



**Energy Saving Recommendations Report**

for

**Higgs & Co.**

**December 2018**

**Survey of Higgs & Co. Print Shop & Offices**



**European Union**

**European Regional  
Development Fund**



**Bioregional**



## ORGANISATION OVERVIEW

### Report overview

EiE carried out a site visit and met with Ben Elliott. All recommendations in this report are based on information and observations obtained prior to and during the site visit and information subsequently provided. The report is set out in order of recommended priority based on ease of implementation, carbon impact, cost and factors discussed on site.

### Client details

<b>Organisation name</b>	Higgs & Co.	Caxton House, 1 Station Road Henley on Thames RG9 1AD
<b>Contact name</b>	Ben Elliott	<a href="mailto:belliott@higgsgroup.co.uk">belliott@higgsgroup.co.uk</a> 01491 419 429
<b>Date of site visit</b>	22/11/2018	Carried out by Moira Dorey

### Energy savings recommendations - summary

Below is a summary of the opportunities recommended in this report. Costs and savings have been estimated using available information; an explanation is provided in detail for each opportunity. Estimations have been made based on energy data provided.

Opportunity	Savings (kWh / yr)	Savings (£ / yr)	Cost (£)	Initial Payback (yrs)	Carbon Impact (tCO <sub>2</sub> e / yr)
Use timer to turn off hot water	1,095	36	0	0	0.20
Use half-hourly data to monitor out of hours energy use	1,031	139	0	0	0.42
Introduce an employee engagement energy saving programme	866	81	0	0	0.28
Add draught proofing to shop doors	0	0	20	-	0.00
Upgrade lighting to LEDs	19,047	2,562	9,991	3.90	7.85
Add insulation above the ceiling	8,116	267	900	3.37	1.49
Replace print room doors	1,521	50	1,000	20.00	0.28
<b>TOTAL</b>	<b>31,676 kWh/yr</b>	<b>£3,135/yr</b>	<b>£11,911</b>		<b>10.52 tCO<sub>2</sub>e / yr</b>

### Site details

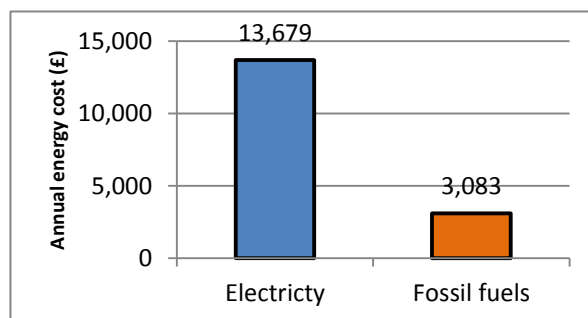
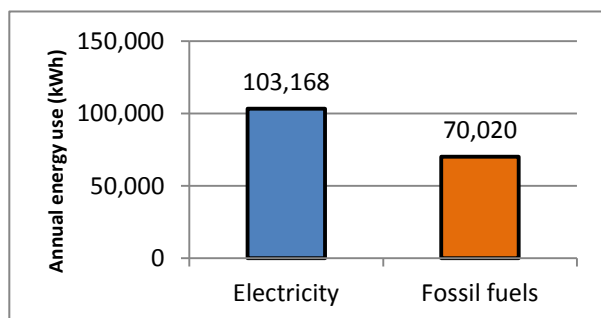
This town centre building was constructed in 1885 and consists of a shop and print room downstairs and offices upstairs, with a vacant flat at the top of the building. Over a number of years Higgs & Co. have expanded into several adjacent buildings resulting in a variety of heating systems, both gas and electric. The top flat is due for refurbishment when insulation will be added. Hot water is provided by a 125 litre tank heated by the gas boiler.

# ENERGY PROFILE

## Energy consumption annual profile

Fuel type	Annual Energy use (kWh)	Cost per kWh (p)	Standing charge (p/day)	Approx. annual cost (£)
Electricity	98,096 5,072	Day 13.45 Night 10.44/7.86	0 18.4	13,679
Gas	70,020	3.288	0	3,083

### Energy profile breakdown for Higgs & Co. Printery and Offices consumption (left) and costs (right)



Consumption is based on figures provided from 1/10/2017 to 30/09/2018.

