aIM 4 SMEs CASE STUDY #003

UNITED KINGDOM: Voluntary Action Leicestershire (gas consumption)

Voluntary Action Leicestershire (VAL) is a voluntary organisation that acts to involve volunteers and local community groups in improving life in Leicester and Leicestershire. It was established in 1965 as the Council for Voluntary Service for Leicester and has developed into a major force for change and improvement in the City. Currently, it has 80 staff and an annual income of over £2 million.

The charity is located in Leicester City Centre. In 2007, the charity transformed a derelict knitwear factory into a "green" building, including solar thermal panels on the roof, low-energy lighting, double glazing, extensive insulation and a gas condensing boiler.

Voluntary Action LeicesterShire
Helping people change their lives for the better

In November 2008 they installed optical character readers (OCRs) on their gas meter to monitor consumption rates at the premises

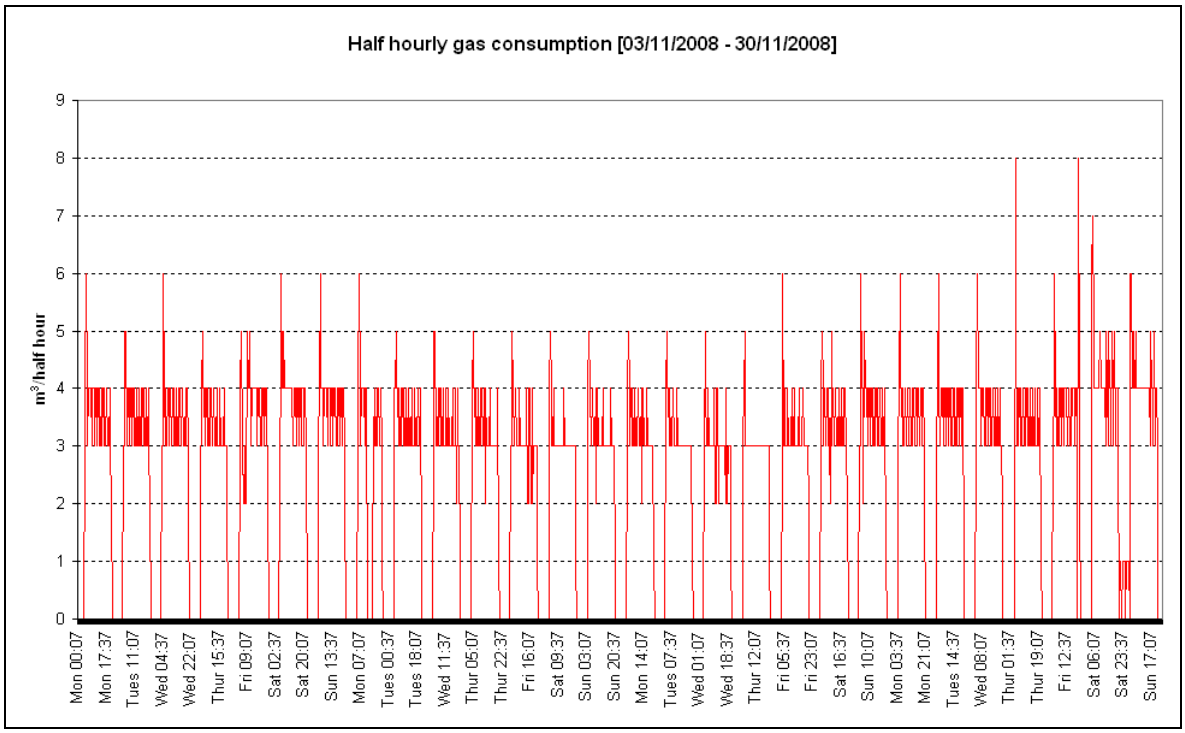
PROJECT SUMMARY

Company name	Voluntary Action LeicesterShire
First metering installed	October 2008
Baseline consumption (03/11/2008 – 30/11/2008) [4 weeks]	35,057 kWh
Final consumption (01/06/2009 – 28/06/2009) [4 weeks]	17,814 kWh
Savings / avoided consumption	49.2% (gas consumption only)

SME POINT OF VIEW

De Montfort University installed temporary Optical Character Reading (OCR) monitoring equipment ("comet" units) to monitor half hourly gas consumption since October 2008. Gas is mainly use for the heating systems.

