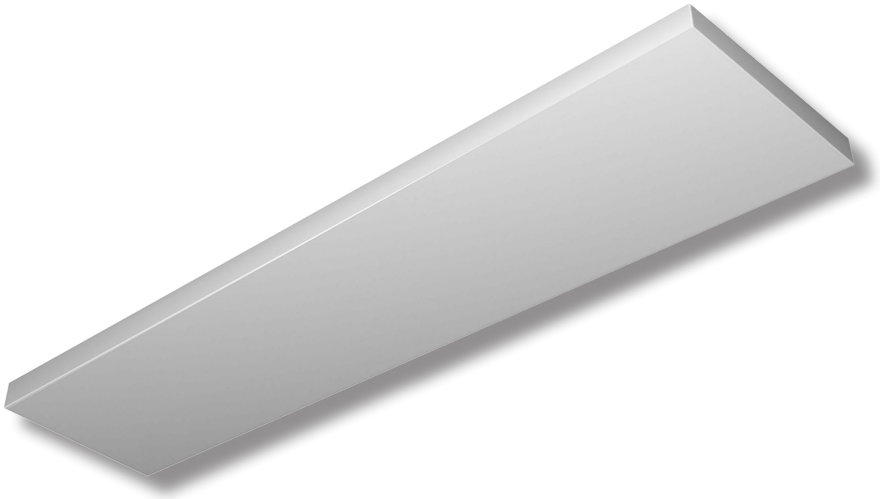
EnergoAqua Cassette LE

Water Supplied Radiant Heating



Technical Information - EAC-LE

ENERGOTECH
ENERGY EFFICIENT HEATING SYSTEMS

Product Description

General

EnergoAqua Cassette LE, **EAC-LE**, is designed to be mounted into a suspended ceiling system with visible grids of widths 15 mm or 24 mm. Its sizes are adapted to replace ceiling tiles in module dimensions of 600 mm. The cassette is available in lengths to fit in the modules 1200, 1800, 2400 and 3000 mm. With its low build height, only 40 mm, the cassette fits in most ceilings. When installed in this mode, it is advantageously connected as an stand-alone ceiling heating cassette.

The EAC-LE can, of course, also be mounted free-hanging from the ceiling.

The standard version of the EAC-LE comes with a Ø10 mm copper pipe, for easier turbulent flow rate. When several cassettes need to be connected in series, Ø12 mm copper pipes are usually needed in the cassettes to manage the flow rate and pressure drop. Contact us for advice.

Composition and Function

EnergoAqua Cassette LE, **EAC-LE**, consists of three parts: the reflective plate, insulation and the water carrying pipe. CE marked and manufactured in accordance with EN14037.

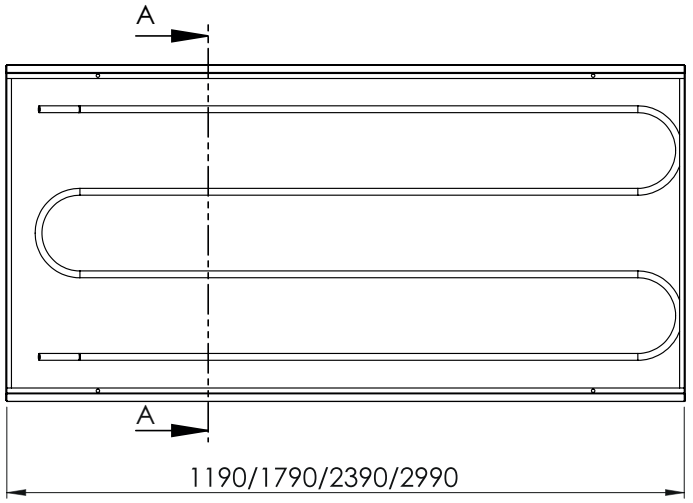
The EAC-LE compromises of a 1.0 mm aluminium sheet metal, 30 mm thick mineral wool insulation topped with plastic covered paper. The pipes are made from copper with a diameter of Ø10 mm or Ø12 mm. The cassette is always delivered with pre-assembled insulation from the factory.

