Do Your Own Energy Audit

This checklist is a very basic starting point and "memory-jogger".

See also our "Thermal Comfort – Passive Design" notes for greater depth

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1. A Starting Point

For a start, a culture change may be needed to minimise unnecessary energy use.

Some simple steps and ideas:

- Turn off ACs and lights on in empty rooms.
- Set the thermostat at 21 degrees winter / 24 degrees C summer.
- Set all thermostats the same, and watch out for the “fiddler” who likes it freezing.
- If air conditioning is on, the windows MUST be closed (~~sorry~~, not sorry)
- Would you be more comfortable with the windows open and the air-con/heating OFF?
- Get rid of light globes and flood lights, use fluorescent lights.
- Think carefully what is actually needed to be on.
- Turn off outside lights during the day time.
- Does the PC, TV etc need to be on when you are away.
- Sweep fans do nothing when you are out of the room, turn off.
- Fridges need to have self-closing doors, with good seals, no ice build-up.

(A starting point)

2. THE SIMPLIFIED DIY CHECKLIST

2.1 Observe How The Facility Operates

(a) During Normal Work Hours

- In empty offices: are lights, PC's, air conditioning, heating all on?
- At lunch time: can some items be shut off?

(b) When A Few People Work After Hours

- Is every light on
- Do they have to heat / cool the entire building

(c) After People Leave

- Are things turned off?
- Or do staff think that some-one else will do it (the Boss, or security, or the cleaners)

2.2 Night Lighting & Security Lights

Do some of these lights stay on during the day, if so why?. Can movement sensors be used?

(a) Sunset & Dawn:

- Are the lights timed correctly?
- Don't rely on a time clock alone, use a solar switch as well

(b) While Staff Leave The Premises:

- They need god lighting for security
- After staff leave, can these lights be reduced, or go off?
- This could be automatic
- The security system could shut off lights 10 mins after the last person shuts it down

2.3 Can The Cleaners Help?

Does staff expect cleaners to switch everything off? Should staff be instructed on what they shut down (PCs, local lights) and what the cleaners shut down?

(a) Do The Cleaners Have Clear Written Instructions?

Suggest: on the door of the cleaners room, on switching off?

- Lights, air con / heating, PC's
- Urns, vent fans, hot water

(b) Do The Cleaners:

- Turn on everything until they leave?

or

- Work area by area, switching off as they go?

2.4 Controls & People

Who Switches What, When, Where, Why, And How?

- What switches that light (air conditioner, heater, etc)
- Where is the switch
- Why is it switched
- Who (or what) switches it -- time clock, person, or thermostat?
- When is it switched
- How is it controlled

This question applies to all switching, from simple light switching, through to time-clock and temperature controls and other more sophisticated control needs, usually in mechanical plant.

2.5 Automatic Controls & Time Clocks

(a) Some Controls Should Be Accessible, Some Should Not

- Air con time clocks should be locked away
- Air con time clocks should have a "manual override" switch to allow limited operation out of hours
- In buildings open to the general public, all switches should be in staff-only areas
- Air con temperature controls should be locked away

(b) Check Time Clocks Regularly For Correct Time Setting

- Who does this?

(c) Time Clocks Need A Power-Off Backup.

- Cheap ones do not have this

(d) Digital Electronic Clocks

Digital electronic clocks often have a battery back-up, but this may only last 3 to 5 years. Are they checked and replaced?

(e) Central Digital Controls

Multiple time switches can be put onto a single central control. This controller can then do many more functions. This is sometimes referred to as BMCS (building management and control system) or DDC (direct digital control.

2.6 Managing Energy

- Collect the data from your bills, compare quarterly with the previous year
- Compare the daily energy used (Units of energy per day) not just the cost
- Remember some months bills are higher as there are more days between readings
- Do you need some sub-meters – say for the air conditioner?
- Who will regularly read that sub-meter?

2.7 Call In An Expert?

For some items you may need expert advice – see next section.

3. IMPLEMENTATION

Energy efficiency and energy cost savings are achieved only by an organisation with people on the "inside" who actively manage and direct the energy saving measures. This is true of all energy efficiency projects that we know of, and it's true of course of our own. A report prepared by a consultant is just that, a report.

3.1 The Advisers

Advisors and Consultants can help you implement energy efficiency measures, and are valuable, but their resources are expensive and need to be targeted to areas where you need assistance. Where you have expertise internally in your organisation, then the consultant need only apply guiding advice.

3.2 The Report

A formal energy audit report, meeting all the Office of Energy and Australian Standards is more expensive than a walk through audit. A well written formal report is a valuable management tool.

A successful energy audit report not only needs the skills behind it, but must be written with great clarity so that the recommendations and the management information "jump out of the page" at the people receiving the report, at all technical levels.

3.3 The Approach

Our approach for the walk through audit (and a formal audit) is to look first at the areas of interaction between occupants and the energy consuming services.

Specifically the first areas and fastest areas of financial return are to do with controls. This ranges from simple light switching (who switches, where is it switched, what areas are switched etc) through to time-clock and temperature controls and other more sophisticated control needs, usually in mechanical plant.

3.4 The Resources Available

Ask:

- Who should do what ?
- When do you bring in outside help

Many larger organisations have in-house trades people, or in-house property maintenance skills. Remember that the Energy Auditor looks at a "bigger picture", the effect on multiple areas. The specialist trades person usually looks at narrower "single trade" view (electrician, duct installer). Hence they do not always agree on solutions.

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