

THERMAL OUTPUT ACCORDING TO EN 442

The thermal outputs of Global radiators, highlighted in the catalog, are certified according to the new EN 442 standard, which stems from the need to standardize thermal outputs across the European Community. According to this standard, the nominal thermal output of radiators is determined in a test chamber with a temperature difference (Δt) of 50°C.

Benefits of Low-Temperature Systems:

- **Lower fuel consumption** due to a reduction in the passive thermal energy losses from boilers, pipes, and heating bodies.
- **Improved hygiene** in heated environments, as low-temperature systems limit convective air movement, which, at higher speeds, can circulate dust, bacteria, and pollen.
- **Reduced thermal gradient** in rooms heated with low-temperature radiators, leading to enhanced environmental comfort.

Thermal Output at Δt Different from 50°C:

The variation in the thermal output of a radiator with a Δt different from 50°C is determined as follows. Starting from the nominal thermal output certified according to EN 442 at $\Delta t = 50^\circ\text{C}$, the following characteristic equation must be used:

$$P = K_m \cdot \Delta t^n$$

Where:

- **P** = thermal output (W)
- **K_m** = coefficient for the specific model
- **n** = exponent for the specific model
- **Δt** = the temperature difference, calculated as:

$$\Delta t = t_m - t_a$$

Where:

- **t_m** = mean water temperature, calculated as $(t_e + t_u) / 2$
 - **t_e** = inlet water temperature (°C)
 - **t_u** = outlet water temperature (°C)
- **t_a** = ambient temperature (°C)

For example, for the 600 model at $\Delta t = 60^\circ\text{C}$:

$$P = 0.80314 \times 60^{1.32266} = 181 \text{ W}$$

Where:

- **P** = thermal output (W)
- **K_m** = coefficient for the model
- **n** = exponent

To calculate Δt , using the given temperatures:

- **t_e** = 85°C (inlet water temperature)
- **t_u** = 75°C (outlet water temperature)
- **t_a** = 20°C (ambient temperature)

$$\text{Thus: } t_m = (85 + 75) / 2 = 80^\circ\text{C}$$

$$\Delta t = t_m - t_a = 80 - 20 = 60^\circ\text{C}$$

Sede

Via Francesca, 54/A
24040 Ciserano (BG) - Italy

Telefono e Fax

T. +39 035 4810174
F. +39 035 4821852

Email e PEC

radiatori@radiatori2000.it
PEC pec@pec.radiatori2000.it

www.radiatori2000.it - radiatori@radiatori2000.it

www.fecs.it

This equation allows the calculation of the thermal output for radiators when operating with different temperature conditions than the standard Δt of 50°C.

2

Sede

Via Francesca, 54/A
24040 Ciserano (BG) - Italy

Telefono e Fax

T. +39 035 4810174
F. +39 035 4821852

Email e PEC

radiatori@radiatori2000.it
PEC pec@pec.radiatori2000.it