SAVING MONEY & ENERGY IN SHOPPING CENTRES, RETAIL PARKS AND SHOPS

NIGHT WALKS – A GOOD STARTING POINT

Co-funded by the Intelligent Energy Europe Programme of the European Union

Night Hawks
reducing idle losses

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Saving Money & Energy in shopping centres, retail parks and shops. Night Walks – a good starting point!
IEE/12/671/S12.644734 Night Hawks - Reduction of idle losses by off production time visits

Compiled by Night Hawks Consortium
Publisher Energy Agency for Southeast Sweden
Issued 2015
Design template: PI
Layout publication: Burbus AB

night-hawks.eu

Co-funded by the Intelligent Energy Europe
Programme of the European Union

SUMMARY

Night Walks are on-site energy surveys held at times when businesses are closed to the public. A survey is conducted with a view to identifying areas of energy waste within a business, in order that a bespoke action plan can be produced and implemented so as to enable direct and significant energy savings.

The method of Night Walks has been used upon 123 shops, shopping centres and retail parks in eight regions in Europe. The concluded findings are that there are a significant potential of energy to save, an average of 10-11% with some organisations achieving over 16% from no cost and low cost measures. i.e. 13.800 MWh by measures that do not cost anything or required very low investments. Refrigerators and freezers, illumination, air conditioning, heating, hot water, elevators, and escalators all consume energy — most of it electrical energy. To achieve energy savings the recommendations are to give the staff and management a raised awareness of energy usage and to highlight the consumption and thereby show a saving potential and to build an insight into their own technical installations. The retail industry is a very visible industry and there are plenty of good opportunities for this business sector not only to reduce the energy cost, but also to communicate the energy efficiency work and the results to the customers, the general public.

Most management know that reducing costs can increase profit, but they do not realise that every day that passes without energy savings costs money. In contacts with shops, shopping centres and retail parks, some management has limited interested in participating because they do not see the economic potential of energy efficiency. Therefore it has been important to use a simple and educational way to show the concrete potential savings that exist in their premises. This has helped them to make an informed decision to improve the energy performance in their businesses.

More than 1,500 persons in the sector of shops, shopping centres and retail parks participated in the trainings and increased their knowledge in energy efficiency and energy awareness.

CONTENT

Dear reader,
We invite you to a late night journey where you can learn where energy might be consumed during a time when everyone took it for granted that everything was shut off, turned off, closed and quiet. Please join us, the Night Hawks team, to find the idle losses you were not aware of in the industry of shopping centres, retail parks and shops. You will see, there are plenty of opportunities of energy savings to discover during a Night Walk.
Let us start by introducing you very shortly to the method of Night Walks: A Night walk is an on-site energy survey held at times when businesses are closed to the public. It gives a snapshot of the energy conditions in the building. Energy experts conduct the survey with a view to identifying areas of energy waste within a business, in order that a bespoke action plan can be produced and implemented so as to enable direct and significant energy savings.

In a consortium of eight European countries the method of Night walking has been disseminated from Sweden down to Denmark and crossed the Baltic Sea to Latvia, passed down in Germany, climbing the Alps in France, cross the channel to United Kingdom. It didn't stop there. In Italy and Cyprus the Night Walks have also been implemented. These European countries have very different circumstances. Clearly the local climate varies a great deal, but also the sizes of the available shopping centres, retail parks and shops differed heavily, with only smaller single shops in Samsø in Denmark and enormous shopping malls in Italy and United Kingdom. Nevertheless the method of Night Walks can be adapted in small buildings and in larger premises – and not just limited to the retail sector.

In this brochure you will not only get to know the organisation behind the Night Hawks, you will also read about the methods, the findings and the tools developed by the team. We hope you will use the collected experiences and be inspired to do a night walk whatever business you are involved in, and maybe even try the night hawk methods in your home.
Remember: Doing nothing will cost you money! So, turn on your reading light and follow us....

Lena Eckerberg, Coordinator of the Night Hawks project

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Picture Credits: Flickr. Mark Ramsay

ENERGY CONSUMPTION IN THE RETAIL INDUSTRY

Refrigerators and freezers, illumination, air conditioning, heating, hot water, elevators, and escalators all consume a lot of energy — most of it is electrical energy. The cooling demand can become higher than the heating demand, even in colder climates, because the lights, electrical appliances and the occupants emit heat.

Illumination is the largest and most visible part of the energy consumption. The heat produced by lights is rarely recycled into the heating system; instead the lights cause a higher demand for cooling. Illumination in food retailers take up around 40% of the electricity use. For non-food retailers this can be up to 80% and so lighting is often a good measure to target for energy savings. Cooling of products and ventilation are the next large user categories. Buildings can have a complex heating, cooling and ventilation system and high demands on other conditions for storing products.

Fridges and freezers uses large amount of energy. Photo: Energikontor Sydost AB

According to detailed mapping[1] of the energy usage in Swedish shopping centres, retail parks and shops. The energy consumption in the retail industry is rather high at 256 kWh/m² (which can be related to the same figure for schools and offices[2] of 216 kWh/m² and 135 kWh/m² respectively). Figures on European level indicate an energy usage of 45 TWh in Europe only in shopping centres[3]. To this you can add the energy usage in super markets, retail shops etc. The energy consumption pattern is very different depending of the products sold in the business, i.e. food stores are using a large share of energy for cooling, and shops for fashion or showrooms for cars use a larger proportion of energy on illumination to highlight the products for the customers. This means that supermarkets and food stores have a higher baseline for energy consumption when the stores are closed, to maintain the quality of the food.

1) Energi i handelslokaler ET 2011:11 Swedish Energy Agency
2) Energistatistik för lokaler 2012. ES 2013:04 Swedish Energy Agency
3)[http://www.cushmanwakefield.com/~/media/global-reports/European%20Shopping%20Centre%20Development%20Report%20April%202015.pdf]

Interiour shop. Photo: Energikontor Sydost AB

There are practical barriers for implementing energy efficiency measures, for instance different ownership of the main building and the shops. The public areas of shopping centres are usually managed by a management company or the landlord. The energy consumption of the public areas is then the responsibility of the management company with the costs covered by rent from the retail units. The individual retail units are usually responsible for their own energy costs, but we have found that the management company can have some influence on energy consumption by insisting on energy efficient measures (such as lighting) when a new tenant takes up a lease.