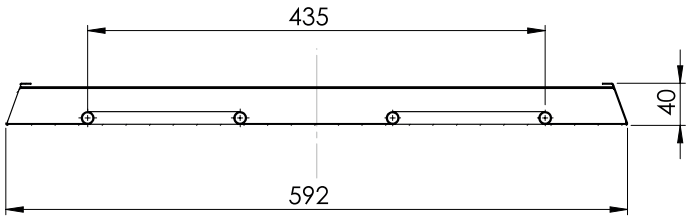
The warm water, which circulates through the pipe, conducts heat to the surface plate, warming the underside of the panel. The increased temperature of the panel enables radiant heat being emitted to cooler surfaces in the room.

Specifications

Lengths:	1190, 1790, 2390 or 2990 mm
Width:	592 mm
Height:	40 mm
Working pressure:	Max. 10 bar
Working temp:	Max. 90°C
Connections:	2 x to plain pipe ends Ø10 mm or 12 mm. Connected by using press fittings, push-fit fittings or compression couplings. The pipe ends are bent up on delivery.
Finish, color:	Standard RAL9003, white. Other colors are available with additional cost.
Installation height:	Up to 4 m
Weight excl water:	EAC-LE-612 – 4.0 kg EAC-LE-618 – 6.0 kg EAC-LE-624 – 8.0 kg EAC-LE-630 – 10.0 kg
Water volume:	EAC-LE-612 – 0.24 l EAC-LE-618 – 0.37 l EAC-LE-624 – 0.50 l EAC-LE-630 – 0.63 l

Size





Connection

Which pipe end one chooses to connect the inlet by, has no significance for the total heat output from the cassette. If possible, however, the inlet connection should be made to the part of the cassette that faces the coldest part of the room.

The center distance between the two connection ends is 435 mm ± 2 mm.

The cassette is simply connected with press fittings or push-fit fittings, but compressions couplings can also be used.

Soldering is prohibited, as it will damage the cassette.

CE

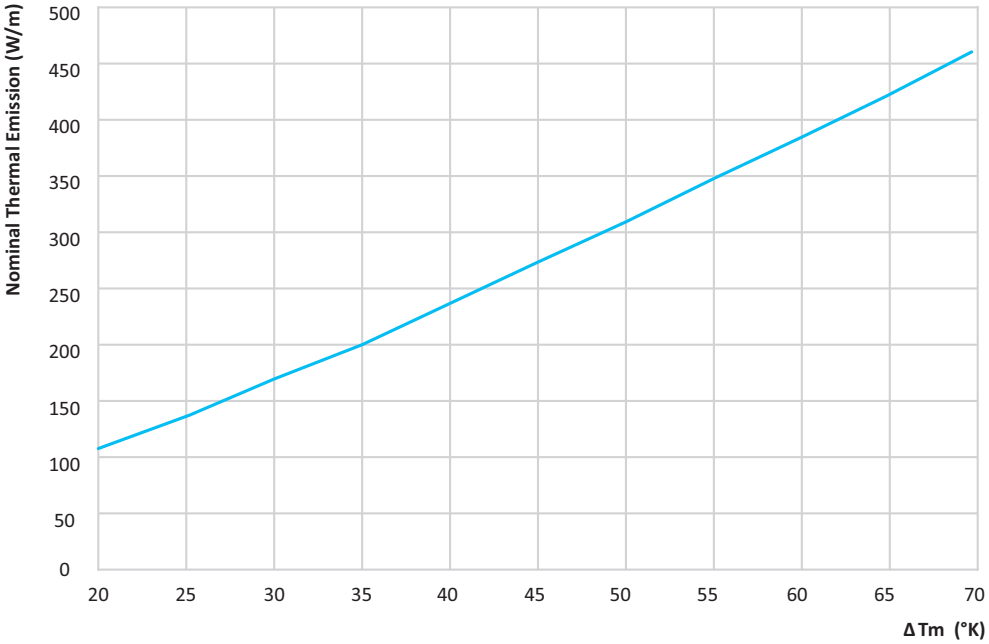
EN14037 Ceiling Mounted Radiant Panels
Model: EAC-LE

Thermal Emission

Nominal thermal emission as per EN 14037-1:2016, and calculated according to: $\Phi_D = K_m \times (\Delta T_m)^n$

