

TRITECH Environmental Technology
Verification Scheme

Verification Report



TECHNOLOGY TYPE	Energy Utilisation
TECHNOLOGY NAME	M2G
COMPANY	Sabien Technology Ltd
WEBSITE	www.sabien-tech.co.uk

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1 Background to ETV

An Environmental Technologies Verification (ETV) scheme is a mechanism to increase exposure and accelerate market acceptance of new and novel environmental technologies. The ETV scheme is primarily aimed at Small and Medium sized Enterprises (SMEs). To enable industry to meet the rigorous challenges of climate change and carbon reduction new innovative technologies must be adopted.

An ETV will give a technology a recognised standard which will install a level of confidence in the end user and therefore accelerate market uptake. Other ETV schemes have been successfully running in Canada and the US for a number of years. Although they have different methodologies, the core outputs are aligned, accelerating market acceptance of innovative environmental technologies.

There are many benefits of an ETV for both the technology vendor and the end user. The scheme provides the vendor with an independent verification of its claims, and provides investors and buyers with confidence about the degree of risk they are taking. Output will provide a Europe wide showcase for the technology.

TRITECH ETV

TRITECH ETV (Environmental Technologies Verification) is a pilot project to develop an EU wide scheme for validating the performance of environmental technologies, and is funded by the European Union's LIFE Environment Programme.

The scheme has been set up 'to establish a mechanism to validate objectively the performance of innovative environmental technology products'. Environmental technologies can be defined as 'all technologies whose use is less environmentally harmful than relevant alternatives'. This includes technologies that manage pollution, are less polluting and less resource intensive.

For technology providers and vendors, persuading the market of the environmental benefits of a particular technology can be a difficult and daunting one. This is especially true for Small and Medium sized Enterprises (SMEs). The links between the provider and the purchaser need strengthening to instil both confidence and acceptability for all parties.

The overall aim of the TRITECH project is to establish a mechanism to objectively validate the performance claims of innovative environmental technology products; this will ultimately lead to new environmental technologies being introduced into the market place at a much quicker rate.

The TRITECH ETV focuses on three technology themes; soil remediation, waste water and energy related technologies. Project partners have been brought together to provide the necessary expertise in each of the technology areas. Each partner is

to develop a methodology to test and verify the environmental claims made by the vendor. To ensure that the methodologies are robust the project partner must engage at least five environmental technologies in their specific areas and test the technology through their pilot methodology.

2 Technology Vendor Information

Country of Origin:	UK
Language:	English
Currency:	Pound Stirling
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3 Technology Descriptions

Technology Name:	M2G
Technology Description:	<p>The M2G is an advanced intelligent boiler load optimisation control unit for commercial boilers. M2G dynamically responds to changing load demand by measuring, identifying and removing dry cycling.</p> <p>Additional features include functionality for two stage burners, single or modulating boilers, therefore maximising boiler efficiency under all conditions. PC interface to enable data downloads.</p> <p>M2G fully integrates and complements existing controls, such as BMS, boiler sequencing, weather compensation and building optimisation controls.</p>
Technology Type:	<p>Energy Optimisation:</p> <p>The M2G unit is an energy efficient product that dynamically responds to changing load demand thus optimising the efficient use of commercial modulating boilers and reducing fuel consumption.</p>
Innovative Features:	<p>M2G is an intelligent boiler optimisation control, a simple, unobtrusive technology to fit. Using intelligent software and hardware the M2G improves the boilers efficiency therefore reducing energy wastage</p>

4 Environmental Claims

The ETV scheme is a claims based scheme whereby technology vendors put forward environmental claims relating to their technology. These claims are then verified through specific tests.

Claim 1:

Installing Sabien Technology Ltd's M2G intelligent boiler optimisation control unit on a commercial modulating boiler will reduce the energy consumption by between 10% and 25% compared to consumption prior to installation.

Supporting Documentation (independent testing to verify the claim)

There are many testimonials to verify this claim and previous pilots to verify this claim

Claim 2:

Installing Sabien Technology Ltd's M2G intelligent boiler optimisation control unit on a commercial modulating boiler will reduce CO₂ emissions by between 10% and 25% compared to consumption prior to installation.

