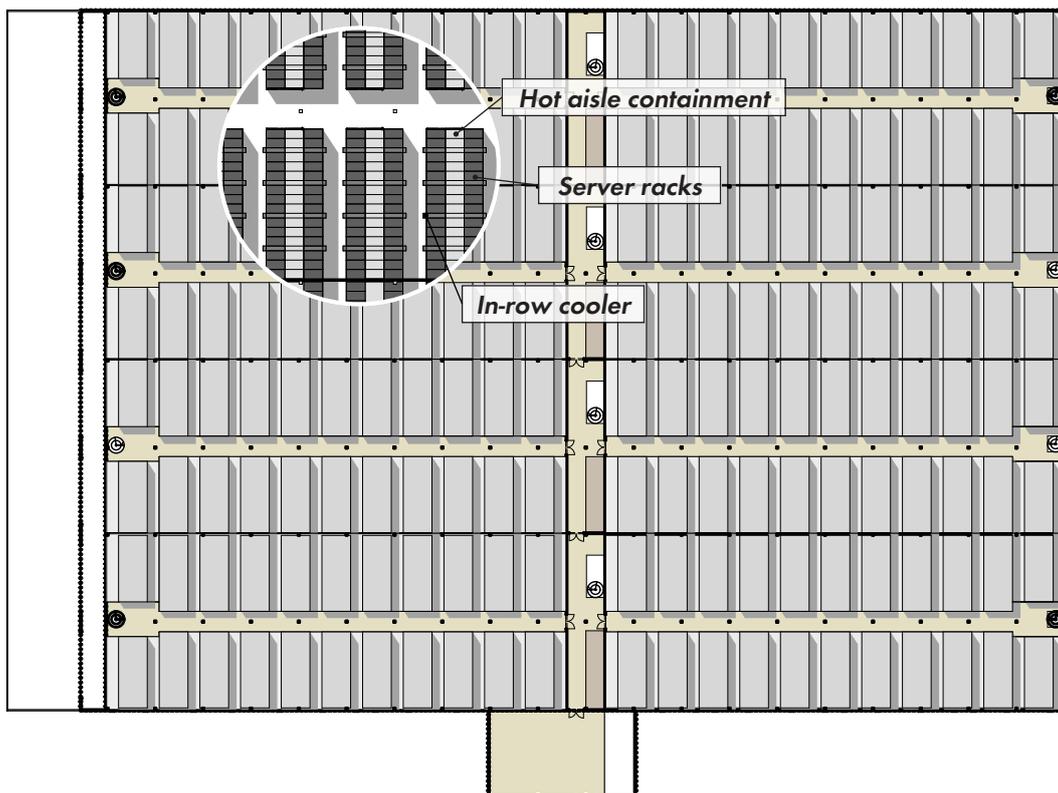
More detailed drawings can be found at www.ncc.se/en/products-and-services/ncc-data-center/

**NCC**

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