INTRESSEGRUPP PASSIVHUS IG PH

www.igpassivhus.se

THE WORLD'S FIRST PASSIVE HOUSE CERTIFIED TENNIS HALL

Tommy Wesslund and Simone Kreutzer

IG Passivhus Sverige

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We are:

Certified Passive House Experts
15 years experience in passive house design

Architecture, envelope, HVAC, energy coordination, etc.

References:
Development of passive house building systems
Development of passive house windows

Certified passive houses in Sweden, e. g.:
Daycare centers, single-family homes, tennis hall

CEPH education and seminars

National and international collaborations

DESIGNER
CERTIFIED PASSIVE HOUSE DESIGNER

IG PH

Simone Kreutzer Robin Fritzson Tommy Wesslund

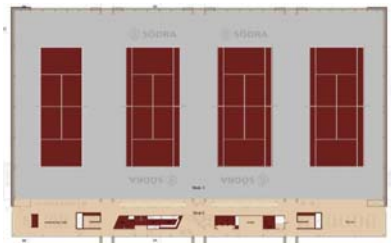
Passivhouse tennis hall Södra in Växjö

Architecture

Architectural competition 2011
200 participating architects
Winning entry, from Denmark- Kent Pedersen

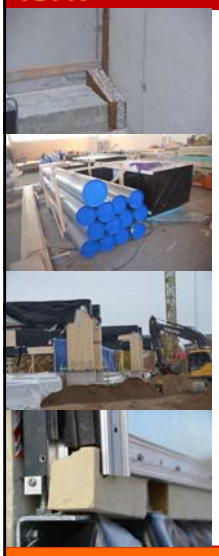
Reference area: 3600 m²
Compact structure
All-glazed southern facade
4 tennis courts, height 9,0 m to the north
Two-story section to the south with reception, café, conference room, fitness, locker room, and technical facilities

Downstairs below ground level



Source: Kent Pedersen Author: SK

Passivhouse tennis hall Södra in Växjö



Requirements:

Wooden structure
Highest energy efficency
Concept hall

Our assignment:

Energy coordination
Tecnical coordination
QA
Education
Compiling for certification

Source: Kent Pedersen Author: SK

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The passive house Södra Tennis Hallen is to be certified by an independent authority, approved by the International Passive House Institute

Energy requirement max 15 kWh/m²a
Effect goal max 10 W/m²
Verified in the energy calculation program PHPP

Air leakage n_{50} max 0,1 h^{-1} at 50 Pa pressure difference, measured in a Blower Door test

Heat camera screening will be performed during pressure test to ensure air tightness and absence of thermal heat bridges

Source: IGPH Author: SK

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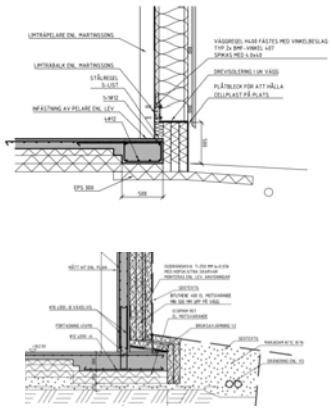
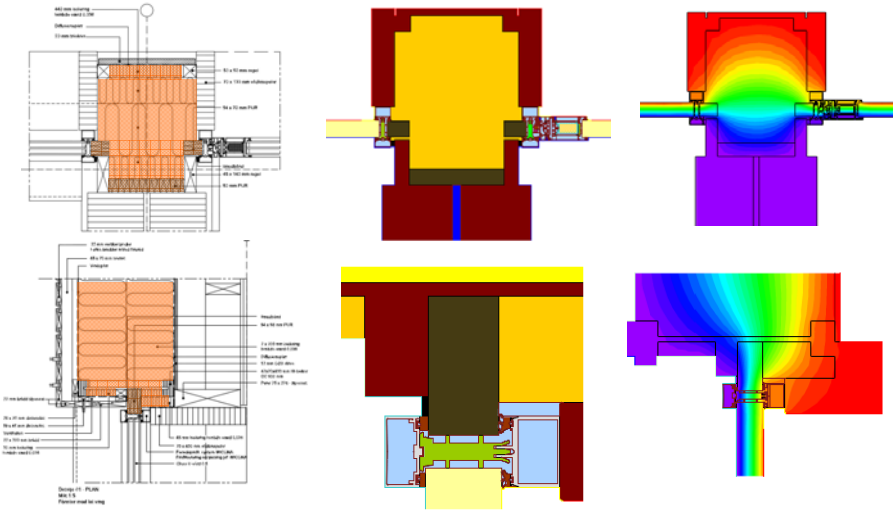
Certified passive houses - Planning and quality assurance