Supporting Documentation (independent testing to verify the claim)

There are many testimonials to verify this claim and previous pilots to verify this claim

5 Testing

Independent testing is required to verify the claims that are being put forward by the technology vendor.

Test Protocol:

The principle of the trial is to monitor and record the energy consumption and temperature of a commercial boiler for a 1 month period. The M2G unit is installed along with independent measuring and monitoring equipment and a temperature logger. The M2G unit is set in pilot mode where it toggles between 'save' mode and 'bypass' mode every 24 hours, i.e. in 'bypass' mode the M2G unit will be out of circuit and in 'save' mode the M2G unit will be in circuit, this process is toggled on a 24 hour basis to allow a comparison of the consumption. The measuring and monitoring equipment records the boiler run hours; how long the boiler has fired for and the temperature logger records the outside ambient temperature. The monitored data is analysed to understand the hours run in 'bypass' and the hours run in 'save' mode. The data collected from the temperature logger is analysed and degree day analysis is completed, the overall saving is weather compensated by applying the calculated degree day factor.

Test Centre:

Testing was undertaken by Sabien Technology Ltd's engineers. The pilot methodology and equipment used have all been independently verified.

Logging equipment:

Dent Instruments SMARTlogger – CTlogger

The SMARTlogger™ series of instruments are designed to monitor the on-off status and total time of use data and provide the operating schedule for energy consuming devices or systems. Models are available for lighting systems, motor loads or virtually any electric load generating at least .25 amps. Small, robust, and no installation required, each of these instruments provide powerful data for superior management.

Sabien Technology Ltd utilise the CTlogger which is a Current Transformer logger to monitor the real time opening and closing of the gas valve.

Test Result:

There were eight boilers in total monitored throughout the Hampshire County Council estate. The results used within this verification will concentrate on the three boilers monitored within the Elizabeth II Court building. The M2G unit and associated monitoring equipment was installed on the three boilers.

The M2G unit was installed on toggle mode for a period spanning 24th April 2009 – 26th May 2009. The three boilers were monitored with the M2G unit in bypass mode for 131.1 hours and consumed 1,219,673 kWh of energy during that time. The degree day data was calculated as 56.4 throughout this period.

The three boilers were monitored with the M2G unit in save mode for 105.3 hours and consumed 1,068,434 kWh of energy during that time. The degree day data was calculated as 51.7 throughout this period.

From the monitored data above the savings realised are based on the reduction in boiler firing time. The savings relate to: $(131.1/56.4 - 105.3/51.7)$ divide $(131.1/56.4) = 12\%$ reduction in boiler run time resulting in 12% reduction in energy consumption.

Performance Conditions:

The pilot was undertaken in three buildings with the Hampshire County Council estate. The boilers monitored were Strebel RU modulating boilers. The condition within the boiler room was standard and therefore the pilot gives a good representation of the performance.

6 Verification of Claims

The data set analysed for claim verification was generated from a full scale trial on three modulating gas boilers. This test was performed by Sabien Technology Ltd using their standard pilot methodology and independent monitoring equipment supplied by Dent Instruments. When assessing the performance of a heating system in buildings, external factors such as weather are a major factor in the results, utilising degree day data is an industry recognised method to ensure these external factors are compensated for.

The verification of the environmental claims 1 & 2 are substantiated through the results gathered in this pilot with Hampshire County Council. The M2G unit successfully reduced the run time of the boiler and thus the consumption of energy was reduced. The M2G unit reduced the kWh consumption and associated CO² emissions on the three Strebel boilers at the Elizabeth II Court building by 12%.

7 Marketing

Logo

Sabien Technology Ltd will be able to use the TRITECH ETV logo on any of their literature and product range

Certificate

Sabien Technology will be awarded a TRITECH ETV certificate reflecting the results from the verification tests.

ETV Website

Sabien Technology Ltd will be listed on the TRITECH ETV website under the Energy; Energy Optimisation section. Sabien Technology Ltd will be able to have a hyperlink from their own website to the TRITECH ETV website, to direct potential customers to the verification.

8 Appendix

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