An initial analysis of the consumption profiles during the first metering period [03/11/2008 – 30/11/2008] showed that the heating system had a very consistent consumption profile, with an average daily consumption between 3 and 4 m^3 per half hour, requiring around 90 minutes to reach a steady state consumption. The profile shows that the system was switched on from 4.30 am to 9 pm every day (7 days a week), with minimal gas consumption overnight. The total consumption during November 2008 was 35,057 kWh, with a daily average consumption of 1,310 kWh. As a result of the gradual decrease of outside temperature, an increased consumption was observed in December 2008, where the total gas consumption was 43,539 kWh, with an average of 1,555 kWh per day.

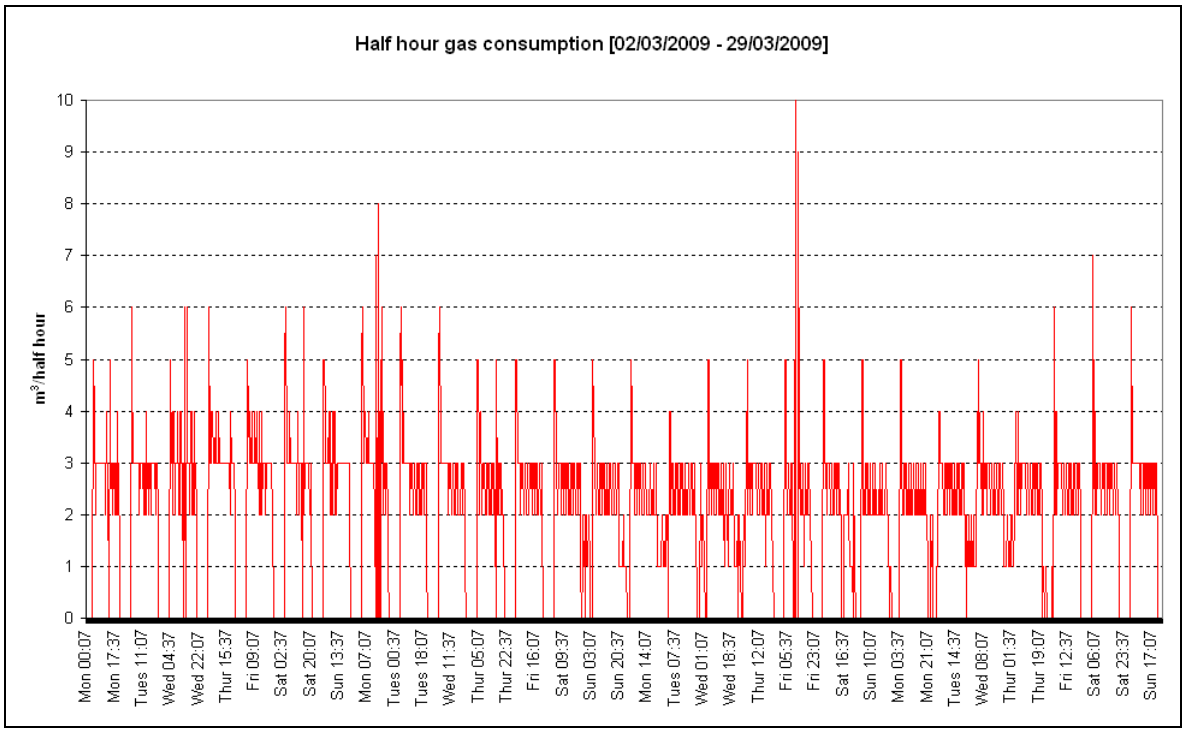


INTERVENTIONS

A meeting was held between VAL and the project partners on February 19th 2009 to discuss the half-hour gas consumption graphs and some recommendations were discussed. Some of the actions identified in this meeting were:

- Continue to regularly monitor gas consumption
- Adjust heating patterns to match building occupancy patterns (weekdays – on 6 am / off 7 pm, Saturdays – on 8 am / off 5 pm, Sundays – off if possible)
- Investigate heating controls and provide training in their use
- Provide behavioural change advice when requested

A reduction of total gas consumption was observed after mid-February 2009. The average daily consumption ranged between 2 and 3 m^3 per half hour, while the total monthly consumption in March 2009 was 30,827 kWh (daily average consumption of 1,101 kWh).

