

Energy Report for the year ending 31st of December 2010

This report is a short summary of the energy consumption/production of the DkIT campus. It does not go into detail and is only meant to provide an overview for management purposes.

Infrastructure:

The current electrical installation consists of a single electricity connection to the National Grid. The metering and billing is managed by VAYU who are our current electricity provider. The electrical energy consumption is reduced by the production of electricity on site by the means of a Vestas 850kW wind turbine. The wind turbine supplements the imported energy and on occasions produces more than needed which results in electricity export for which we receive a small payment that is offset against the charges.

The Regional Development Centre has its own supply independent from the campus Network. This is managed by the ESB.

The provision of thermal energy is also managed by VAYU. There are seven meter points on site that connect to the Board Gas Network. Most of the Gas supplied is used for space heating purposes and small amounts for use in various laboratories and kitchens.

Summary:

The following figures are rounded to a degree that will help to remember the outline data. The total Energy consumption of the whole campus was 11,068 MWh of which 6,707 MWh was Gas and 4,361 MWh Electricity.

The Wind Turbine Produced 1,117 MWh of which 957 MWh was consumed in house and 160 MWh exported.

Of the total electrical consumption of the campus 78% (3,403 MWh) were imported and 22% (958 MWh) produced in House.

The **total cost for Energy was 574 kEuro**, 318 kEuro for Electricity and 256 kEuro for gas.

The average price per kWh was 9.12 cent for electricity and 3.81 cent for gas.

The total output of CO₂ was 3,544 tonnes.

Benchmark Figures:

The Student Population for 2010 was approximately 4,500 full time students, 240 apprentices and 500 part time students.

The approximate area in use is 50,000 square metres.

With these figures we can get the following benchmark figures that can be compared on a year to year basis.

Energy Consumption per student:	2,459 kWh
Energy Consumption per square metre:	221 kWh

Analysis:

Consumption:

The rise in energy consumption in 2010 is due to the increased demand due to two cold spells one early in the year and a severe spell of extremely cold weather in December.

The full operation of the Carroll Building has also contributed and will in the next year consume even more since it was only occupied in the later part of 2010.

The Wind turbine production has also dropped by 26% (380 MWh) due to wind conditions which resulted in higher electricity imports.

Cost:

S:\Facilities Management\Utilities\Energy Management\Energy Report 2010.docThe introduction of the Carbon Tax in May 2010 has added to the cost of gas as has the PSO Levy that was added to the electricity charges in October 2010.

2010

Building	kWh
PJC	1,706,931
RDC	222,763
North/South Block	2,521,012
MPC	676,186
Restaurant and Theatre	513,999
Hospitality	536,157
Nursing Building	529,865
RDC Electrical	257,150
Main Campus electrical	3,146,251
Wind Turbine (electric)	957,568
TOTAL	11,067,882
Electrical	4,360,969
Thermal	6,706,913