There are also instances where the retailer is responsible for the electricity costs, but the centre is covered by a community or district heating network and the cost of the heat is usually covered in the rent or less often, metered directly. There is a lack of motivation for retailers to cut heating consumption where the heat is covered in the rent and not a direct cost. For instance in the UK, the Heat Networks (Metering and Billing) Regulations 2014 come into effect in 2015 and will help to ensure final

heat users are metered for heat and billed, based on consumption. This will help motivate a demand for more efficient and controllable heating networks and out-of-hours use should be targeted as an easy win opportunity.

> ***There is a saving potential in your shopping centre, retail park or shop. Try to identify where the energy is used in your building by mapping where the energy is used.***

Some of the national retailer chains have a standard layout of their stores and can have core systems (heating, cooling and lighting) controlled centrally. This can cause waste for example when display lighting is left on overnight, but the shopping centre is closed to the public. A more bespoke approach to each store could produce some simple saving opportunities.
The national retailers often have the capital to phase in energy efficiency measures, but educating general staff on energy use is not necessarily seen as a priority. National organisations such as The Energy Managers Association in the UK are spearheading the Low Energy Company initiative aiming at getting these larger organisations to offer energy awareness training to staff at various levels.

Independent retailers are in position to be the quickest to respond to installing energy efficiency recommendations as the business owner is often onsite or directly involved with dealing with the day to day running of the business. The availability of capital to invest in more expensive measures can be a limiting factor. This makes targeting the low cost and out-of-hours savings a real benefit to the business.

There is the overlying issue of the landlord/tenant relationship. Many retail units (independent and national chains) are rented. Tenants are reluctant to finance measures that improve the fabric of the building and landlords do not see the financial return in increased rents from installing such measures. However, from 2018, buildings with an Energy Performance Certificate of an 'F' or a 'G' will not be allowed to be rented in the UK. This should help to motivate landlords to work with tenants to come to agreements on how best to improve the energy efficiency of the buildings.
The retail industry is a very visible industry and there are plenty of good opportunities for this business sector not only to reduce the energy cost, but also to communicate

their energy efficiency work and the results to the customers, the general public. The energy savings can be achieved by measures that do not cost anything or required very low investments. The two key points are to highlight and monitor the consumption and thereby show a saving potential and to build an insight into their own technical installations.

Ownership makes the difference – Some regional experiences from Europe

In German Saxony the retail chains manage the energy consumption from the sites mostly centralized in one headquarter. By this fact it is nearly impossible to advice the regional stores. In smaller shops the retailer have limited influence on their energy consumption because of rental. The evaluation of realised energy consulting in the retail sector of Saxony (since 2009 to 2014) shows an average energy consumption in food-sector of 350 kWh/m² and in non-food-sector of 80 kWh/m².

In Italy it seems that the attention to energy savings and the consequent possibility of saving money is not seen as a priority for managers of big shopping centres. On the other hand owners of small shops are more interested in saving money because they pay the bills. **Another observation is that simple and cheap solutions can lead to big results:** When calculating and considering all the measures that could be implemented in visited businesses (not limited to the inactivity periods of the stores), the average potential energy saving could reach a rate of 32% of the total energy consumption in the Italian night walked shopping centres and shops.

Energy consumption in Cyprus in majority obtained by cooling systems and for the freezers and refrigerants. They are not using heating systems, due to year round high temperatures in Cyprus. There is a great interest in investment in PV, but due to the poor economic situation in Cyprus, it is difficult to get financing through the banks at the moment. The energy average saving potential in Cyprus is high at 24 % which indicates the great potential to shop owners. The main measure to achieve this high energy saving is obtained by PV system installation due to high level of irradiation all over the year. Other measures are lamp replacement to LED, replacement to inverter A/C systems and installation of power factor corrector systems.

Energy consumption in shopping centres has increased in Latvia because of improper use of ventilation systems, building management systems and user behaviour. Small changes in these systems do not need almost any investments but the energy savings are huge.

ENERGY SAVING POTENTIAL AND RESULTS

Most management know that reducing costs can increase profit, but they do not realise that every day that passes without energy savings costs money. In contacts with shops, shopping centres and retail parks, some management has limited interested in participating because they do not see the economic potential of energy efficiency. Therefore it is important to use a simple and educational way to show the concrete potential savings that exist in their premises. Most businesses are there to make a profit. So be clear to estimate installation cost and financial savings. Give a return on investment and highlight any potential disruption the installation may have on the business. This will help them to make an informed decision to improve the energy performance in their businesses.

> **Do not just hand your energy bill over to your accountant every month. Check your kilowatt-hour, record them down and compare them with the previous year. If you do that, you will be aware of the actual consumptions and it means that you are interesting in more savings. Believe us, you will see!!!**
>
> **ALEXIS VIOLARIS, EXPERT FROM STRATAGEM LTD**

> ***The advisors use Night Walks to find savings. Energy advisors and energy experts have visited enterprises and performed energy checks, these energy checks have been done when everything is expected to be closed, turned off and quiet.***

During two years 123 shops, shopping centres and retail parks were visited by energy experts in Cyprus, Denmark, France, Germany, Italy, Latvia, Sweden and United Kingdom. The purpose was to support the 123 shops, shopping centres and retail parks to find and stop the energy usage that was not necessary, when the businesses were closed, during a Night Walk. The energy experts also took the opportunity to highlight further energy savings measures that would be suitable to each site.

When performing the Night Walks the energy experts, together with local staff, such as management, janitors, shop keepers etc. found potential energy savings in the range of 5% to 50% of the total energy use.

Country	Total number of shopping centres, shops and retail parks	Total energy consumption, MWh	Potential energy saving, %	Potential energy saving, MWh	Potential CO2 savings, tones per year
Total	**123**	**138,400**	**10**	**13,800**	**4,100**
Sweden	15	15,500	6.5	980	22
France	15	13,210	3	370	21
UK	15	9,720	26	2,510	1,360
Latvia	15	85,000	7.5	6,460	700
Denmark	16	1,800	11	200	90
Cyprus	15	2,510	24	610	530
Germany	15	4,080	13.5	550	350
Italy	17	6,540	33	2,140	1,030

The table summarises all Night Hawked areas, i.e. number of shops/shopping centres visited and estimate saving potential. Potential energy savings of approximately 10% shows that the energy efficiency potential in shopping centres is very substantial.