Source: IGPH Author: SK

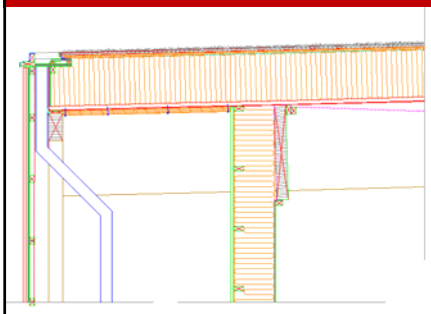
Facade systems

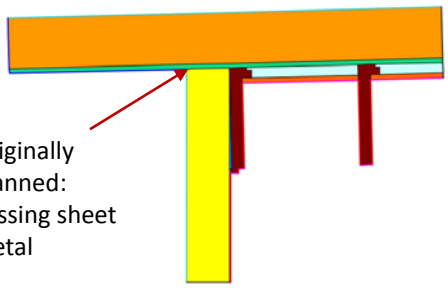


Source: IGPH, Wicona

Author: SK

Certified passive houses - Planning and quality assurance



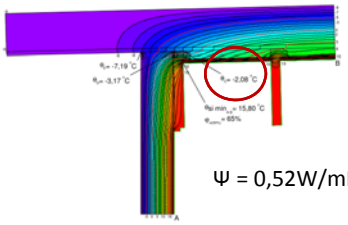


Originally planned: Passing sheet metal

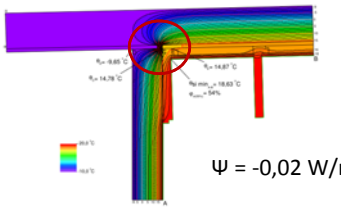
Source: IGPH

Author: SK

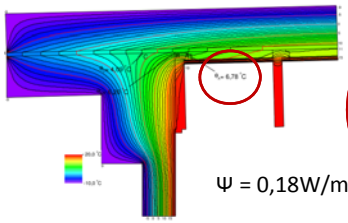
Certified passive houses - Planning and quality assurance



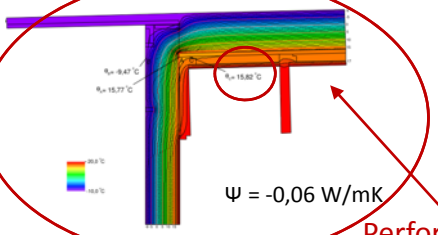
Ψ = 0,52W/mK



Ψ = -0,02 W/mK



Ψ = 0,18W/mK



Ψ = -0,06 W/mK

Performed!

Source: IGPH Author: SK

Installation overview

Ventilation system

2 air handling units with high maximum air volumes (1600 l/s and 1300 l/s)

- First rotating heat exchanger certified for passive houses
- Pre heating and cooling with four boreholes
- Tennis hall unit recirculates air from tennis courts
- All air handling is demand-controlled

(humidity controlled in shower area, CO_2 controlled in conference rooms, CO_2 and temperature controlled in the hall)

Heating system

District heating

Distribution:

- Via air in the hall
- Via water (radiators) in the rest of the building

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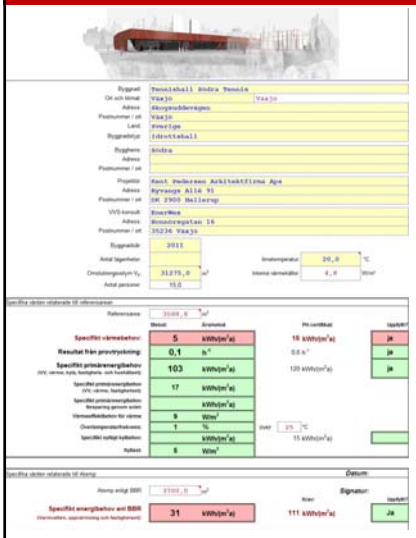
PHPP

RESULTS



Source: IGPH

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Passive house consultants and certified energy experts with 12 years experience in passive house development in Germany and Sweden.

Development of systems for single-family housing
Energy coordination in several Swedish passive house projects.

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