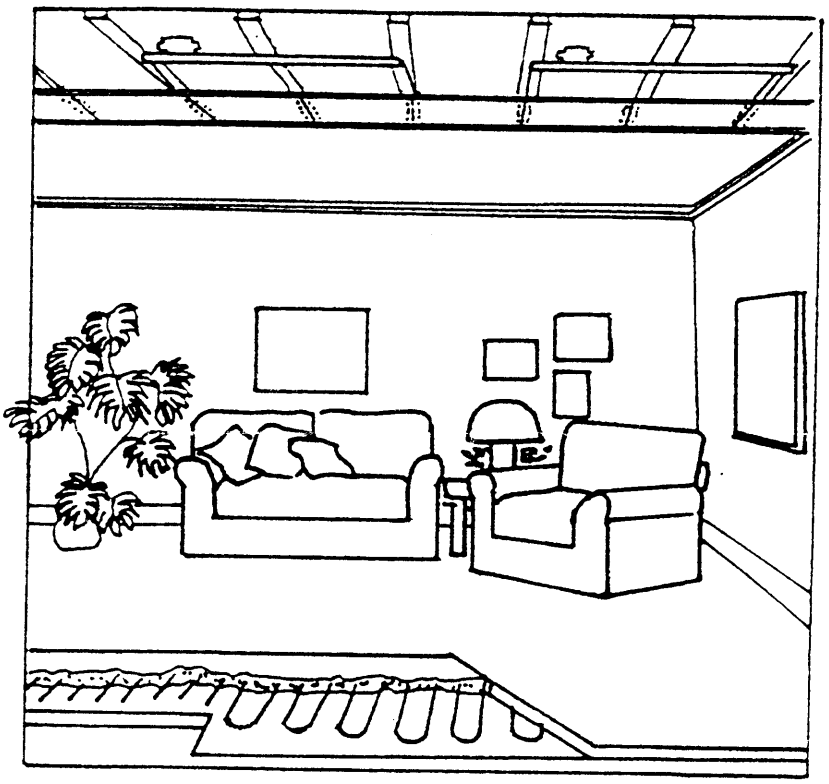
ESWA

UP AND UNDER



The ESWA 'Up and Under heating system is a combination of two systems that have been developed in use over 35 years in the United Kingdom (60 years in Norway) and which are used today in more than 20 countries world-wide.

It has been designed to take particular economic advantage of current UK electricity tariffs whilst providing an ideal combination of comfort, safety and sophistication. It consists of heating cables embedded in the solid floor areas and elements foils above the ceiling to provide gentle radiant warmth evenly spread from wall to wall and floor to ceiling.

As the sources of the heat are contained within the structure there are no radiators or grilles to interfere with your furnishings or decoration. All the floor and wall space you have paid for can be used. The ESWA system will give long, maintenance free life.

USER INSTRUCTIONS

HOW IT WORKS

Your floor heating is designed to provide gentle background warmth using entirely lower rate electricity with the amount of energy stored being determined by an outside weather sensor connected to a charge controller mounted indoors.

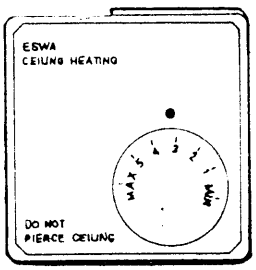
Your ceiling heating is designed to work in combination with the floor heating to give the necessary 'direct acting' comfort, controlled room by room by the individual thermostats. In rooms without floor heating the ceiling heating will provide full heating up to the design temperatures. Operated on a time of day tariff benefit will be obtained from the low rate energy when available.

Individual room thermostats control the ceiling heating and ensure minimum consumption by taking advantage of all the incidental heat gains from the sun, lighting, TV, appliances and even people, whilst maintaining exactly the temperature you have set the thermostat to.

It is a low temperature radiant system which makes it particularly efficient. Remember, so called conventional systems rely on cold air falling, forcing the heated air up causing uneven temperatures and draughts. Radiant heat goes where it is directed, including downwards (like the sun) and does not just heat the air but the surrounding surfaces. This ensures that the air remains fresher, temperature distribution vertically and horizontally is even and comfort is obtained at lower air temperatures thus saving energy. Just think of the effect of stepping into the shade on a pleasant sunny day, the air temperature remains the same, the effective temperature does not.

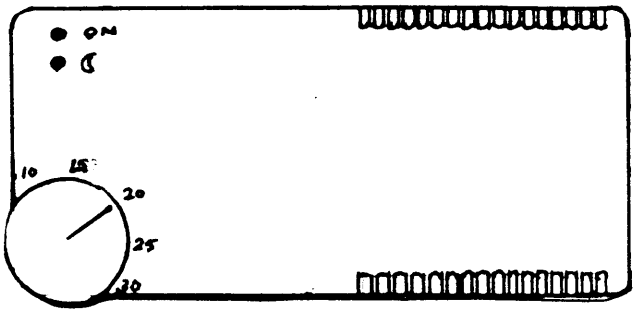
OPERATION:

