Gem Utilities

GEM | C/S 1 | 2005

▶ GEM SHOWS 18.45% REDUCTION IN BOILER GAS USE AT DCU

▶ GEM PRODUCES BEST KWH PER M2 IN THE MONITORED BUILDINGS ACROSS THE ESTATE

Technical *focus*

ADDRESSING THE NEEDS OF ESTATES AND MULTI-BUILDING CAMPUS FACILITIES .

In May 2005 two M2G boiler optimising systems were installed to the boilers in the Physics & Electronics Building in DUC. The reduction in fuel consumption over the months of Oct, Nov and Dec was 18.45%

Helping you achieve your energy goals

Building characteristics:
TFA = 5,400M² powered by 2 x Cast Iron Sectional forced draught Hogfors 21 Nova Type H21 Boilers with Riello single-stage burners type Gas 5. The boilers are rated at 370 kW.

The building heating system is time clocked through the BMS and operates a strict 'loading demand' strategy where both boilers are utilised to realise the common header set points at start up after which one boiler is disabled through the BMS leaving one boiler only there after to maintain the heating and hot water requirements for the building

Weather compensation:
The building is heavily weather compensated with the boiler plant being shut down when external ambient temperatures reach 15ºC

Metering:
The boiler house is metered and all meter readings are fed back through the BMS to an out station where they are down loaded at midnight and then up loaded to the DCU E3 web site for public scrutiny

Weather Correction
There is no requirement to monitor this aspect for comparative purposes given that all three buildings are subject to identical weather characteristics as they are all on the same site.

WATCH THIS SPACE

Summary of actual % kWh reduction of the Combined 3 months
Physics Electronics - 18.45%
Library + 6.02%
Sports Building + 18.1%

Month by month % reduction in kWh 2004 v 2005

	Oct	Nov	Dec
PE	-47%	+5%	-13%
Lib	-35%	+37%	+12%
Sp	-13%	+41%	+21%

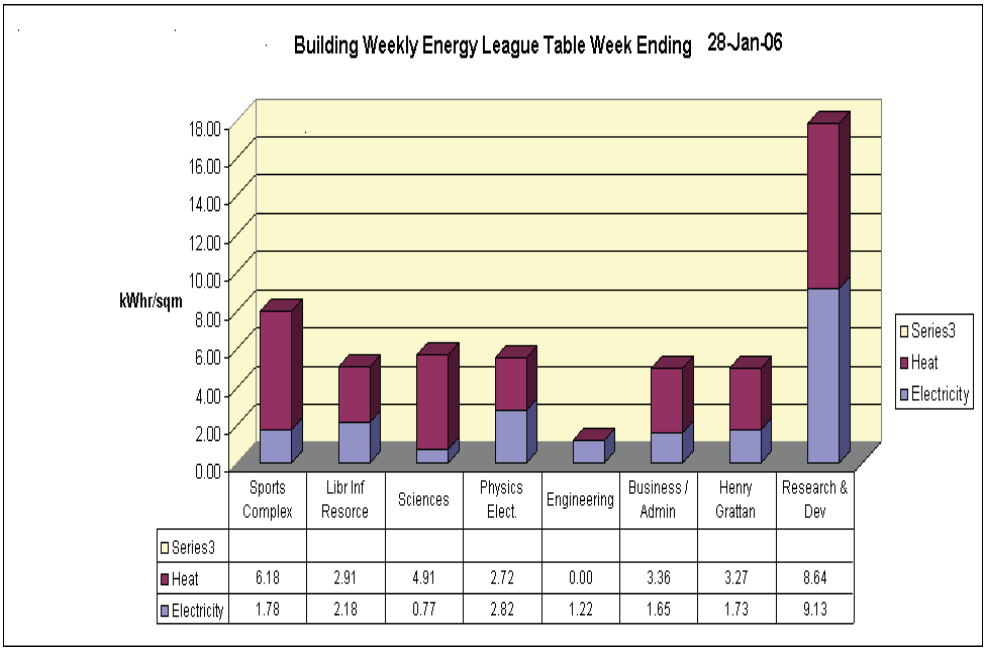
DCU Case Study Continued ...

M2G boiler optimisation:
By monitoring each individual boiler flow and return circulating water temperature every second M2G builds a profile of boiler performance and heat loss over time. This profile is then utilised to optimise the boiler firing pattern, eliminate wasteful boiler firing, restrict purge losses and capitalise on any boiler over-shoot.

The M2G programme can mimic current boiler performance under heavy load conditions. The software also has the ability to slow the rate of boiler response when the loading demand drops to a minimum.

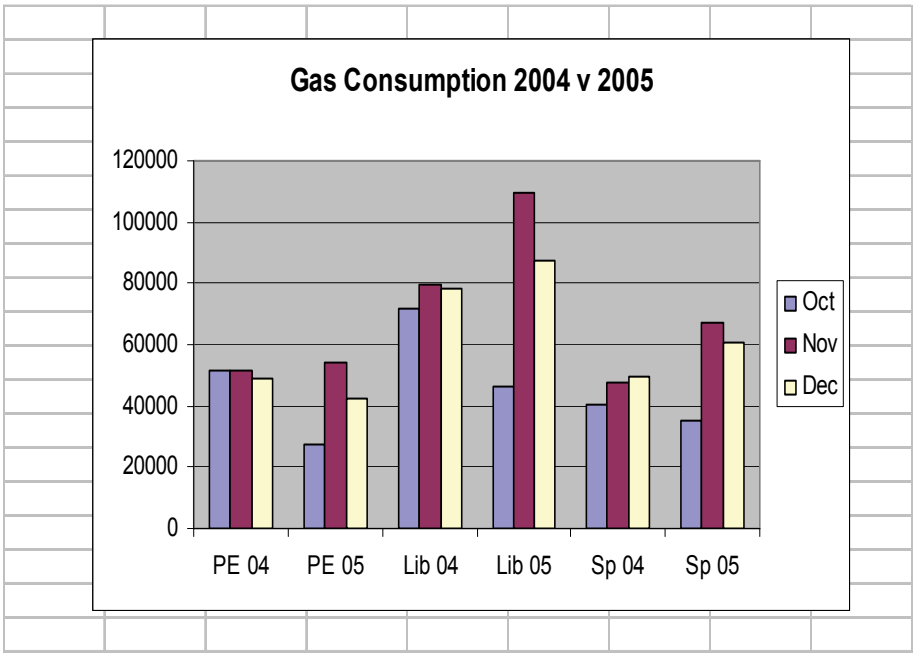
Importantly, the M2G boiler optimising strategy upholds the common header pipe-work temperature set points thus ensuring that the same heat is delivered into the building on variable and constant temperature circuits.

The slide below shows the Physics Electronics building ranked No.1 in performance kWh/M² of all the monitored buildings on site with just 2.72 kWh/M²



	Sports Complex	Libr Inf Resorce	Sciences	Physics Elect.	Engineering	Business / Admin	Henry Grattan	Research & Dev
Series3								
Heat	6.18	2.91	4.91	2.72	0.00	3.36	3.27	8.64
Electricity	1.78	2.18	0.77	2.82	1.22	1.65	1.73	9.13

This slide compares gas consumption kWh over the last quarter 2004 v 2005 pro rata across three buildings on site. (Physics Electronics, Library and Sports)



M2G savings

DELL 35%
Milford Hospice 20%
Clarion Hotels 34%
Ulster Bank 25%
Tipperary Energy Agency 20%
Superquinn 13%
Inst Mechanical Eng 17%
O² 27%