The largest amount of these savings can be achieved by practically no investments or small investments with short or fairly short payback periods (up to 3 years), normally related to behaviours changes, changes in routines and simply awareness by staff and management. The table above shows that each country has its specifics and there is also a different approach how to deal with energy figures. This is also seen in energy consumption data and potential energy savings. Therefore the figures in the table above only gives an indication on national summary and the specific circumstances in each shop must be considered separately.

If all energy efficiency measures suggested in the project are implemented 2.2 million EUR per year savings can be reached (18,000 EUR on average per shopping centre or 2.93 EUR/m^2.

Photo: Coop Forum Karlshamn

Large Potential for PV

A supermarket has a large demand for electricity during the day (and night). The ability to generate and utilise "home-made" electricity can reduce overall electricity costs, increase profitability and be used as an educational and marketing tool by the supermarket.

There is a growing interest for PV. In part this is due to reduced installation costs and improved efficiencies in recent years. The roofs of larger supermarkets and shopping centres can be ideal for larger PV-systems. By installing PV, electricity costs can be reduced significantly.

PV is a large investment and the payback time can be many years (different from country to country depending on the possibility of financing support and system size). However, looking at the whole life cost and even without subsidies the energy works out cheaper than importing electricity by as much as 40%. To increase the financial viability, PV should be sized to match the onsite electricity demand, so that exported electricity is minimised.

PV should be considered: on all suitable roofs; when renovations or extensions are carried out and for new build shopping centres. There are some fine examples presented in the guide book for best practice, available at www.night-hawks.eu.

> Last time I fitted some [LEDs], they were a lower wattage and nowhere near as bright so was put off. Last weekend, I replaced with 4.5 watt led lamps and was impressed with the light output from them! I intend to watch my electric bill plummet!
>
> **GRAHAM HAWES, ELECTROFIX**

Some examples

Building management system running 24/7 instead of programmed regimes cost a lot of money for one shopping centre. A simple change in the building management system turned off unnecessary lights in the shopping mall as well as switching off the ventilation system during night. Energy savings of 217 MWh and 30,000€ per year were achieved by switching AHU and lighting systems from manual to automatic regime. All that was done – two mouse clicks.

Photo: Energikontor Sydost AB

By turning off the plug-in coolers for sodas and water during night time, a supermarket saved 1,200€ per year, the return on investment was less than a week.

Electrofix is a music equipment repair shop in the heart of Bristol. The site consists of a shop front, a workshop and unheated store area. An energy assessor completed a brief energy survey of the business and identified that over 75% of the business's total energy spend was due to the electricity use of the halogen spot lighting.

Electrofix. Photo: Severn Wye Energy Acency

It was possible to keep the existing fittings and replace the lamps. The cost to implement this was around 550 Euros. Replacing the halogen spotlights with LEDs are predicted to save over 750 Euros per annum. Giving a return on investment of just 9 months and a reduction in carbon of over 2.5 tonnes per annum.

Photo: Energikontor Sydost AB

NIGHT WALKS – METHOD TO SPOT ENERGY CONSUMPTION YOU WERE NOT AWARE OF

The method of Night Walks or energy checks is a simple straight forward method to get a grasp of the energy use in a building and a help to pinpoint the most obvious energy savings. They are often right in front of us, but we don't know about them, since we don't look for them normally.

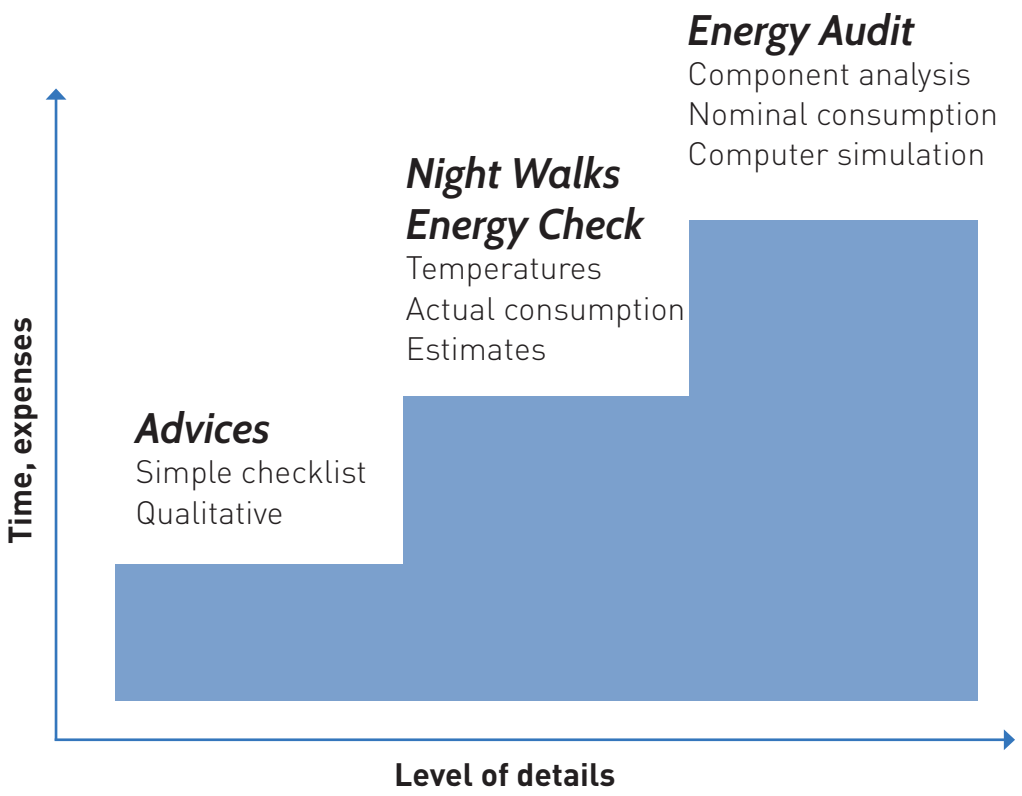
> ***Definition of a night walk: A night walk is a check of the shopping area after hours, when the shop is unoccupied (evening, night, weekend, or holidays).***

A Night Walk is an energy check of the site after hours (evening, night, morning, weekend), in order to spot potential energy losses - the energy used when it is not needed. The concept has been used in Sweden for years. It doesn't have to be performed in the middle of the night, despite the name of the method. It is enough to either return back the very minute the last member of the staff has left the building.