During the summer months of course, there is no need for heating and so both floor and ceiling systems may be switched off. As autumn approaches and a little heating is needed this is best provided by the ceiling heating. So, switch on the ceiling heating and set the individual room thermostats to the level you find comfortable. Initially, the room will need to heat up before this is established. The system is designed to be left on continuously, with the thermostats being turned back in rooms not being occupied - generally by one to two positions from the comfort setting for the room concerned. In some installations an overriding programmer or time clock will have been rifted to do this automatically for which the specific manufacturers instructions should be followed. Do not use additional heaters as they will upset the pattern of control of the system as the thermostats are not output controls, but switch the heating elements on and off at the set temperature. You do not get greater output at higher settings, so turning the control knob above the temperature you want will not heat the room quicker. An indication of comfort settings is as follows: -



Standard thermostat

Living, dining, bathrooms: 4-5
Bedroom, kitchen, hall: 2-3



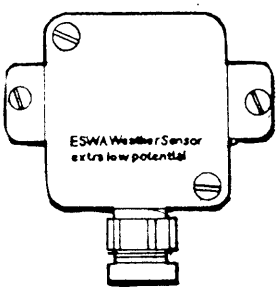
Proportional Electronic Thermostat

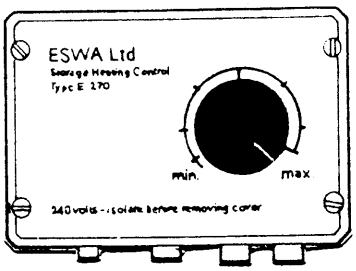
Living, dining, bathrooms: 20-22°C
Bedroom, kitchen, hall: 16-18°C

The living areas probably have a proportional electronic thermostat for even better control. These may vary in different installations and reference should be made to the specific manufacturer's instructions but again choose the comfort setting by experience.

As the weather becomes colder, the floor heating should be switched on at its main switch to provide gentle background warmth using lower rate electricity. This electricity is stored as heat energy in the floor, generally at night, and dissipated slowly during the day. Floor temperatures are only marginally above the room temperature as this is all that is necessary to achieve the designed background warmth. You will notice it somewhat warmer though, under a floor rug or cushion on the floor.

The amount of energy store is determined by the E270 weather compensating charge controller. This has an external sensor that monitors the outdoor temperature during the charging periods and sends a signal to the internal controller that automatically varies the energy stored to suit.





The E270 is a backward acting control, if less than 100% of the available charging period is required, switch on is delayed to optimise efficiency by ensuring the heating is not stored until the end of the charging period.

Example: Outdoor temperature 8[illegible] - knob in middle position.
Storage will be approximately 50% of full capacity.
Switch on point will be halfway through 'off peak' period.

There are two separate charging modes selected by means of a switch situated inside the housing:

8H Continuous charging of up to 8 uninterrupted hours of availability of lower rate electricity. The heating system is then charged during the one continuous off peak period with the starting time being delayed in accordance with the external temperature and personal adjustment setting.

11 H Intermittent for all other lower rate tariffs. The heating system is charged proportionally during each hourly period of the available charging times according to the external temperature and personal adjustment setting.

If there are regular times when reduced -storage is desired a time switch or a manual switch can be connected so that a temperature set-back is obtained automatically without disturbing the established setting of the personal adjustment. The electrician that installed the E270 should have selected the appropriate programme for your tariff.

The quantity of heat stored can also be varied by using the personal adjustment control knob mounted on the front of the controller.

As all buildings, even apparently similar ones have different thermal characteristics and occupant requirements it is only possible to give general guidance on operational setting with actual ones found by experience. It is recommended initially, therefore, to set the control knob in the central position, allow the system 2 or 3 days to settle and then if necessary adjust the knob setting towards maximum or minimum to give more or less charge respectively. Re-assess after a further 2 or 3 days. Once a suitable setting has been established which suits both the building's characteristics and personal preference no further adjustment should be necessary.

With the coming of spring it is, of course, the floor heating you will switch off first and you should do this when you realise your home is warmer than you wish during the day. There may be a switch in each room, two in larger ones, or individual circuit breaker's in the fuse boards which can be switched to enable this to be done on a room by room basis. if required.

Electric Water Heating

In order to get the fullest benefit from time of day tariffs you are recommended to make maximum use of the lower rate periods to heat your water.

Payment of Accounts:

In all homes much more energy is used in the winter than in the summer. In fact, it is normal to incur as much as 75% of your annual heating cost over the worst winter quarter. More energy is of course also used for lighting, cooking and water heating in the winter. Most people wish to 'spread the load' of costs evenly over the year, and this can be arranged through your Electricity Company with a direct debit facility. Remember maintaining a higher temperature than required will increase running costs - a 1 °C increase in temperature could increase costs by 10%.

NOTES:

There have to be some "do's and don'ts" and these are: -

a) **DO NOT** pierce the ceiling or floor. Clearly this must not be done as the heating elements above the plasterboard and the cables in the floor could be damaged.

b) **DO NOT** stick insulating tiles onto the ceiling, nor add additional floor surfaces. The warmth is designed to pass downwards through the ceiling and up through the floor.

c) **DO NOT** obstruct or cover any part of the ceiling with high level furniture units or lighting fittings - a clear air space must be left between the top of them and the ceiling, nor fit permanent fixtures or furniture on the floor heated areas.

d) **DO NOT** maintain higher than necessary temperatures

WARNING: Access to the inside of all controls should only be undertaken by a competent person, after the supply has been disconnected.

If you require further information please contact:
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