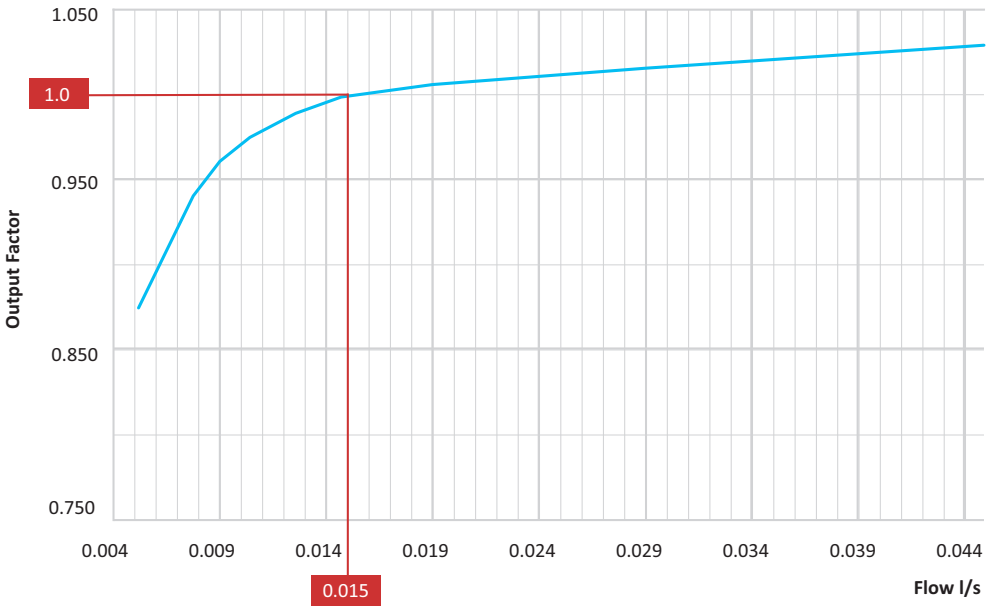
Φ_D	Nominal thermal emission, W/m
K_m	Characteristic equation constant, 3,0288 W/K^n
ΔT_m	Difference between the average temperature of the fluid and the ambient temperature, °K
n	Characteristic exponent equation, 1,1813

Nominal Thermal Emission per meter



The specified nominal thermal emission applies at a turbulent flow rate of 0.015 l/s. If the flow rate is lower, the output will decrease and the calculated output will be reduced according to the output factor diagram below.

Output Factor



Example, An EAC-LE that is 2400 mm long at 55°/45°/20°C gives the following result:

The calculated output according to EN14037 is 404 W which corresponds to the flow of 0.01 l/s.

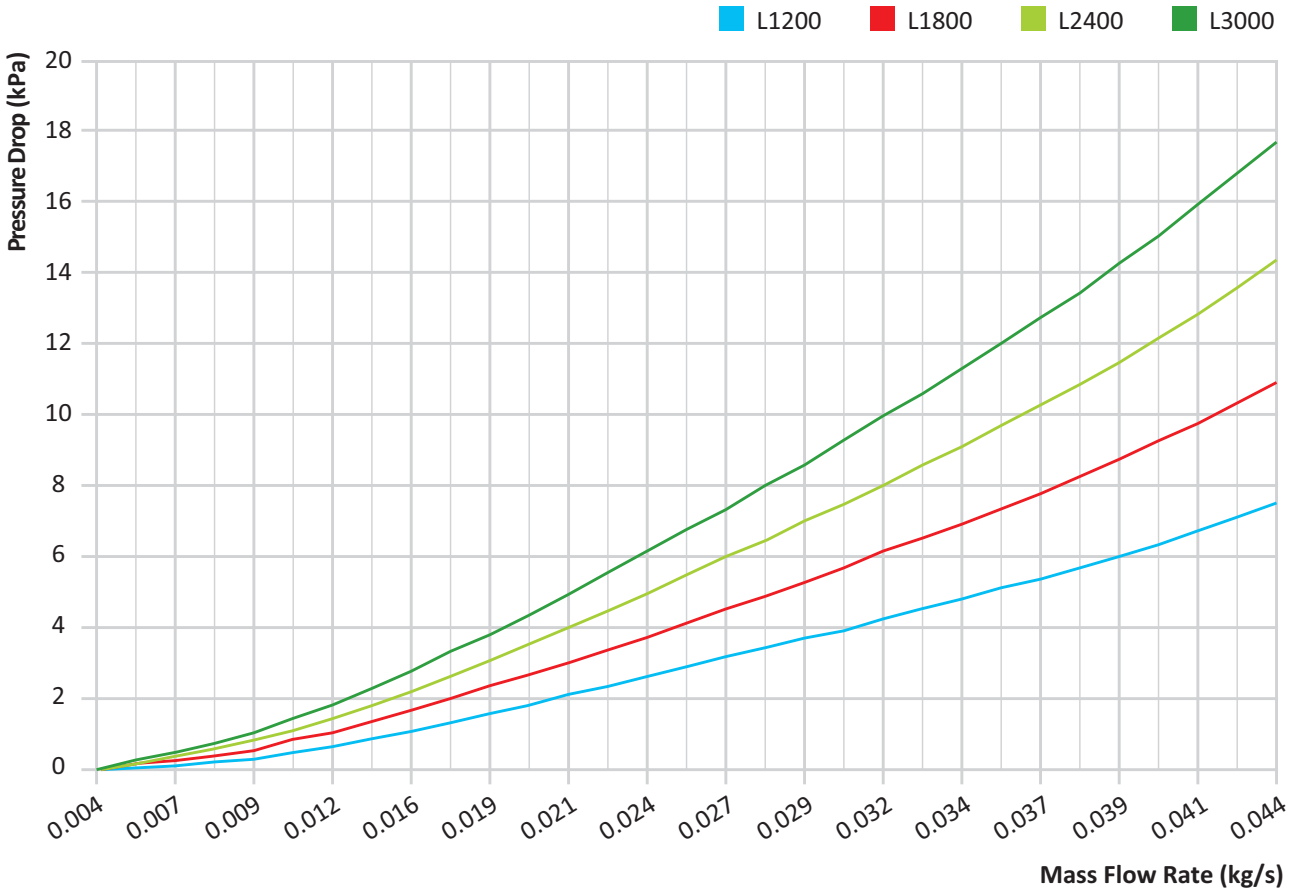
Since the flow is less than 0.015 l/s, a output factor of 0.01 l/s of 0.965 is read out.
The actual output of the cassette is 404 x 0.965 = 390 W.

