


# Neonatal department at Central Hospital in Karlstad

by [henric ernstson](#) / 2015-06-11 10:52:15 / International / 9583 / EN



Renovation

**Primary energy need :**  
**102 kWhpe/m<sup>2</sup>.year**  
(Calculation method : Other )

**ENERGY CONSUMPTION**

*Economical building* *Building*

< 50	<b>A</b>
51 à 90	<b>B</b>
91 à 150	<b>C</b>
151 à 230	<b>D</b>
231 à 330	<b>E</b>
331 à 450	<b>F</b>
> 450	<b>G</b>

*Energy-intensive building*

**Building Type** : Public or private hospital  
**Construction Year** : 2013  
**Delivery year** : 2013  
**Address 1 - street** : Rosenborgsgatan 2 652 30 KARLSTAD, Sweden  
**Climate zone** : [Dfb] Humid Continental Mild Summer, Wet All Year

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**Net Floor Area** : 1 250 m<sup>2</sup> SHON  
**Construction/refurbishment cost** : 6 100 000 €  
**Cost/m<sup>2</sup>** : 4880 €/m<sup>2</sup>

## General information

The projects aim was to build a new department for premature infants.

The project aims to measure the amount of chemicals that are been reduced through conscious choices and at what cost and a prestudy for the new hospital building?

[See more details about this project](#)

<http://www.construction21.org/manager/data/sources/users/14996/docsmiljovanligt-materal-englag.pdf>

## Stakeholders

### Stakeholders

Function : Others

County of Värmland

Anette Andersson anette.andersson@liv.se

<http://www.liv.se/>

owner of the building and also the user of the building

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**Function :** Environmental consultancy

Henric Ernstson Konsult

<http://www.ernstson.com/>

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**Function :** Contractor

Byggdialog AB

<http://www.byggdialog.se/>

main contractor

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**Function :** Designer

KLARA arkitekter AB

<http://www.klara.se/>

architect

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**Function :** Others

Imtech, Skanska, Goodtech

Plumbing and Building automation, Ventilation, Electricians

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**Function :** Other consultancy agency

KVE, EBAB, VVSPlan

Design plumbing, ventilation, electric

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**Function :** Others

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**Function :** Others

SundaHus

<http://www.sundahus.se/>

SundaHus Miljödata is a tool for property owners to ensure that conscious choices are made on the materials in their buildings.

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**Function :** Others

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**Function :** Others

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## Contracting method

Other methods

## If you had to do it again?

Modify the medical equipment so that it doesn't need to be any static dissipative floors in the building.

## Building users opinion

The people working are very satisfied, they have had a lot of visits from other hospitals. The goal have been that the newborn child shall not be separated from parents during the hospital stay and all parents should be offered a room directly adjacent to the point of care and that no contagion of multiresistant bacteria shall be possible. Due to the architecture it is possible for the parent to stay close and also to get a room close to the outside and the inside of the clinic.

## Energy

### Energy consumption

**Primary energy need :** 102,00 kWhpe/m<sup>2</sup>.year

Primary energy need for standard building : 198,00 kWhpe/m<sup>2</sup>.year

Calculation method : Other

Initial consumption : 183,00 kWhpe/m<sup>2</sup>.year

## Envelope performance

Envelope U-Value : 0,23 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

refers to the new parts in the buildings.

Indicator : EN 13829 - n50 » (en 1/h-1)

Air Tightness Value : 0,50

## More information

The standard consumption are based on mean consumptions in similar hospital-buildings in Sweden.

## Real final energy consumption

Real final energy consumption/m<sup>2</sup> : 102,00 kWhfe/m<sup>2</sup>.year

Year of the real energy consumption : 2 014

## Renewables & systems

### Systems

Heating system :

- Urban network
- Geothermal heat pump
- Water radiator
- VAV System

Hot water system :

- Urban network
- Heat pump

Cooling system :

- Reversible heat pump
- Geothermal heat pump
- Chilled Beam

Ventilation system :

- Free-cooling

Renewable systems :

- Heat pump (geothermal)

All electricity that are bought comes from wind and hydropower.

## Environment

### Urban environment

The area on which the hospital is located area completely urbanized, There are public transports to the hospital and is fully served by sewerage, mains electricity, mains drinking water and so on.

Green space : 1 000,00

## Products

### Product

Outcome of environmentally conscious material choices at a neonatal department in the main hospital i Karlstad

#### Product category :

Landstinget in Värmland has long acted consciously to choose and regulate the "best" environmentally friendly products in construction. In its buildings Landstinget does not wish to build in material which it subsequently may have to sanitize or retrofit later or which might cause illness. By controlling the selection of materials and managing output, risks and problems can be minimized reducing later stage impact to the environment.

What impact in terms of reduced unwanted chemical presence does Landstingsfastigheter in Värmland achieve through their work and at what increased expenditure?