The Night Walk is less detailed than an energy audit (see figure) and gives a snapshot of the conditions and energy use. Indeed, the energy advisor will perform the energy check in a few hours, and the result is a rough estimate of the savings. Night Walks are recommended to be undertaken annually and be used as part of an organisation's energy policy. The Night Walk could thus be viewed as a precursor, which promotes a follow up with more detailed accuracy.

> I would have never thought that cooling is the major consumption of energy in my shop.
>
> **Björn Fjellström, owner of the supermarket in Källa, Sweden**

THE NIGHT WALK AND ENERGY CHECK IS BETWEEN PLAIN ADVICES AND AN ENERGY AUDIT



Before the Night Walk

A minimum of 12 months energy data is analysed to help assess the levels of consumption at different times of the day, week, month and year. Further information about the business is obtained via a short questionnaire to help understand aspects such as hours of use and management processes, including works that have taken place to already address the issue of energy waste.

Photo: Stratagem

PROCEDURE FOR A NIGHT WALK

1. Start after the last person left, or before they arrive

2. Check meters for electricity, water, and heating

3. Check office, cafeteria, lights, ventilation, equipment, running water

4. Check timer settings

5. Check temperatures in rooms, fridges, freezers, coolers, hot water

On the day of the Night Walk – the "walk and talk"

The energy adviser meets with the site manager to conduct the energy check when the usual business is closed, it can be early in the morning, a Sunday, or in the late afternoon. The time doesn't matter, but to spot the unnecessary energy usage it is preferable to do the energy check when the site is closed. This will involve assessing the usual elements that lead to unnecessary energy use.

The energy adviser checks following functions:

- Lighting – management and technical opportunities for improvements
- Heating and air condition– hours of use and levels of heat/cooling provided and cases of heating and cooling in the same area at the same time
- Ventilation – hours of use, and how this works with heating systems
- Electrical equipment – opportunity for time control, use of refrigeration and so on
- User behaviour

In addition to these "core" aspects, the survey will also accommodate more specific issues as appropriate. This may include water use; billing issues or renewable energy opportunities for example. And of course the energy adviser listens for equipment running, illumination on in hidden rooms and feels for vibrations tries to detect if there is energy usage that is not needed or can be reduced with minor investments.

Post visit

A brief report of findings is produced and presented to the management team, along with a suggested action plan, comprising no cost, low cost and capital cost measures along with suggested savings that can be achieved. A useful method is to present investments related to return on investment or as life cycle cost (LCC). Upon agreement of the action plan, support will be provided to assist with its implementation. Additionally, short training courses will be made available for employees to help show them areas where improvement can be made. Much of this support can then be applied at home in order to further broaden the potential benefit of the support.

Approximately 6 months after the initial Night Walk, it is recommended to do a follow up review to check progress against the action plan and for further support to be provided as required.

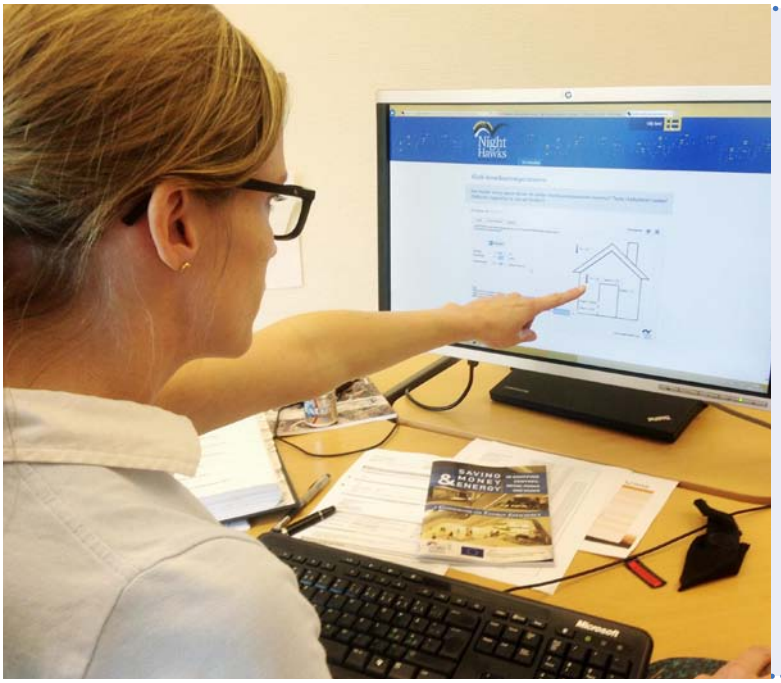


Photo: Energikontor Sydost AB

SUPPORT AND HELP

- A supporting tool to help a Night Walks is developed and available online. With some training it is possible to do a night walk yourself. Full instructions are available in the online handbook at www.night-hawks.eu/

- Short videos are available for input and instructions.

- Use the online calculators to estimate possible savings.

ENERGY CHECK PROCEDURE

Pre visit

1. Collect at least 12 months' worth of baseline data for heating fuel, electricity and water.
2. Ask for unoccupied hours of the day, unoccupied days of the week, unoccupied weeks of the year (holidays)
3. Ask for the heated area (m^2)
4. Look up average outdoor temperature during heating season and cooling season
5. Annalise data for patterns and unusual usage. Unoccupied times/days will give the baseload consumption.
6. Estimate the consumption during unoccupied hours: from bills, monitoring equipment or meter readings overnight.
7. Estimate the non-space (or non-comfort) heating fuel energy consumption (likely hot water and cooking): Take the summer 3 months of heating fuel use and scale up to a year.
8. Estimate the space (comfort) heating fuel consumption: (1) – (7) provided they come from the same fuel. If heating is from electricity then extra consumption from the lighting would need to be factored in during the winter.

