

# Floor & Ceiling Heating

## CEILING HEATING FOILS & FLOOR WARMING CABLES

Both Eswa ceiling and floor heating have all the advantages that modern heating systems should have: they are completely hidden, occupying no useful space, they do not interfere with room or furniture layouts and are totally silent, maintenance free and automatic. They also both provide excellent comfort conditions with their even heat distribution.

Ceiling heating can invariably provide full heating on its own, with an even spread of heat and quick response to close thermostatic control and in some situations is all that is required.

Floor heating, in which cables are embedded into solid floors also provides excellent heat distribution but often cannot provide full heating, especially if installed as a storage system. However, the combination of the two systems Eswa 'Up and Under', provides the nearest to optimum comfort that any heating system could achieve, and it makes economic sense to combine them with special storage heating electricity tariffs.

Eswa heating has been used in more than 20,000,000 square metres of room area in the 55 years that it has been on the market. Eswa heating offers the following advantages:

- SPACE - every inch of space can be utilised without radiators or appliances.
- ECONOMY - through low energy consumption.
- COMFORT - by uniform temperature distribution and untainted air.
- CONVENIENCE - by having no maintenance costs and by being totally automatic.
- SAFETY - no high surface temperatures or projecting sharp edges.
- HEALTH - no dust or dirt traps. A clean healthy environment.

The principle behind Eswa ceiling heating is low temperature radiation from a large ceiling surface area. An even heat source, the ceiling provides radiant warmth for full heating because the elements are made in low wattages. The ceilings are normally only about body temperature. In this way the room is 'blanketed' with uniform warmth. There are no areas which are less favoured than others. Feet stand on warm floor surfaces as the floor receives most of the energy from the ceiling, and at head level the air temperature is normally a few degrees below that at the floor level, whilst cold air movement at floor level caused by convection is eliminated.

Since all room surfaces, including furniture and fabrics, are warmed from the ceiling, radiant heat losses from occupants are fully balanced. This creates a comfortable atmosphere in which the source of heat is not felt. The air is fresh and free from dryness and stuffiness because it is never heated above the actual temperature required.

The Eswa foils of today offer particular benefits; the entire production is manufactured and assembled to create completely finished products on fully automatic machines enabling each heating element to be thoroughly checked and tested before delivery; there is a unique terminal fitting on each element which simplifies the connection of them and the electrical installation; there are reinforced areas in the fixing strips which help to prevent damage during installation; the strong plastic laminate from which they are produced ensures that each element is electrically insulated and waterproof; the Eswa foils come as complete elements in standard sizes and loadings making the design and installation very simple and easy to check; the melting point of the current carrying metal foil is lower than the melting point of the outer plastic laminates and thereby creates an inherently safe product by eliminating fire risk.

The Eswa foil is a flexible heating element with a total thickness of approximately 0.2mm designed especially to be used in ceiling and floor heating installations. The element consists of a metal foil which is cut in such a way that a continuous meander pattern of current carving strips is created. The strips are hermetically sandwiched between mechanically strong plastic laminates on both sides. These laminates are non-hygroscopic and thermally stable within the temperature limits they normally operate in. The maximum operating temperature of the Eswa foil is 80°C.

Eswa floor heating cables complete the Up and Under combination heating system by providing storage heating and add a further economy factor. Standard Eswa heating cables are normally linked via one or more charge controllers and weather sensors which take account of weather changes during the low rate tariff charging times.

The resistance wire of the Eswa cable is insulated by non-hygroscopic and temperature resistant material and covered by an outer PVC jacket. The cable is laid over a wide area thus overheating at any point can never occur, when properly installed.

Cables are usually laid over the entire floor surface of the appropriate rooms in parallel loops. The normal method of installation in a solid ground floor consists of a 50mm minimum layer of high density polystyrene or polyurethane insulation laid under the slab. This is turned up at the perimeter wall to the depth of the floor. The cable is fixed to the top of the slab and covered by a minimum of 60mm screed. Flooring can be tiles, carpet, wood block, etc. On solid intermediate floors ceiling heating insulation installed on the under side to prevent loss of heat upwards will also prevent loss of heat downwards from the heated floor above. On the top surface of the structural floor a sound insulation break can be laid, if required, followed by the cable and screed covering.

Eswa has full design facilities and will provide detailed proposals on individual projects upon receipt of drawings and a specification. We can supply, in diagrammatic form, recommended ceiling and floor specifications providing satisfactory bases for the system. When an installation is to proceed Eswa's drawing office then produces plans for an installation team for every building on which they work. The plans show cable runs, ceiling element sizes and locations, loadings and thermostat positions.

Specialist uses: Housing, one off houses, studio flat accommodation, student accommodation, nursing homes - where space is limited - offices, churches, sports and animal facilities are other places where Eswa heating is appropriate and has been successfully used for over 36 years, in the UK.