



▶ M2G BOILER OPTIMIZATION DELIVERS SAVINGS IN ADDITION TO BMS



▶ 5-YEAR WARRANTY NO MAINTENANCE WITH GUARANTEED SAVINGS

# Technical *focus*

ADDRESSING THE NEEDS OF BUILDING ESTATE OIL & GAS BOILER SYSTEMS WITH M2G BOILER OPTIMISATION

M2G is a boiler optimising control for commercial boiler systems. A control is required for each boiler on site. The M2G can be considered as an additional control which, when connected in series with other heating technology such as thermostats, BEMS, and frost protection equipment, applies intelligent software solutions to modify the firing pattern of the boiler in a manner which increases efficiency without affecting comfort levels.

## Helping you achieve your energy goals

M2G is interfaced to existing “control circuits” sometime know as the stat circuit. M2G has fully “opto” isolated inputs and outputs ensuring that the product is fail-safe. The interconnections to the boiler/ burner controls do not include any connections to the primary safety requirements of the appliance under EN298.

The M2G is interconnected in the same way and is an extension to the BMS/other controls. In this way the inclusion of the M2G does not contravene the boiler burner manufactures product liability or warranty.

M2G is ACA listed. Code BMS 9030.



M2G is Carbon Trust Approved



Making business sense of climate change



Gem Utilities  
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## Quality

A M2G registration card is completed for all M2G installations. This information is held on database by GEM-Utilities Ltd

Subject to minimal exclusions GEM-Utilities Ltd warrants its M2G system complete with digital sensing probes to be free from defects in materials and workmanship under normal consumer usage for the period of 5 years with no maintenance requirements.

## Why is M2G required?

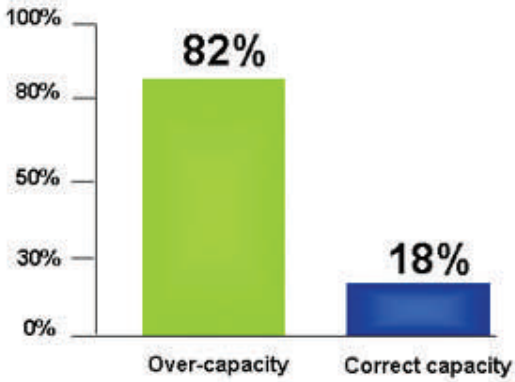
### The inherent problem

All boilers, no matter how modern, waste heat as a consequence of standing losses and lack of proper boiler temperature control.

When installed, over 80% of commercial boilers have over capacity for their application i.e. the boiler's maximum thermal output is rarely utilized.

Over capacity creates "dry cycling" i.e. boilers firing unnecessarily to recover the heat loss without contributing to "true" building load.

This results in unnecessary energy consumption and CO2 emissions which can be eliminated by M2G boiler optimization.



Source: European Energy Institute

## Accelerated Capital Allowance (ACA)

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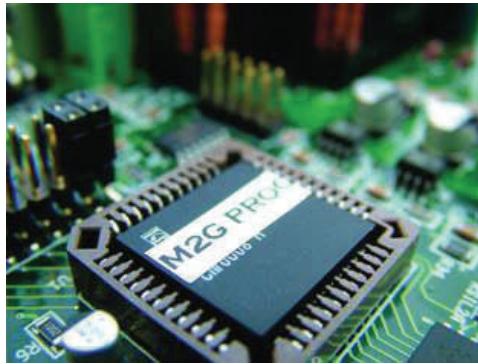
ACA allows private companies to claim 100% of the cost of M2G against end of year tax returns.