The corrected flow is reduced according to: $\dot{m} = Q / (Cp \times \Delta T)$, i.e. 390 / (4190 x (55-45)) = 0.009 l/s.

Pressure Drop

Pressure drop diagram for the four lengths of EAC-LE with Ø10 mm pipe. To ensure turbulent flow and thus best thermal output, the flow rate should not be less than 0.015 l/s.

The pressure drops are stated at Mean Water Temperature (MWT), 50°C. At lower MWT's the pressure drop will increase. At e.g. 20°C MWT, the pressure drop is about 20% higher.



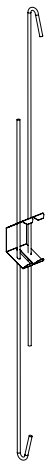
Suspension / Mounting

EnergoAqua Cassette LE can be mounted into a suspended ceiling system, 600x600 mm, with visible grids, T-profile widths 15 mm or 24 mm.

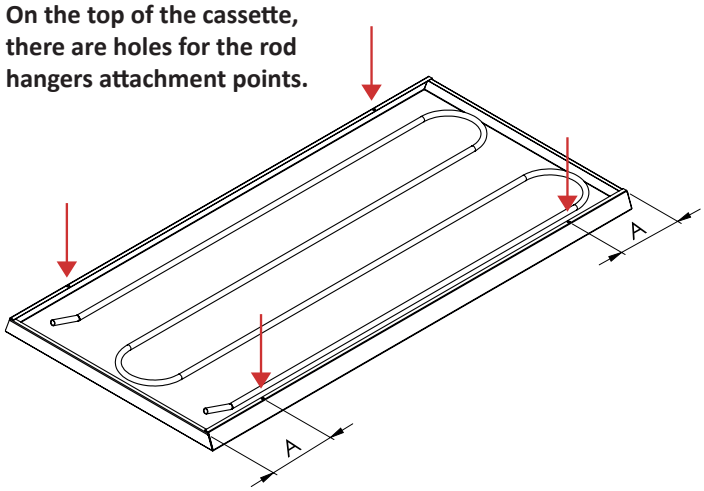
However, it is equally suitable for free-hanging mounting.

Adjustable rod hangers are always supplied with the EAC-LE. The standard length of these are 540-1000 mm. Other lengths can be ordered if required.

Note that the rod hangers should be used even if the cassette is mounted into a grid systems, false ceilings.



On the top of the cassette, there are holes for the rod hangers attachment points.



Product Length	L1200	L1800	L2400	L3000
A (mm)	160	260	360	360