During visit

9. Look for light sources, listen for noise and feel for vibrations/airflow. Find the source and check if it needs to be on or can it be turned down.
10. Check settings of timers, thermostats, and control units (heating, ventilation, lights)
11. Does any equipment have energy saving measures that are not being used: night blinds, eco-modes
12. Check if occupancy sensors would be suitable in some areas for: lighting, heating/cooling, urinals
13. Measure temperatures with data-loggers. How long does it take for the building to heat up and cool down? Can the settings be optimized?
14. Targeted energy monitoring of plug-in equipment – drinks fridges, vending machines etc
15. Check water utilities for leaks and other potential easy wins.
16. Check for pipe/valve insulation
17. Measure temperatures of: freezers, coolers, hot water, cold water to check if internal thermostats are set and working correctly.
18. Measure average illumination levels (lux): parking area (10), corridors (100), shop retail area (300), shop till area (500-1000), office work (500)
19. Estimate lighting consumption: count lighting fittings and power rating and estimate number of hours per year lighting is used. Estimate potential savings from replacing lighting with energy efficient technology on a like for like basis.
20. Where possible check envelope of building to identify potential for easy wins: draught proofing, cavity wall insulation, loft insulation.
21. Does the roof have potential for PV
22. Is there a large amount of refrigeration onsite? Could the waste heat be captured for space or water heating?

ENERGY SAVINGS BY KNOWLEDGE AND NEW ROUTINES – CHANGE IN BEHAVIOUR WITH AWARENESS

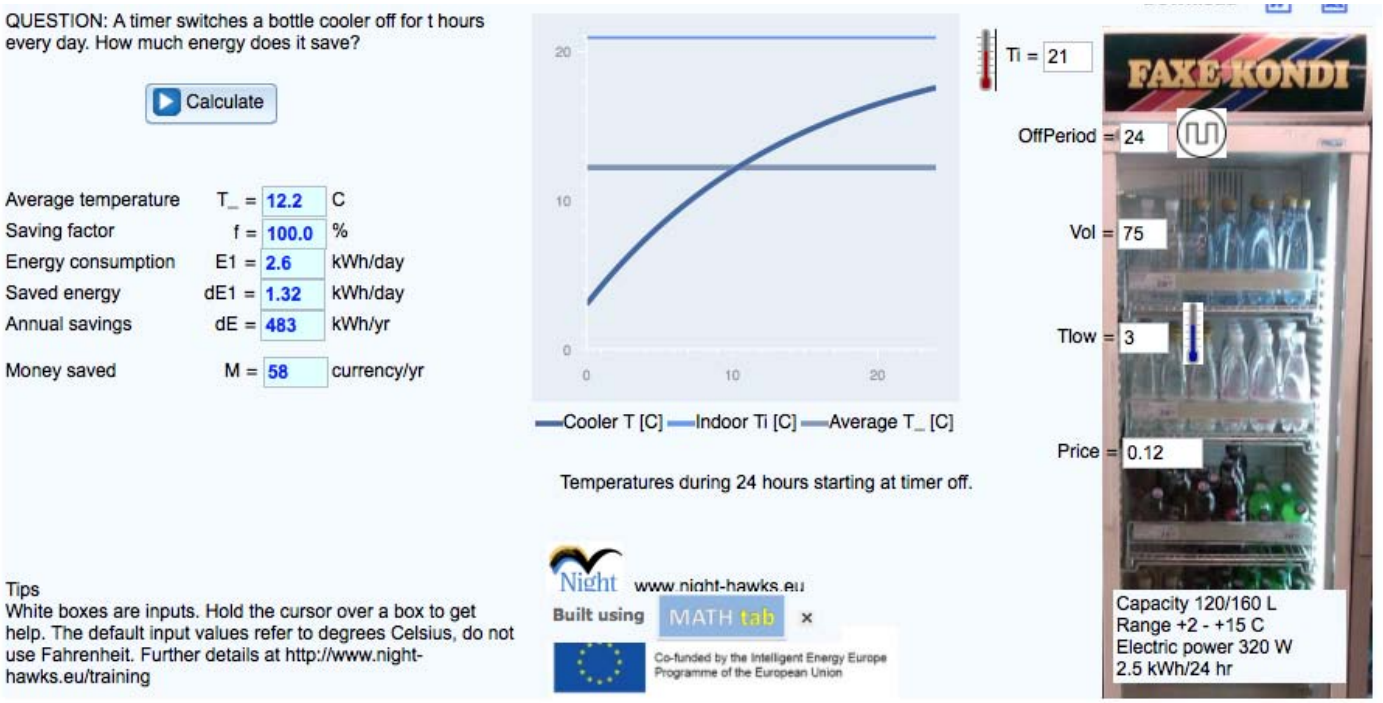
Knowledge and awareness is an important step to adapt new routines and changes, to achieve energy savings. Therefore it is essential to include training of staff, management etc as a crucial part of improving user knowledge and understanding, as well as gain control of the energy use in the building.

> The energy check made us up-to-date, which is useful even though we are moving to another location. Now we know what to look for in the new place.
>
> **ANONYMOUS SHOP OWNER**

The first step is to follow up the energy use on regular basis. By doing this for instance once a month the awareness of the energy use will be raised and can lead to energy savings by changed behaviour. Another important step is to appoint an energy manager among the staff. The energy manager should work not only with technical solutions, but also motivate the employees to save energy. He or she should encourage the employees to take part by giving energy saving suggestions, when the energy savings are giving results – reward the employees to involve them in the process and to motivate them for continuous improvements.

Based on a master handbook (available at night-hawks.eu) in energy savings especially developed for shops, shopping centres and retail parks 1517 persons were trained in energy efficiency matters during 119 trainings. The trainings were targeting and addressing the great range of professions represented in commerce. By including local results from the Night Walks in with the training, local energy saving advice could easily be included and used in the training sessions.

A web based self-study course is developed and available free online at night-hawks.eu where anyone is welcome to participate in the seven lessons of energy savings in shops. The online course can be used either by management and employees in shops, shopping centres and retail parks or as teaching material used by energy efficiency trainers. The self-study course is based upon fact in the master energy saving handbook and followed with questions that has to be answered before continuing with the following lesson.



Screen-shot: www.night-hawks.eu/training/drinks-fridge-savings-calculator.

