



GEM-Utilities Ltd

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Energy Green Paper Submission
28 November 2006

20:20 Vision:
Focusing on Technology Advances in
Building Energy Management Control Strategies.

Preamble: 20% : 20% vision:

It is with considerable interest that GEM-Utilities Ltd notice the Governments intent to 'deliver 20% improvement in energy efficiency by 2020'. In addition we are pleased to note that the government has acknowledged that this is in fact the 'cheapest and cleanest method of reducing greenhouse gas emissions and energy costs for consumers'. There is little doubt but that not alone is energy efficiency the cheapest and cleanest method of reducing costs but it is also the 'fastest' given the new advances in Building Energy Management Control Strategies such as 'load compensation control'.

Similarly the EU recent green paper on energy efficiency 'Doing More with Less' estimates that the EU as a whole could save up to 20% of its present energy consumption in a cost effective manner. This is real 20:20 vision.

This 'new' energy efficiency focus comes as somewhat of a relief, as one would have been led to believe, given the current concentration and promotion of renewable and sustainable energy sources, that it was Governments' understanding that these sources were the one and only way forward.

This estimated 20% saving is in line with GEM-Utilities Ltd findings with regard to the application of new 'load compensation'* boiler control software when applied as a complimentary addition to current Building Energy Management Systems (BEMS) strategies.

GEM-Utilities Ltd business model guarantees the delivery of a 10% reduction in thermal energy/fossil fuel to its clients who are operating low pressure hot water (LPHW & MPHWH) systems (non-steam systems). The average saving produced by the addition of our unique control strategy is coincidentally 20% hence the title of this submission, i.e. '20:20 vision'.

The uptake of our technology advance has been primarily through Private Sector who are obviously results driven. We have wasted significant amounts of company time to date promoting our technology to the Public Sector.

There are a number of reasons for this not least being Public Sector reliance on large consultancy companies and their knowledge base. Because there is none or very little requirement for detailed specification, design or commissioning of our control software, the considerable margins which the consultancy companies are used to through their project based work do not exist in our case.

The pay back for our clients is normally in a matter of months primarily because of the low cost structure of our product offering coupled with the very significant system savings which we deliver.

To date we have a smattering of client evidence generated through savings produced on the ground. In many cases we were told 'it could not be done' and in many cases our prospective clients were informed through their advisors that the measure of

savings we promote could not be achieved given the current level of control technology employed in new buildings however we remained and remain undeterred.

The level of over design/over sizing in boiler plant provides considerable opportunity for savings irrespective of the control strategies. In addition there is a current pre-occupation with boiler combustion efficiency where promoted energy efficiencies of 108% by some boiler manufactures do not translate to the system efficiency or seasonal efficiency of the complete system in operation in the client building in contrast to its efficiency which is quoted based on its operation on the manufacturer's factory floor.

The combustion efficiency of a boiler relates to the burning of the fuel (oil or gas) it unfortunately gives no indication as to the how effective this process is at raising water temperature within the boiler heat exchanger. As a result we encounter boilers with a certified combustion efficiency > 85% but with a very reduced system efficiency where a significant amount of the generated heat is lost to the flue/chimney and the surrounding boiler house.

BEMS control of Boiler Systems:

BEMS control is current place in all modern commercial buildings and is installed as a matter of course. BEMs intelligence is suited to controlling the timely distribution of heat in a regulated fashion as required by the building occupants however BEMS has inherent weaknesses when it comes to controlling the boiler heat centre of the building and in almost all cases the boiler/s cycle on-off on very limited intelligence normally attributed to the boiler control thermostat.

In many cases we encounter efficient heating systems powered by inefficient boiler plant. This is now completely avoidable through the application of GEM-Utilities Ltd control software solutions.

A significant aspect of BEMS control strategy is the requirement for considerable knowledge of the dynamics of the building loading demand as well as specialised knowledge about the individually designed BEMS parameters and settings. The presence of a designated buildings 'energy manager' with this knowledge base and understanding is the exception rather than the rule.

The maintenance of the BEMS is crucial to savings and slippage as well as 'aging' of the product is implicit where sensor technology losses calibration over time. In our business we find many of the 'auto' control settings turned to bypass or 'hand' simply because the system has not been adequately maintained.

In many circumstances the BEMS installation company conduct product maintenance without any interface with the end user. The prevalent thinking is that to hand over working knowledge of the product is to weaken the supplier position and possible renewal of the maintenance contract where one exists.

Novel energy efficient technology:

GEM-Utilities Ltd load compensation control technology has a European Patent Pending. The technology is applicable to new and retrofit projects. With the Green Paper focus on the new 'Building Energy Regulations' (BER), the use of 'novel

energy efficiency technologies and *opportunities to take on board on-going technological developments* our technology advance now presents considerable learning opportunities for Government either through the application of our product offering and/or through our research and knowledge base into boiler system energy waste as well as energy savings.

In contrast to current BEMS control, GEM-Utilities Ltd load compensating advance technology is a universal control which is fully automatic requiring no maintenance, calibration or setting over the lifetime of the product. Load compensation fits seamlessly with BEMS in all circumstances and is 'invisible' within the system despite the very significant savings achieved. The control system is suited to new and retrofit build.

GEM-Utilities Ltd system logic has been subject to robust scrutiny. Our 'load compensating' technology is listed on the Energy Technology List (ETL) as part of the Enhance Capital Allowance Programme which is backed by the U.K Government as well as having documented evaluation and grant aid from Energy Saving Trust (EST) at £400 sterling , Calor Gas and the National Health Service (NHS) in the U.K. Our client base can be viewed at www.gem.ie . GEM-Utilities Ltd specialises in utilities cost reduction and utilities efficiency. We help our client to 'minimise costs and maximise efficiency'. The results driven program of one major high street Bank in the UK delivered 22% saving across the group from phase-1 M2G installation (> 100 buildings). The savings data was provided by British Independent Utilities (BIU). All buildings had BEMS control. M2G savings were in addition to BEMS.

GEM-Utilities Ltd is the sole distributor of 'load compensating' boiler control system software in the Ro I.

All evaluations and accreditations are available on request. Tel: 1890 882 888.