The difference between building with environmental or without environmental requirements but with the same functional requirements is in the present case estimated to 201249 SEK. The total cost for the construction was 59,229 thousand SEK, the subsequent increase in building environmentally consciously was 0.33% of the total budget, excluding equipment for this project. At the same time there was a reduction of through active environmental choices approximately 800 kg (787-915 kg) of phthalates have not been released and that the benefit to the environment is not insignificant. In addition, we know that we did not have to use 1598kg PVC plastic by choosing a different superior plastic.

All premature infants in care in the region will directly benefit through reduced exposure to chemicals at the same time as the entrepreneurs will learn to think on the environment in other projects.

## Costs

### Construction and exploitation costs

Total cost of the building : 6 400 000 €

## Health and comfort

### Indoor Air quality

All products used in construction must be checked against Landstingsfastigheter's overall environmental guidelines through the chemical database, SundaHus. Additionally this database, besides containing classifications of different chemicals by current applicable law and recognition, contains a filter which can sort out those chemicals Landstingsfastigheter in Värmland wishes to reduce or phase out entirely according to its environmental guidelines.

Some of the demands that Landstingsfastigheter have are

\* Limitation of VOC (Volatile Organic Compounds)

\* Limitations / restricted use only after demands / of PVC

\* Limitations of a bunch of chemical substances that have or are suspected to have negative effects (The County Council work based on the precautionary principle and research on chemicals and exposure.)

### Comfort

**Health & comfort :** The goal has been that the newborn child shall not be separated from parents during the hospital stay. All parents should be offered room directly adjacent to the point of care and that

no contagion of multiresistant bacteria shall be possible. Due to the corridor outside the rooms it is possible get a relation between indoor and outdoor environment and the variation of the nature's cycles. The indoor thermal comfort are extremely important in this care.

**Acoustic comfort :** Acoustic comfort are calculated in the project SS25268:2007 klass C.

## Contest

### Reasons for participating in the competition(s)

This building is the first project where it is investigated what impact in terms of reduced unwanted chemical presence does Landstingsfastigheter in Värmland achieve through their work and at what increased expenditure?



We can establish that through active environmental choices approximately 800 kg of phthalates have not been released and that the benefit to the environment is not insignificant. In addition, we know that we did not have to use 1598kg PVC plastic by choosing a different superior plastic. These savings have been made at a cost that is less than 0.33% of the total of the building construction portion of the project of 1250 sqm.

From a health perspective it will always be more important to control chemicals people come into direct contact with than those which people will not have contact with. Control of exposure to indoor surfaces will be more important than outdoor exposure from facades or roofs. Emissions that take place outdoors will be diluted and have a lower concentration than if in doors. From a property owner's perspective, it is equally important to keep track of a substance whether it is outdoors, indoors or in small amounts, if the property owner at some time in the future might be required to sanitize in regards to a particular substance.

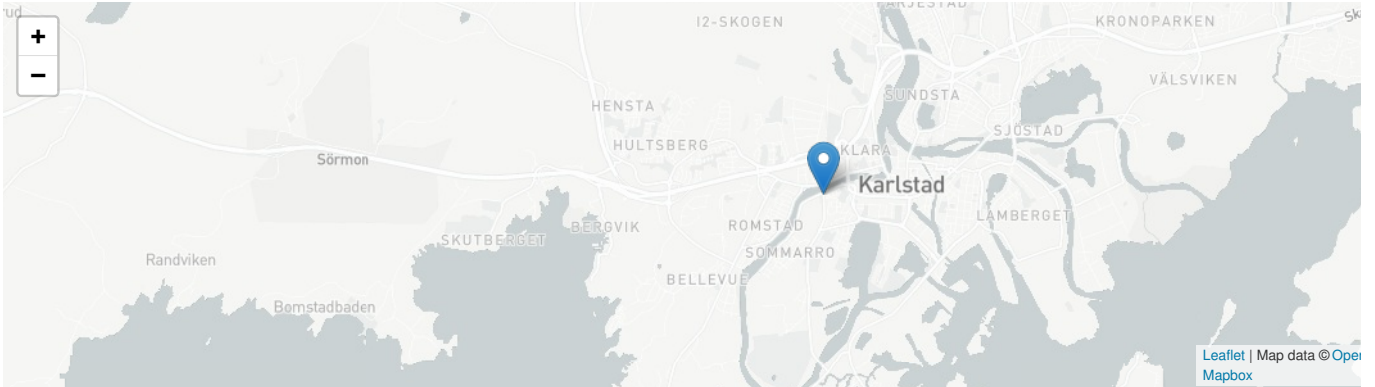
How do the environmental requirements work with production? Environmental demands work very well within modern building criteria, as no contractor wants to use materials that are dangerous. Both the contractor and the developer want a long durability and high function, no one wants buildings that

will need to be sanitized or that their premises make people unwell.

### Building candidate in the category

  
  
**Health & Comfort**

  
**Green Building Solutions Awards 2015**  
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