Our experiences shows that it is easiest to introduce changes in routines and to introduce new technology when a shop, shopping centre or retail parks is new, or undergoing redevelopment. The prioritised group to train are the people in charge – the management since they are in a position of decision making and can delegate responsibility to appropriate personnel. Shop assistants, shop keepers, janitors are important to include in the trainings but they can be included in a later stage.

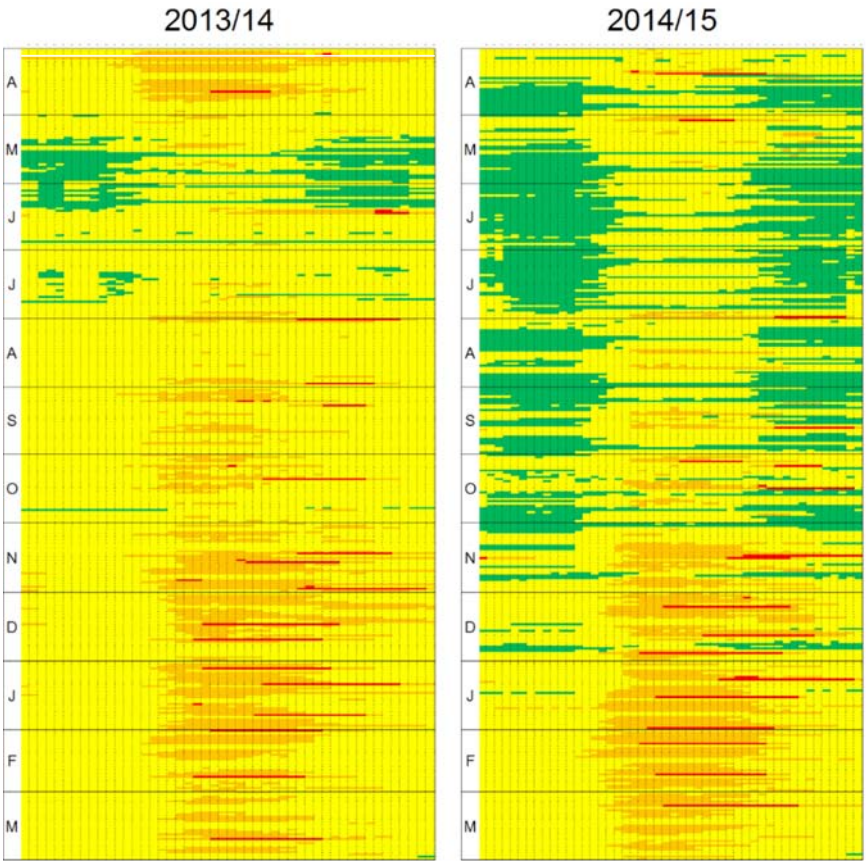
Theoretical calculators for energy savings are developed for specific cases in shops, shopping centres and retail parks and available online at the website night-hawks.eu. These very useful tools help to understand the energy saving results by lowering the temperature indoors, lowering the temperature in hot water tanks, control the temperature and running of bottle coolers and nightly setbacks in buildings.

USEFUL TOOLS IN NIGHT WALKING – ALL AVAILABLE AT NIGHT-HAWKS.EU

- Master handbook in energy savings
- Self-study course
- Calculators
- Guidebook in energy efficiency
- Case studies
- Short videos

Using Energy data to Evidence the effect of energy awareness training

The effect of energy awareness training can be difficult to quantify, but when you have accurate energy data showing the before and after situation then the impact simply jumps off the page. The figure below shows the half hourly energy data for two years for one of the Night Hawks clients.



The energy data is:

- Colour coded with Green being lower consumption through to yellow, orange and red being the highest energy consumption.
- Column 1 is the data from 2013/14 and column 2 is from 2014/15.
- Each row represents a day and these are grouped into months of the year for ease of identification.

Each individual cell represents the energy use for a 30 minute period and the rows run from midnight to midnight. (the middle of each column would be midday)
For this client the Night Walk findings were presented to six of the senior staff/board members at the beginning of April 2014 (top of column two). General staff awareness training with department heads took place a few weeks later in May.

A picture speaks a thousand words. In this case it can be seen that the green is far more dominating in the early morning and late evening periods after the training sessions took place. The immediate savings peaked at 22% in the first 3 months, but over the 12 month period a total of 16% savings were achieved as a result of the energy awareness training and the procedures that were implemented as a result.

Practical session in a shop. Photo: Prioriterre

Methods of training

Different approaches have been used for awareness training of the management and staff. The best outcomes were generated normally by the trainings with a high practical and bespoke content related to the requirements of the individual retailers.

Tutorium for shop employees and management of the shop.

• Class room teaching: invited speakers were talking about energy efficiency in retail sector with examples of energy savings and the possibility to exchange their experiences and ask questions.
• Class room teaching: activity sessions in form of a tutorial (participants were asked to complete questions about topics of energy efficiency and sustainability after instructions of the trainer).
• Practical sessions – "walk and talk": brief energy survey and discussion about findings in small shops in combination with workshops with practical examples from an energy survey.
• A breakfast forum in an informal ambience was yet another format.

NIGHT WALKS –AN EYE-OPENER AND A STARTING POINT

Management, owners, shop keepers, janitors, and other employees at 123 shops, shopping centres and retail parks participated in the Night hawks program. The night walk and the participation of the Night Hawks program was an eye opener for opportunities – not only for energy savings, but also on how to decrease unnecessary costs and save money. In many of the buildings visited we found organisations with a good track of the energy use and positive routines for energy management. Still there were energy saving measures identified by the night walk. In other premises visited there were larger possible energy savings, as much as 50% were found.

For energy advisers who want to implement night walks in their repertoire, the recommendation is to communicate the best practices available. Highlighting, easy and low costs investments that will make a difference in the costs for energy consumption.

As we all know: Cash is king! To do nothing will cost money!

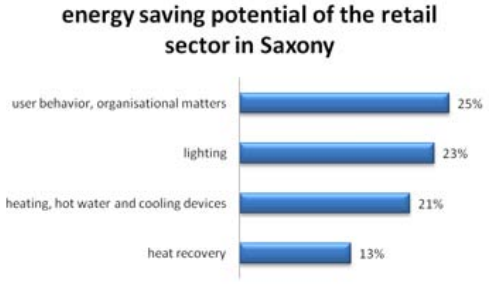
The awareness of environment and organic choices is a strong driving force for a growing part of the customers.