### 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 overshoot.

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



### More information available

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### M2G savings examples

DELL 35%

Milford Hospice 20%

Clarion Hotels 34%

Ulster Bank 25%

Tipperary Energy Agency 20%

Superquinn 13%

Inst Mechanical Eng 17%

O<sup>2</sup> 27%

UL Arena 19%

Kerry County Council 16%

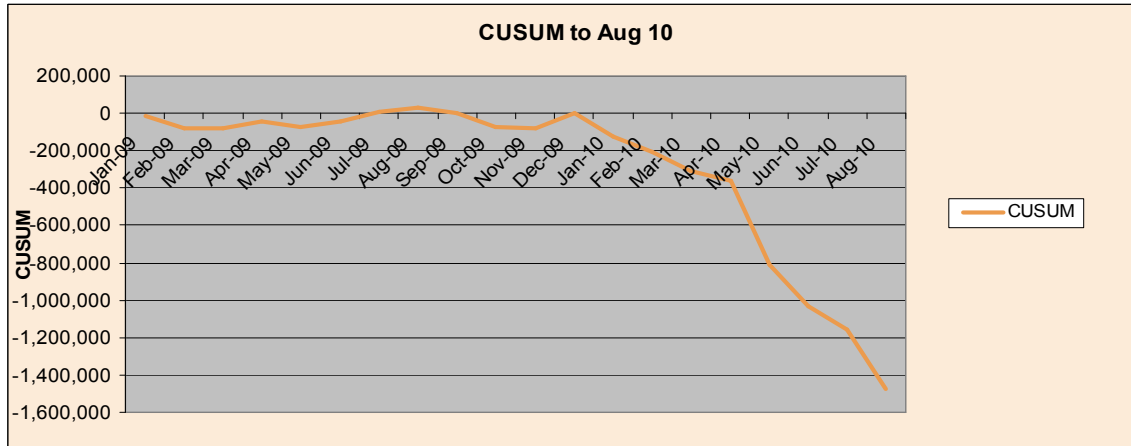
Hermitage Clinic 12%

M2G savings are in addition to current and modern BMS (including weather compensation, boiler sequencing and optimum start-stop).

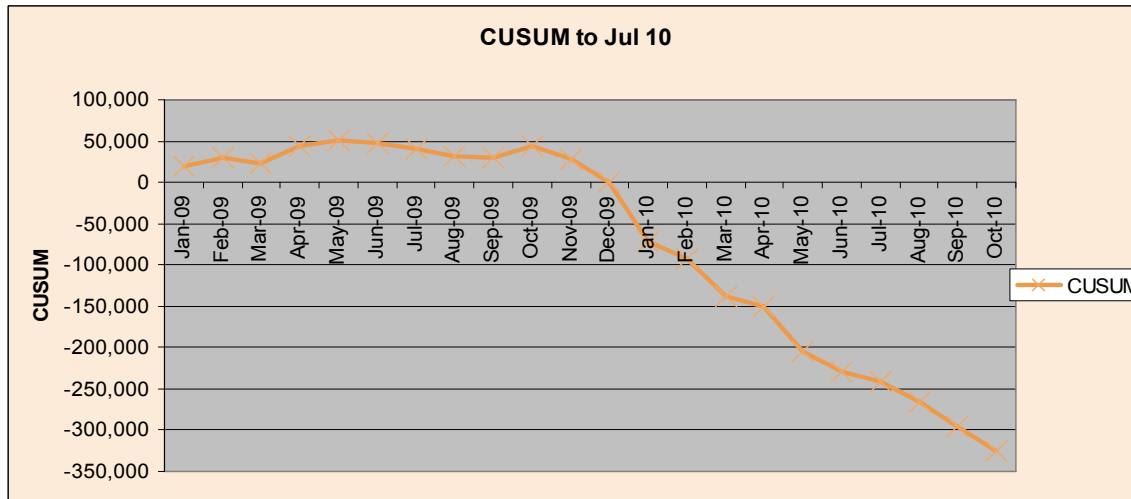
M2G savings are also in addition to high efficiency condensing and modulating boilers.

## M2G Bank Headquarter and Bank Centre Performance

The following slides show the how the M2G systems have performed since installation on the last week of April 2010



The above graph is based on a building which does not have a fully incorporated BMS. The BMS controls the Fan coil units on the floors. The AHUs and boilers are controlled by local time-clocks. There are 3 Hoval ST boilers. There has been a significant reduction in gas consumption since installation date.



The above graph shows how the M2G boiler optimizing system performs in a building with a fully incorporated BMS. The BMS controls AHUs, boilers and local FCUs. It monitors space temperature and outside air temperature and controls the plant accordingly to achieve the require working environment for the staff. As you can see from the installation date there has been a continuous downward trend in the gas consumption. This building has high efficiency condensing and modulation boilers installed.

**CUMSUM explained:** <http://www.vesma.com/mt/cusumx.htm>

Cumulative sum of the difference between expected and actual fuel used