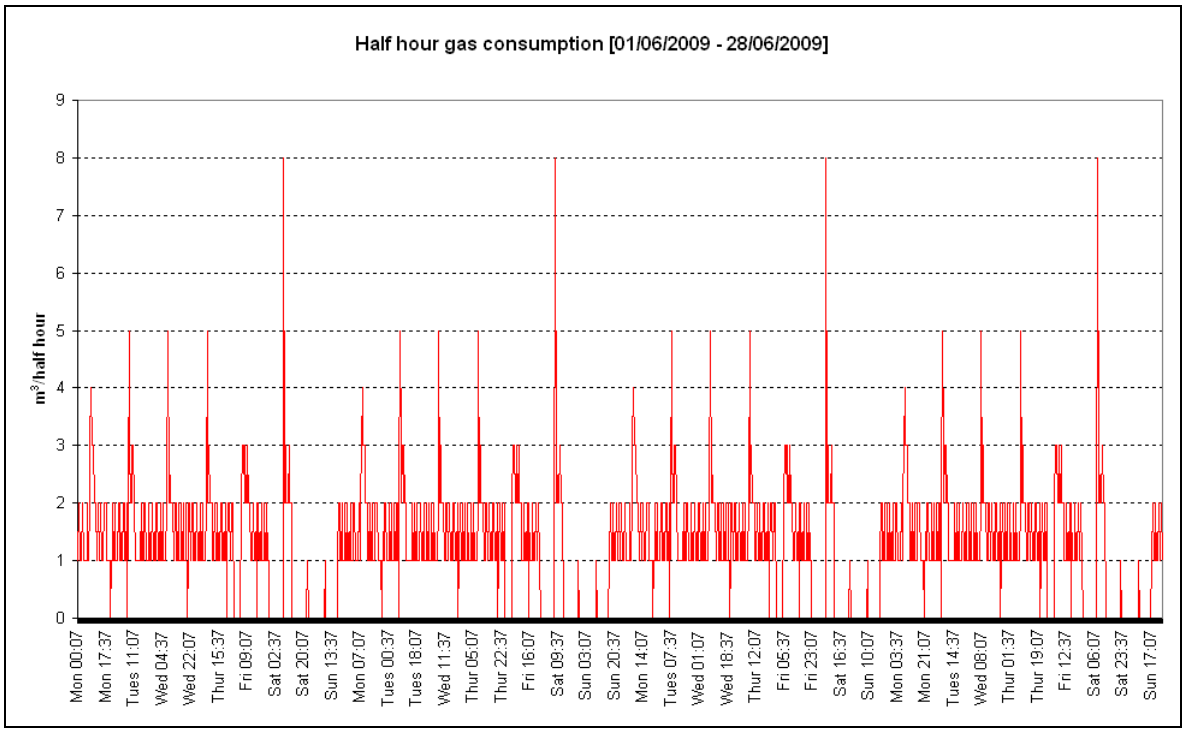


After the first visit, VAL installed a new temperature controller for the building and staff monitored that the heating of un-occupied rooms was switched off. However, it was observed that further attention was required concerning the working hours during the weekdays and weekends.