The most common and most important advices are

- Take control of the energy data –investigate and analyse!
- Set local specific targets.
- Start the energy efficiency work with a night walk as a starting point.
- Monitor and follow up and reward the staff when milestones are reached!
- Communicate the results

Recommendations and findings are concluded in a guide book, where management in the retail sector can find solutions for no or low cost investments.

A result of the evaluation of realised energy consulting in the retail sector of Saxony in Germany (since 2009 to 2014) shows that the most frequently measures in energy consulting for food-sector and non-food-sector have been "user behaviour / organisational matters" and "optimisation of the lighting system".



GUIDEBOOK AND SUPPORT FOR NIGHT WALKS

The findings, solutions and advice for energy savings are collected in a comprehensive guide book targeting shops, shopping centres and retail parks. Technical solutions and the benefits or barriers for the solutions are described to support the management of shops, shopping centres and retail parks to start the energy efficiency work in their premises. **Over the two year period, the Night Hawks consortium worked with over 120 organizations across Europe. Completing Night Walks with them and identifying potential savings.** The guide book not only describes the experiences, but includes client feedback, the good practices with calculated or best estimated energy/financial savings with returns on investment, extra advantages of installed measures, potential disruption of installing measures and to which situations measures can apply.

The energy guide for shops, shopping centres and retail parks.
Photo: Energikontor Sydost AB

The central part of the guide book is a non-exhaustive list and description of possible measures. The measures are classified according to energy savings potential, feasibility and economic factors. It can be a useful tool for energy managers, business owners and management for how to develop their own energy strategy and help them to asses which measures should be at the top of their priority list and what should be considered before implementation.
To help the readers to navigate through the extensive guide there is initially introductions on the main energy saving categories followed by a catalogue of case studies, evaluated by the Night Hawks and the experiences of the beneficiaries. The case studies explain the advantages and potential inconvenience for each solution and include a recommendation of if/how and when the solution can be applied /used.

> The guide gives a great overview of what we could do in the shops. It gives a very good general idea of the existing practical possibilities. It is the initial step for 'first level' awareness raising of management team that can led to new ideas and practices that were not evaluated before. It is a very useful document to start with in a sustainable development approach.
>
> **EMMANUELLE GEFFRIAUD, EXPERT FROM PRIORITERRE**

IN A NUT SHELL

The Night Hawks has been implementing the night walk methods to reduce the energy use in shopping centres, shops and retail park in eight European countries 2013-2015. 123 shop, shopping centres and retail parks participated, covering an area of 752,000 m². The potential energy savings are estimated to 10%, i.e. 13,800 MWh.

> ***More than 1,500 persons in the sector of shops, shopping centres and retail parks participated in the trainings and increased their skilled in energy efficiency and energy awareness.***

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There is evidence (see page 22) that the effects of energy awareness training is not always permanent. It can be seen in the example that the energy consumption for the two years are very different immediately after the training, but after 9 months the consumptions are starting to look similar again. It is hypothesized that there could be a number of possible reasons for this including:

- Staff turnover
- Staff moral
- Work pressure – people cutting corners to get work done faster
- People returning to old habits
- Lack of motivation from management
- Increased opening hours
- Expansion or changes within the organisation.

Further investigations would be required to identify issues affecting the longevity of energy awareness training. Possible solutions to help extend the effects of these potential savings would include:

- Annual refresh of energy awareness information – bolted on to other annual training sessions
- Dissemination from management about achievements from previous years
- Rewards to staff when certain achievements are made.
- Make energy awareness part of the induction training for new staff

Photo: Craca

In some cases it was discovered that there was a general reluctance within the retail industry to allow general staff to take part in energy awareness training. This is highlighted when the makeup of the participants of the training are analysed. Of the retail staff that received energy awareness training – 40% were from shopping centres or larger shops and 60% were from smaller retail units (sub 800 m²). This could highlight that business owners are more involved in the day to day running of smaller businesses and have a closer connection to their staff? Whereas larger stores possibly have a higher staff turnover and employers may be reluctant to offer extra training or employers simply do not believe the savings that energy awareness can bring. Further investigations would be needed.

A number of useful tools are available online at night-hawks.eu and free to use for anyone:

- Handbook in Night Walks
- Self-study course online
- Two instructive mini documentaries
- Training material
- 4 online interactive calculators to show results of four different common energy saving advices
- A guidebook of energy efficiency in shops, shopping centres and retail parks
- A collection of best practice and case studies with recommendations and advices

By 2020 the project will achieve a CO2 reduction of 20,555 ton and a primary energy saving of 69,000 MWh.

THE TOP RECOMMENDATIONS GIVEN

The most important recommendation is more important than all of the below in to improve the information gathering. **It is important to know how much energy a site is using and where and when it is using it.** Larger organisations are starting to use sub-metering on certain areas or pieces of equipment to keep an eye on energy use. This monitoring equipment is coming down in cost so is more assessable to all businesses. This could take the form of sub-metering a heating/cooling system to a simple plug-in energy monitor that can be used by anyone to monitor individual pieces of equipment.

Turn non-essential electrical equipment off when it's not needed. It sounds obvious, but it's high ranked on the lists of recommendations. Substantial savings can be achieved through plug-in timers or manually switching equipment off as part of the end-of-day procedures. Common equipment found to be left included: Cash registers (displays), vending machines, games, office equipment, drinks fridges.

Adjust heating times or temperature settings. As most of the surveys were carried during the winter it is no surprise that heating recommendations are ranked quite high. Findings included heating being set to be on for too long (some were on 24 hours) or too high a temperature. Just reducing the temperature setting by one degree can result in savings of 5-10% or more.

Lighting efficiency. Lighting actually appears twice in this list primarily because it is such a good way to reduce energy consumption. As the lighting is used for such a long time in retail centres the savings achievable from upgrading to more efficient technology can result in very short payback times. In some instances it can take longer to get permission to have new kit installed than it does for the installed cost to payback in savings.

