BEST: H+H 4 Refurbished school

Grydemoseskolen, Helsingør

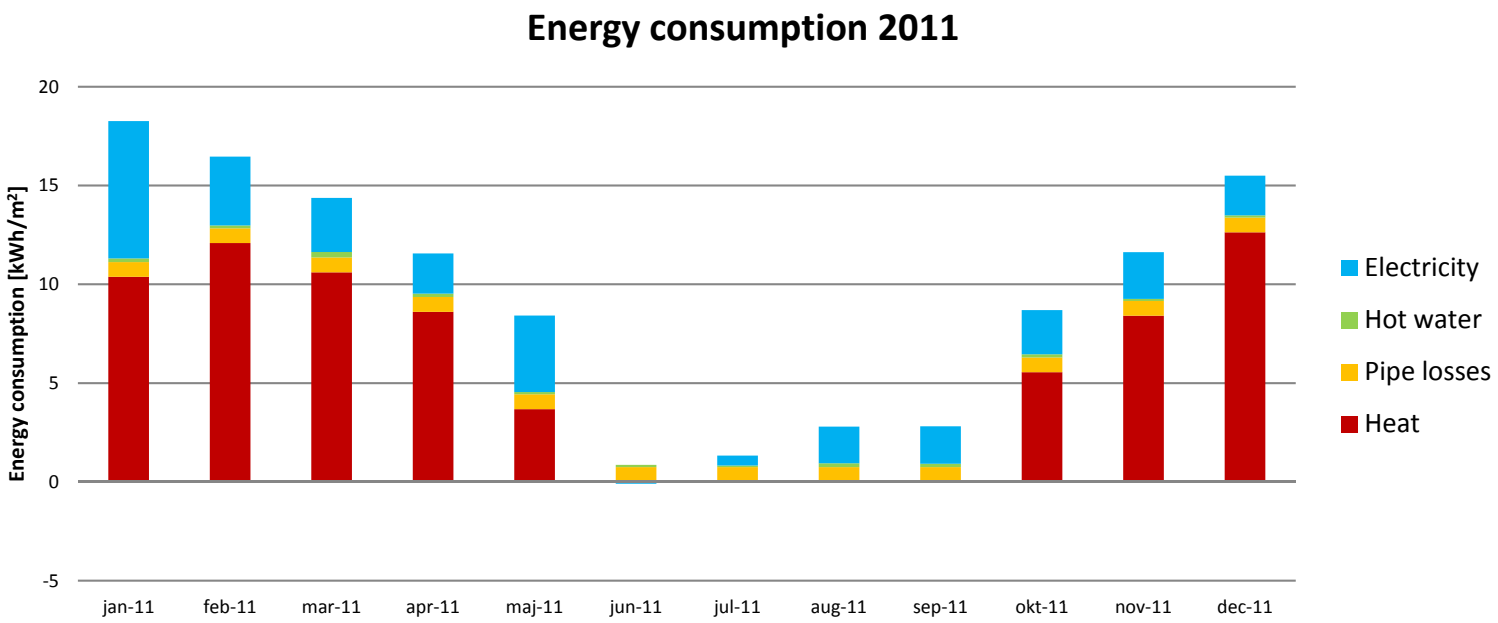
Project information

Project type:	ECO-rehabilitation
Address:	Grydemosevej 1 3060 Espergærde
End construction year:	2008
Building type:	Public school
Storeys:	1-1.5
Persons in building:	507 pupils
Gross area BTA:	11,196 m²
Net area:	10,132 m²
Total eligible costs:	€ 463.256
Total costs:	€ 463.256

Special ECO-technologies applied:

- Energy optimisation of lighting
- Low energy lighting with sensor control
- PV plant installed
- Conversion to district heating
- Establishment of heating control
- Rehabilitation of water installations
- Installation of sub meters
- New low energy pumps
- Registration of energy consumption
- Optimisation of electrical installations

Energy consumption



ECO-City project partners

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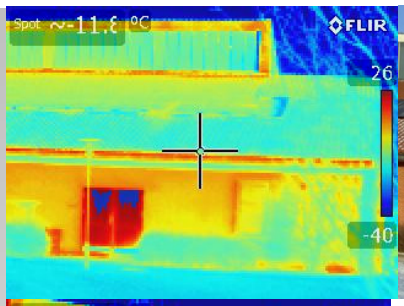
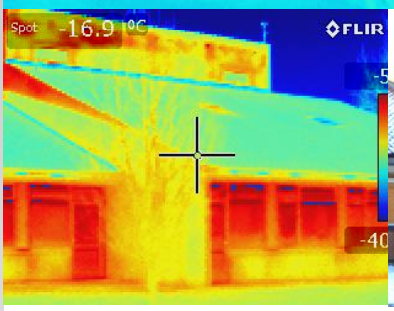
Lessons learned:

- Improving energy efficiency of installations can reduce energy consumption by 25-30% before changing the building envelope
- Interactive screens in classrooms and computers use a lot of energy
- Changed control of lighting strategy in the sports hall has been very energy saving

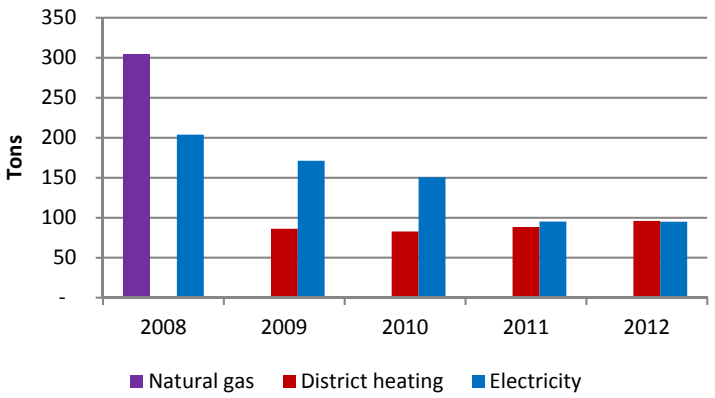
CO_2 emission

Some of the reduction in the CO_2 emission from the electricity is caused by the increased import from Sweden which leads to lower production from Danish coal CHP plant and a larger percentage of biomass in the Danish electricty production.





Annual CO2 emission Grydemoseskolen



Key figures

U-value	Unit	Normal practice	Concerto spec.	Actual
Outerwall	W/m²K	0.4	-	0.4
Roof	W/m²K	0.25	<0.2	0.2
Floor	W/m²K	0.3	-	0.3
Windows	W/m²K	1.8	-	1.1
Glazing	W/m²K	1.1	1.1	-
Doors	W/m²K	2.5	-	-
Vent. rate	h^{-1}	3	>2	0.5

Energy consumption	Unit	Normal practice	Concerto spec.	Actual 2011	Actual 2012
Heat	kWh/m²	70	49	72	79
Pipe losses	kWh/m²	11	8	9	8
Ventilation	kWh/m²	44	31	-	-
Hot water	kWh/m²	8	6	2	2
Total heat	**kWh/m²**	**133**	**94**	**83**	**90**
Lighting	kWh/m²	24	16	-	-
Other	kWh/m²	12	9	22	20
Total elec.	**kWh/m²**	**36**	**25**	**22**	**20**
PV	kWh/m²	0	0	-2	-2
Total	**kWh/m²**	**169**	**119**	**102**	**107**

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