Heraeus

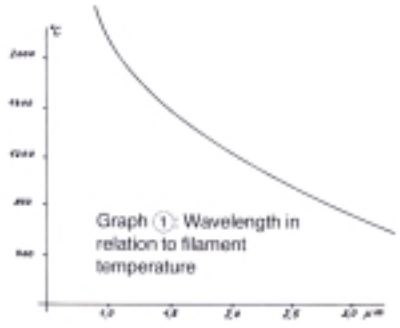
Interdependance of output, wave length, filament temperature and voltage

The filament temperature of short-wave IR radiators can be reduced, which gives rise to a medium-wave IR emmission. Due to the resistance characteristics of the tungsten filament, the power decreases to such an extreme that economical heating is no longer possible.

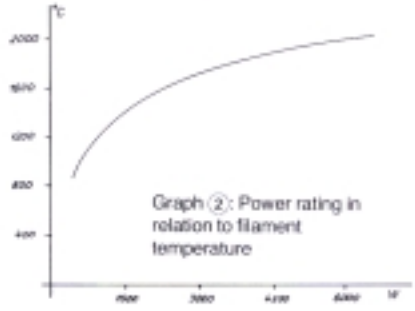
The following example and the corresponding graphs explain this:
If the power is reduced, e.g. from 380 V to 190 V, then the short-wave radiator has only one third of its original effective output. If the voltage of the radiator is adjusted within the medium-wave range to, e.g. 2.35 microns, it gives a filament temperature of approx. 950 °C. With this filament temperature the power of a short-wave 6000 W radiator is reduced to approx. 500 W.
In this case medium wave IR is recommended since this yields 5 times the power output at the same filament temperature.

Example:
Short wave twin tube radiator
ZKC 6000/1000 G

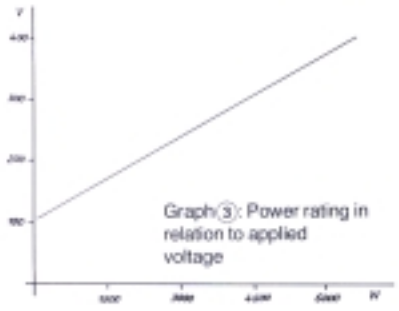
Voltage V	Current A	Power rating W	Filament temp. °C	λ max. µm
380	8	6000	2000	1,26
300	7	4200	1820	1,37
220	5,9	2600	1650	1,49
190	5,4	2050	1550	1,57
150	4,8	1450	1450	1,67
110	4	880	1250	2,02
75	3,3	500	950	2,35



Graph ①: Wavelength in relation to filament temperature



Graph ②: Power rating in relation to filament temperature



Graph ③: Power rating in relation to applied voltage

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