## ENERGY SAVINGS RECOMMENDATIONS

### Use timer to turn off hot water

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
1095	36	0



The Megaflow 125 litre hot water tank that provides hot water to toilets and kitchenettes is turned on at all times. The water is heated by the Worcester boiler that already has a timer beside it that can programme when the hot water is on.

Hot water tanks constantly lose heat and require energy to remain at temperature. If hot water heating times better match building occupancy, energy can be saved. We recommend re-setting heating times to reduce unnecessary hot water heating. For example, hot water could be switched off from 6pm to 6am daily. There will be sufficient residual hot water in the tank in the evening to supply the needs of

staff working beyond 6pm.

NOTE: In order to reduce the risk from Legionella bacteria, where a hot water tank is turned off for a period of time it will need to be turned on in advance of use to bring the whole tank up to 60°C for 5 minutes. The Health and Safety Executive guidance on this issue is very helpful and can be read at <http://www.hse.gov.uk/Legionnaires/things-to-consider.htm>

#### Actions

- Re-programme your hot water heating times to reflect building use, for example programme the hot water to be off 6pm to 6am 7 days a week.

#### Costs and savings

Savings are based on the heater using 6kW a day to keep the tank hot x 365 days and assumes that the heater could be switched off 50% of the time for a total of 1,095kWh. There is no cost to this action.

## ENERGY SAVINGS RECOMMENDATIONS

<b>Use half-hourly data to monitor out of hours electricity use</b>		
<b>Energy saving (kWh)</b>	<b>Cost saving (£)</b>	<b>Cost of action (£)</b>
1,031	139	0
<p>The amount of electricity used overnight in your building is unknown. You have access to half hourly electricity data, which is a useful way to measure and monitor overnight electricity use.</p> <p>Carrying out an 'out of hours' energy survey will help identify wasted electricity when the building is not in use. We recommend carrying out the energy survey that requires finding &amp; switching off energy using items that are not needed to reduce wasted energy and monitoring half-hourly data to establish an electricity base load.</p> <p>Carrying out the following actions on a regular basis will ensure that wasted electricity overnight is minimised.</p>		
<p><b>Actions</b></p> <ul style="list-style-type: none"><li>• In order to identify wasted electricity during out of hours periods, conduct a walk-through of the offices and print room, arranging to switch off any electrical items left on unnecessarily. These may include: lights, heating, fans, stand-by on machinery, and other appliances.</li><li>• Once this is completed, look at half-hourly data to establish the minimum practical electricity base load for your building.</li><li>• Regularly check out of hours energy use via your half hourly data link and compare the average to the original (after the survey). If there has been an increase, further action to switch off unnecessary items may be needed.</li></ul>		
<p><b>Costs and savings</b></p> <p>There is no cost to this action. Savings assume electricity use can be reduced by 1% by turning off items out of hours.</p>		

## ENERGY SAVINGS RECOMMENDATIONS

<b>Introduce an employee engagement energy saving programme</b>		
<b>Energy saving (kWh)</b>	<b>Cost saving (£)</b>	<b>Cost of action (£)</b>
866	81	0
<p>There is limited awareness of energy saving among your staff. Employee engagement in resource efficiency and carbon reduction can help change behaviour in the workplace. According to the Carbon Trust, a well implemented employee engagement scheme can lead to energy savings of approximately 5-10% at work through reducing unnecessary energy consumption. It can also act as a catalyst for more effective employee communications. Additionally it can lead to improved environmental behaviour of staff in their home. We recommend planning and delivering an employee engagement programme in order to support energy reduction actions.</p> <p>Useful links are here:  <a href="https://www.carbontrust.com/resources/guides/energy-efficiency/creating-an-awareness-campaign-download/">https://www.carbontrust.com/resources/guides/energy-efficiency/creating-an-awareness-campaign-download/</a>  <a href="http://www.energylens.com/articles/energy-awareness">http://www.energylens.com/articles/energy-awareness</a>  <a href="http://www.ecomonitor.com/12-energy-saving-tips-for-your-workplace/">http://www.ecomonitor.com/12-energy-saving-tips-for-your-workplace/</a></p>		
<p><b>Actions</b></p> <ul style="list-style-type: none"> <li>• Form an eco-team of employees from a variety of departments and roles within the business.</li> <li>• Agree the initial focus of an energy saving campaign, e.g. turning off printers and PCs, closing doors, turning off radiators before opening windows.</li> <li>• Agree the best way to communicate with staff, e.g. e-mail, posters, staff newsletter, department meetings.</li> <li>• Engage senior management in the programme.</li> <li>• There are a number of helpful websites on setting up a behaviour change programme at work that can be referred to (see links).</li> </ul>		
<p><b>Costs and savings</b></p> <p>There is no cost to this action. Savings are based on reducing energy use by 0.5%, however actual savings may be much higher than this.</p>		

