CUH M2G CASE STUDY

GEM-Utilities Ltd | Sept 2014

M2G Advanced Boiler Control

GEM's M2G Advanced Boiler Control (ABC) system was retrofitted to the #2 Hoval ST-Plus forced draught dual-fuel boilers at CUH with a combined heat output of c. **2.4 Mw.**

This simple 'deep retrofit' delivered **10.1% energy savings** (weather corrected) with a return on investment of just **10 months**. This efficiency measure is now in place over 12 months with no issue, no maintenance and **no negative impact** on the hospital.

"this was a simple retrofit project that delivered significant energy savings to IPMVP standards without any negative impact on the hospital..."

Eric Crowe
HSE Estates South/South East Energy Champion
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Hospital Watch (A&E)

CUH
Cork University Hospital
Ospidéal Oliscoil Chorcaí

CUH A&E is operational 24 hours a day 7 days a week. The new department opened in **April 2005** and approximately **sixty thousand patients** pass through the emergency department every year, making it one of the busiest emergency departments in the country

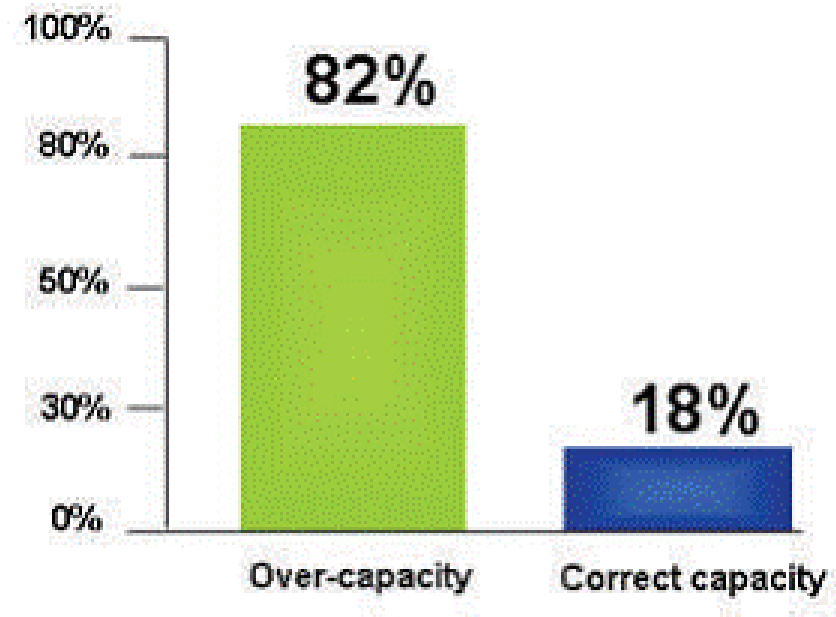
Sustainable Health Services

The **CUH Group** is committed to energy management and continual improvement in energy efficiency in accordance with the HSE towards a **Sustainable Health Services** document (2013).

Cork University Hospital Accident & Emergency

M2G Project

- 10.1% savings
- Same day completion
- No changes to BMS
- No maintenance
- On-going savings
- Project cost €4,500
- Return on investment 10 months



Boiler Over Capacity : Source European Energy Institute

Boiler Over Capacity

Almost all boilers have **over capacity** for the job in hand.

This leads to **nuisance cycling** during low load conditions.

Nuisance cycling engages additional purge losses and can cause **premature aging** of boiler plant.

M2G completely **eliminates** boiler nuisance cycling.

M2G has **no maintenance** requirements whatsoever and a 5-year no-quibble warranty

CUH Increased Efficiency

The boilers are **BMS controlled** and service all the A&E variable (Heating) and constant temperature (DHW) circuits in the A&E Department. The installation was completed in one day with **no disruption** to any of the Hospital services.

The BMS remains in control of all boiler-enable periods, set point temperature, weather compensation, duty rotation and sequence control of the boilers. The **M2G** now controls the cycle rate of the boilers within strict limits and has the ability to match the normal pre-**M2G** cycle rate during heavy load conditions.

M2G will now eliminate any attempt for the boilers to cycle as a result of standing losses or short circuiting (temperature dilution from the lag boiler) both of which engage significant additional inefficiencies due to boiler over-size and the pre-purge element of boiler plant. **M2G** will also eliminate any boiler response to very low load conditions which may be below the minimum output of the boiler/burner configuration.

Hospital Planning

Applications

M2G is suitable for Low-Medium temperature hot water boilers **up to 125 °C including** Atmospheric, Forced Draught, Single-Stage, 2-Stage, Modulating Boilers, Modulating Burners, Condensing Boilers and Oil Fired Pressure Jet Burners. M2G is suitable for Natural Gas, Oil and LPG fired heating systems.

M2G Installation

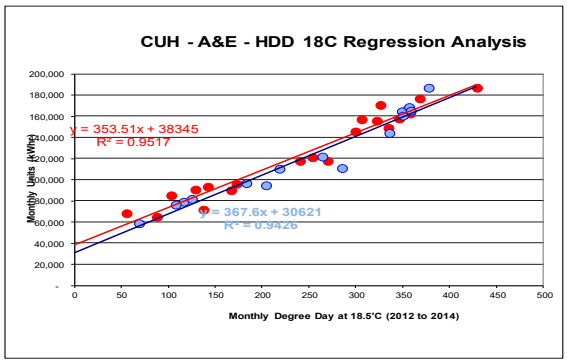
- The M2G is wired in series with the existing boiler thermostat circuit, and ensures that the existing boiler thermostat set point (boiler temperature) is always maintained and controlled.
- In all cases the primary safety controls of the burner/boiler are not compromised or interrupted.
- The boiler control thermostat and over-temperature thermostat are always in circuit and the boiler is always protected.
- M2G has a number of in-built fail-safes which ensure that in the unlikely event of unit failure the boiler will fire as normal.
- There is no loss of comfort or service during M2G installations.
- M2G RRP is €2,485 per boiler. An M2G control is required for each boiler.
- Normal paybacks are between 4—18 months
- Savings range from 10% - 25% depending on controls and system set up
- M1G controls available for DHW boilers with expected savings of c. 10%

Typical M2G Installation

Let the savings do the talking

M&V Savings Methodology:

Degree Day Regression Analysis using local HDD 18C indicated savings of 10.1% without any negative affects on comfort heating or hot water. The base load was reduced by 20%



GEM-Utilities Ltd …. Delivering increased energy efficiencies

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About GEM...

GEM is the leading supplier of boiler load control technology in the ROI and has 14 years experience in delivering projects for public and private sector organizations.