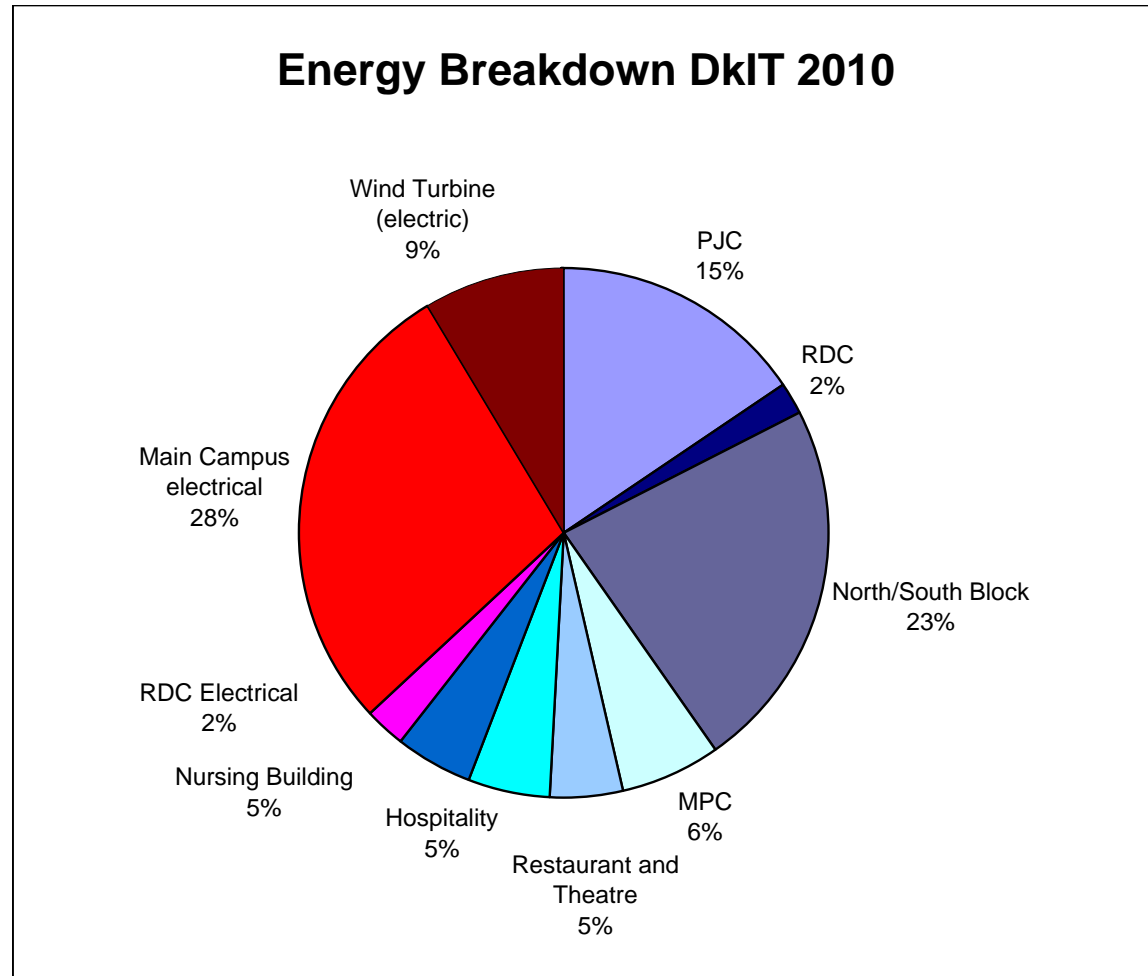


Table of Annual Energy Usage 2010

Utilisation Factor Gas
Student Population (FT)
Floor Area

0.75
4500
50000 square meters

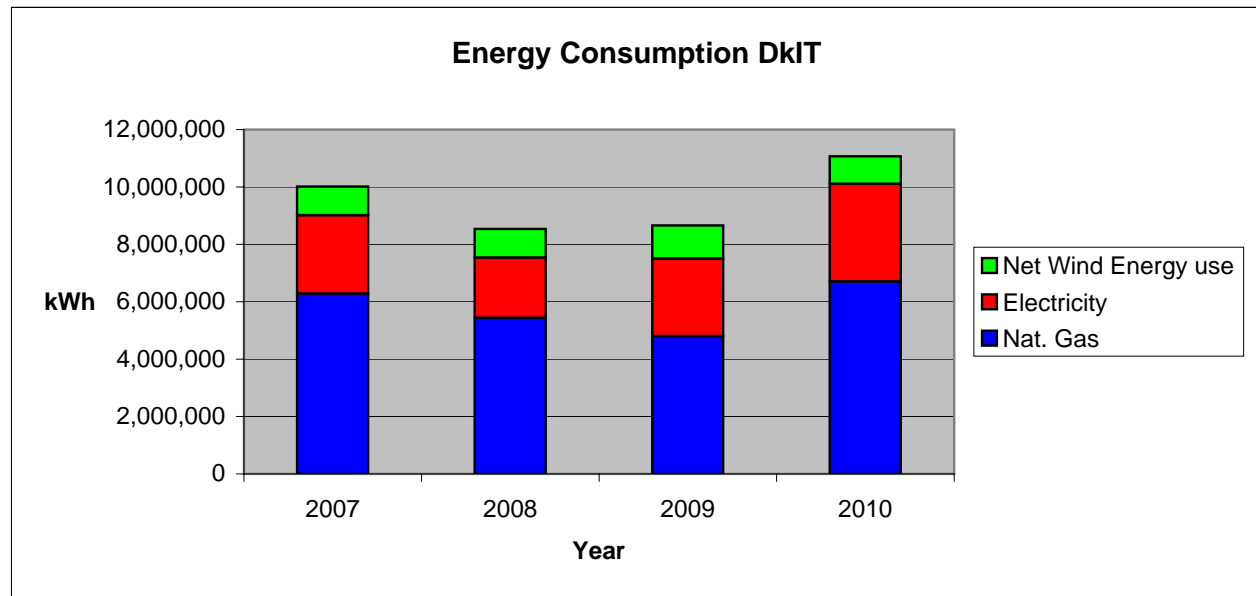
0.651 kg of CO₂ per kWh (Electricity)