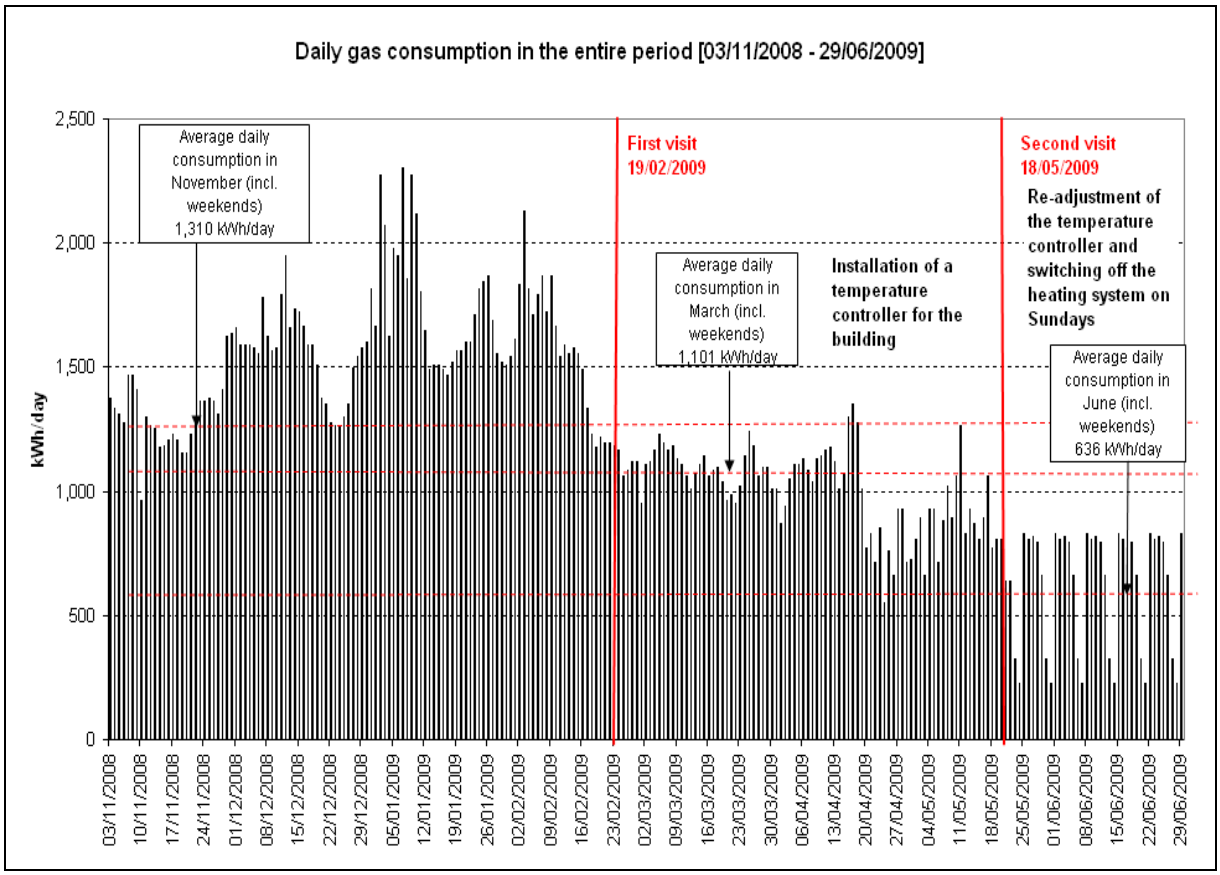
A second visit took place in May 14th 2009 to discuss the matter of having the same consumption profile in spite of the training conducted in the first session. It was identified that the outside weather compensator originally installed in the building was not set up to the right instructions, i.e. the flow temperature sensor was set to its maximum, and the room stat temperature and the outside air temperature stat setting were not set and left blank. As a result of these faults, the heating system was working to its maximum capacity from 4 am to 9 pm.

After this second visit, the heating system was set up to work from 7 am to 9 pm from Monday to Saturday, with the boiler plant staying switched off on Sundays. The room stat temperature was set at 19° C, providing a comfortable temperature to the building users. The outside air temperature stat was also set up to the correct temperature, so the heating system switches on intermittently when it is required and is switched off on warm days.

As a result of re-adjusting the temperature compensator and switching off the heating system on Sundays, the average daily consumption on June 2009 ranged between 1 and 2 m^3 per half hour, while the total monthly consumption was 30,827 kWh (total daily average consumption – 636 kWh).



The following graph illustrates the total daily gas consumption profile for the entire period.



CONCLUSIONS

Different interventions aimed to reduce the overall gas consumption in this building:

- Data analysis of the half-hourly gas consumption graphs aimed to understand the consumption profile of the heating systems and identify how heating patterns can be adjusted to match building occupancy patterns. For example, switching off the heating systems during weekends.
- Training visits aimed to raise awareness on the gas consumption profile and promote changes in energy management practices.
- The temperature control measures the outdoor temperature and adjusts the heating system to match the difference between outdoor temperature and indoor temperature for comfort environment. An adequate setting of the outside weather compensator aims to reduce gas consumption in a significant manner.

aIM 4 SMEs – Automatic Intelligent Metering for Small and Medium Sized Businesses

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AIM 4 SMEs is a Europe-wide project to demonstrate the potential for energy savings from automatic intelligent metering in small/medium-sized enterprises.

The project involves nine partners from five countries (Austria, Hungary, Poland, Portugal and the UK), including businesses, local/regional energy agencies, an association of municipalities, universities and a utility company. www.aim4smes.com

Intelligent Energy Europe