## ENERGY SAVINGS RECOMMENDATIONS

### Add draught proofing to shop doors

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
0	0	20

There is a draught from a gap in your exterior shop door (see image). Heat will escape in winter through any gaps around the door; draught proofing will greatly reduce this. We recommend adding draught proofing to reduce discomfort during colder months.

An examples of draught stripping can be found online here: <https://www.screwfix.com/p/stormguard-epdm-rubber-p-strip-brown-20m/88076>



#### Actions

- Add draught stripping to the door or door frame.
- If draught stripping is not suitable to attach (e.g. if the gap is not uniform), consider engaging a contractor to suggest improvements to the door frame.

#### Costs and savings

Costs for 2 packs of rubber draught proofing strip are £20 and could be attached by a member of staff. Savings are negligible but this action will help reduce discomfort in winter months.

## ENERGY SAVINGS RECOMMENDATIONS

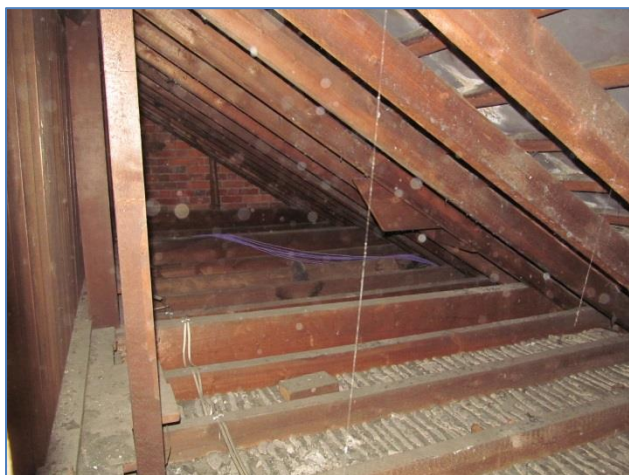
<b>Upgrade lighting to LEDs</b>		
<b>Energy saving (kWh)</b>	<b>Cost saving (£)</b>	<b>Cost of action (£)</b>
19,047	2,562	9,991
<p>Very few of the lights currently installed in the building are LEDs. LED lights are more energy efficient and exist for nearly every fitting. They can reduce electricity use by up to 90% compared to other lighting. Additionally LEDs last up to 35,000 hours before they need to be replaced (fluorescent lights last 15,000 hours) resulting in reduced maintenance costs. We recommend replacing lights with LEDs to reduce the cost of lighting.</p> <p>You have already received a quote for replacing lighting throughout your offices from Earlsman Lighting.</p> <p>When reviewing this quote check that the replacement lights consider both the light quality preferred (known as colour temperature) that ranges from warm white, cool white or daylight and the level of brightness needed (measured in lumens).</p> <p>Also request a minimum 5 year failure replacement guarantee and a prompt replacement service for bulbs that break down. Test a number of LEDs to ensure the light quality is correct before making a final purchase.</p>		
<b>Actions</b>		
<ul style="list-style-type: none"><li>• Obtain a second quote from lighting suppliers for LED replacements.</li><li>• Choose a preferred contractor and arrange for the lights to be installed.</li></ul>		
<b>Costs and savings</b>		
<p>Having reviewed the quote, costs and savings are estimated based on the recent figures from Earlsman Lighting.</p>		



## ENERGY SAVINGS RECOMMENDATIONS

### Add insulation above the ceiling

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
8,116	267	900



Whilst there is a top floor flat that extends over much of your building, visual inspection showed that there was no insulation in your accessible loft spaces above some of the offices.