0.198 kg of CO₂ per kWh (Gas)
1000

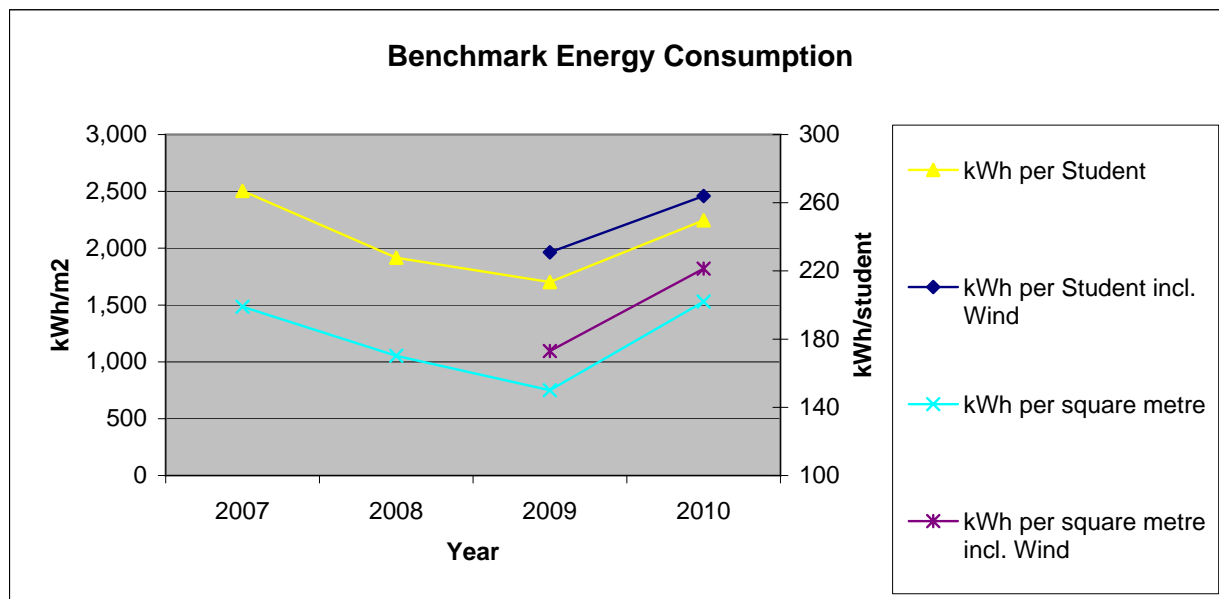
Energy Type	Consumption kWh	%	Cost Euro	%	Cost c/kWh	Useful Cost c/kWh	Tonnes of CO2	kWh consumed per student	kWh per m2 per annum
Electricity	3,403,401	30.75	310,524	54.09	9.12	9.12	2,216	756.31	68.07
Nat. Gas	6,706,913	60.60	255,694	44.54	3.81	5.08	1,328	1490.43	134.14
Wind (net)	957,568	8.65	7,835	1.36	0.82		0	212.79	19.15
Total	11,067,882	100	574,053	100			3,544	2459.53	221.36