Cooling/Refrigeration. In some stores cooling is a surprisingly high proportion of the total energy bill and so looking at: actual temperature settings to reduce over-cooling; installing gadgets to reduce the number of cooling cycles; installing curtains; checking door seals can all make significant savings.

Lighting Controls. The second showing in the top list of recommendations is for improved controls. This could be occupancy sensors or day light sensors or simply adding more switches to an area so that smaller zones can be switched on when needed.

Photo: Energikontor Sydost AB

THE WORK WILL CONTINUE

The method to perform Night Walks is easy to replicate in any other kind of business and building, where you can suspect energy losses. The method and the tools are available online for anyone to use in their organisation at www.night-hawks.eu.

In order to pool competencies beyond the duration of the project, the German partner in Saxony established an energy advisor network for the retail sector. Energy experts with expert knowledge of energy consulting in the retail sector were chosen and introduced to the Night Walks method in a local advisory group meeting. To be included in the network, the consultants have to demonstrate that they have successfully and regularly fulfilled consultations for retailers. In addition to the existing brochure about energy efficient lighting systems in retail, the creation and publication of a brochure about a special technology for instance "energy efficiency of cooling furniture" for retailers is planned for 2016.

In Sweden the method of Night Walks is implemented to the local energy advisers, and used in many different sectors. The Energy Agency for Southeast Sweden is now using the method in small and medium sized enterprises and public buildings for the upcoming years. The British partner Severn Wye Energy Agency is working with the Local (and neighbouring Local) Enterprise Partnership to establish the Night Walks are taken forward as part of the European Structural Investment Funds (ESIF) through ESF and ERDF funding. The benefits of night walks are also to be disseminated to the regional renewables and energy efficiency installer network – LinktoEnergy.

In Denmark Samsø Energy Academy are aiming to include the Night Walks method and the developed tools in the network of Energy Service Denmark where the Guidebook is one of the tools to highlight and to use in the future. The French partner Prioriterre is introducing the night hawks methods to a national chain in a one year training campaign.

The night walks will be used in future energy audits in shopping centres in Latvia by Ekodoma. When building owners see the energy wasted during the night they start to think. This wasted energy is an eye-opener for many already experienced energy managers in shopping centres and it helps to find energy savings also when shops are open. The concept of night walks will be developed to be used not only in shopping centres but also in industry.

The method to perform Night Walks is easy to replicate in any other kind of business and building, where you can suspect energy losses.

In Cyprus the Night Hawks method will be used by Stratagem Energy Ltd in industries, public buildings and households. The unnecessary energy consumption was not obvious until the night walks were performed and result presented. It was an eye-opener for energy savings. Maybe a new Energy Efficiency project will be designed for the upcoming funding opportunities where the Night walks method will be obtained in public buildings or hotels.

Thanks to the recently started collaboration with the Association of Merchants, Operators and Services (ASCOM), CRACA is trying to spread the Night Walk method in order to train new "Night Hawks" within the staff of the stores and create new professional skills and consequently new jobs and projects always oriented in energy savings solutions.

> Being off the mains gas network means the energy bills at the Taurus Crafts can be high. These costs would ultimately be passed on to our tenants and then to their customers. Implementing energy efficiency measures help keep these costs down. We have seen significant levels of savings from installing LED lighting and replacing some of the heating system and controls. We know we can do more and hope to do something each year funded by the savings achieved from previously installed measures.

Ingo Kresse, Centre Manager and Landlords agent at Taurus Crafts

BEHIND THE SCENE

The Night Hawks project has been run by a consortium of eight organisations in Europe, who have contributed with experiences, lessons learned and jointly developed the method of night walking and tools to use and disseminate the experiences.

The project has been coordinated by **Energikontor Sydost – Energy Agency for Southeast Sweden.** The agency works strategically and systematically to link the projects at the local and regional level with the projects of the European and international market. Over the years Energy Agency for Southeast Sweden has conducted hundreds of energy audits, energy checks, Night Walks and trainings.

Prioriterre, France has been responsible for the development of the guide book. The actions consist in raising awareness, campaign, informing, supporting and training any interested public (large audience, local authorities, enterprises) on different topics such as energy use and sources, water and material products issues, energy efficient buildings or system, labels and certification.

Severn Wye Energy Agency, UK has coordinated the communication and dissemination tasks. Severn Wye are an independent charity and not-for-profit company which aims to promote sustainable energy and affordable warmth through partnership, awareness-raising, innovation and strategic action.

The Latvian partner Ekodoma has been responsible of coordinating and the results of the Night Walks in the consortium. With more than 20 years of experience in energy efficiency, environmental protection and renewable energy source projects Ekodoma is the leading independent engineering consulting company in Latvia. New knowledge was gained within the Night Hawks project and it will be used in future projects.

The pedagogical skills within the **Danish partner Samsø Energy Academy** was very useful in the development of the master handbook of the Night Walks and the prototype of the training concept. Samsø Energy Academy was founded in 2007 as a result of a project to make the island of Samsø 100% renewable. One of the main activities is dissemination of these past experiences and Samsø Energy Academy receives many national and international visitors and organises events, workshops and seminars.

Stratagem Energy Ltd is an independent energy research group committed to work towards sustainable development in the areas of energy, environment and transportation. They are implementing sustainable energy development within the

scope of energy efficiency, sustainability, mobility, urban planning, energy audits and renewable energy promotion and production.

As an energy agency, **Sächsische Energieagentur GmbH** realises energy policy objectives in the federal state of Saxony, Germany. The topic of energy efficiency in companies is part of their work, next to efficiency in municipality and buildings, renewable and sustainable energy, electro mobility and the department of Intelligent Transport Systems. Sächsische Energieagentur GmbH has been responsible for collecting and evaluating the trainings.

C.R.A.CA. SOC. COOP has introduced the Night Walks method in Italy with good feedback coming from trained people and staff met during the visits. CRACA works with local artisans also specialised in renewable energy sources and energy efficiency services. The night walk method will be used in small and medium companies. Recently created networks of businesses, energy advisors and energy specialists could include this method as a tool to collect data and realise new projects.

Thank you for reading!

PARTNERS CONTACT

For any more information and experience exchange on the campaign implementation, contact your local partner.

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KNOWLEDGE IS THE POWER NEEDED TO DRIVE ENERGY SAVINGS

THE NIGHT HAWKS TEAM