Up to 25% of your building's heat is lost through the roof if it is un-insulated. We recommend increasing insulation to 300mm. This will:

- Minimize heat losses in winter.
- Reduce heat gains in summer.
- Improve comfort levels for users.
- Reduce annual energy bills by reducing heating requirements.

An example of loft insulation is here: <http://www.wickes.co.uk/Products/Building-Materials/Insulation/Loft-Insulation/c/1000270>

Ensure that insulation is laid evenly over the whole loft, including right to the edges, to avoid cold spots where heat can escape.

#### Actions

- Install loft insulation (such as mineral wool insulation) to a recommended level of 300mm to maximise heat retention in the building. Loft insulation is readily available at DIY shops and costs of installation can be reduced by using in-house staff to carry out this work.

#### Costs and savings

300mm of loft insulation will cost approximately £900 based on a £6 per m<sup>2</sup>. Savings are based on the Energy Saving Trust estimate of £1.78/m<sup>2</sup> over 150m<sup>2</sup> of loft space.

## ENERGY SAVINGS RECOMMENDATIONS

### Replace print room doors

Energy saving (kWh)	Cost saving (£)	Cost of action (£)
1,521	50	1,000

Your double doors leading out of the print room into the loading bay are poorly fitting and of poor quality. Heat will escape in winter through any gaps around the door making the section of the print room near the door uncomfortable.

You are considering replacement options and a garage style door may be suitable.

The most energy efficient garage door is an insulated sectional garage door. For further explanation on this and comparative doors go to:

<https://www.thegaragedoorcentre.co.uk/garadorsectionaldoors>



For an example of an insulated sectional garage door see: <https://tinyurl.com/y8h942lu>

If this type of door does not prove suitable consider engaging a carpenter to mend the door and add insulation inside the doors.

#### Actions

- Consider replacing the print room door with a well-insulated garage door.
- If this is not practical because of the use of the door engage a carpenter to improve the fit and insulation of the door.

#### Costs and savings

Cost is based on £600 for a replacement garage door plus installation of £400. Savings are low due to minimal heating in the print room but this action will help reduce discomfort in winter months.

## FURTHER RESOURCES

### Funding

Possible sources of funding for the recommendations in this report:

OxFutures – 25% funding towards the cost of energy reduction and generation measures. Contact Alison Grunewald. E-mail: [alison.grunewald@lowcarbonhub.org](mailto:alison.grunewald@lowcarbonhub.org).

Carbon Trust Green Business Fund - <https://www.carbontrust.com/client-services/programmes/green-business-fund>

### Information on air source heat pumps

An air-source heating system provides the opportunity to heat using a renewable source of energy whilst reducing your energy bills in comparison to other electric heating systems. Air Source Heat Pumps (ASHP) are powered by electricity, pumping fluid in the outside loop, so there will still be running costs. Every unit of electricity used by the pump produces two to three units of heat, making this an efficient way to heat a building. An air to air source heat pump (ASHP), usually placed outside at the side or back of a property, uses a heat pump to boost heat from the air and transfer this to a heating system that will blow warm air into your building or heat water for a wet radiator system.

For further details on air-source heating see:

<http://www.which.co.uk/energy/creating-an-energy-saving-home/guides/air-source-heat-pumps-explained>

For an example of what cassette air-source units look like see:

<https://www.orionairsales.co.uk/cassette-air-conditioning-21-c.asp>

One local company who have recently worked with another SME on this project is Oxford Air Conditioning (<http://www.oxfordairconditioning.com/installation/>) who could discuss this solution with you.

Another local specialist is Alto Energy (<https://www.altoenergy.co.uk>)