Wind net = total wind energy production-export
cost wind energy=O&M cost-export

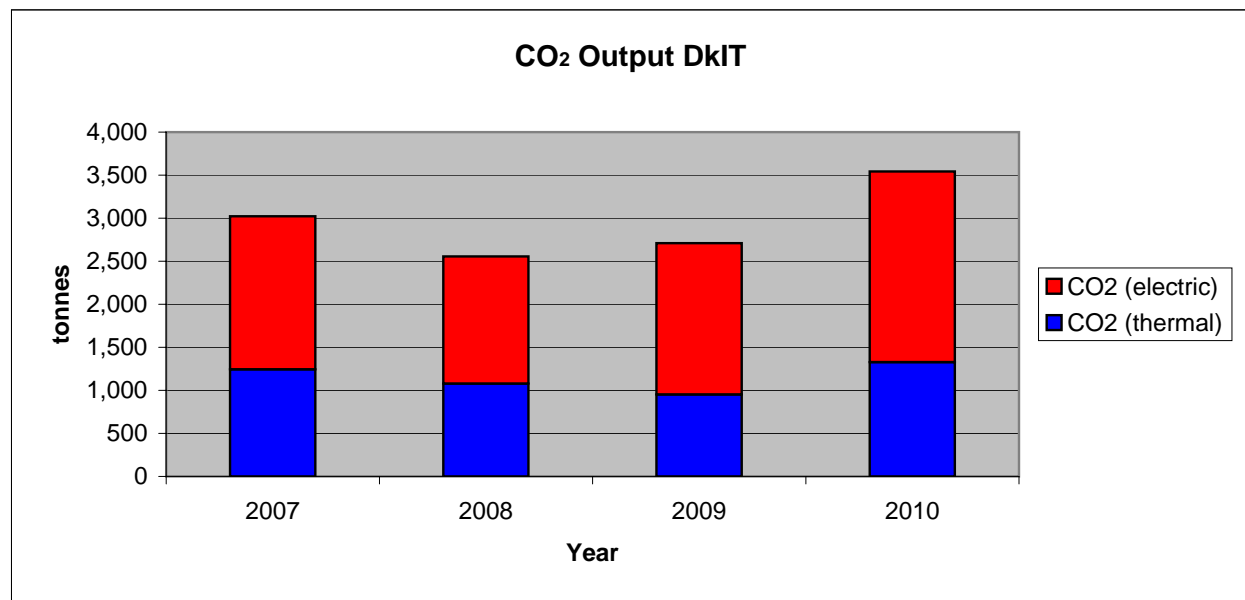
Year	2007	2008	2009	2010	
Nat. Gas	6,284,660	5,442,081	4,803,297	6,706,913	kWh
Electricity	2,731,937	2,094,725	2,702,368	3,403,401	kWh
Net Wind Energy use	1,000,000	1,000,000	1,156,116	957,568	kWh
Wind Energy production	estimated	estimated	1,497,671	1,117,718	kWh
Wind Energy Export			341,555	160,150	kWh



Year	2007	2008	2009	2010
kWh per Student	2,505	1,917	1,702	2,246
kWh per Student incl. Wind			1,964	2,460
kWh per square metre	199	170	150	202
kWh per square metre incl. Wind			173	221



Year	2007	2008	2009	2010
CO2 (electric)	1,778	1,478	1,759	2,216
CO2 (thermal)	1,244	1,078	951	1,328
TOTAL	3,023	2,556	2,710	3,544



Imported Electricity

RDC and Main Building

Year	2007	2008	2009	2010	
TOTAL Electricity Cost	379,975	353,205	260,692	310,524	Euro
TOTAL Electricity Consumption	2,731,937	2,343,875	2,694,617	3,403,401	kWh

