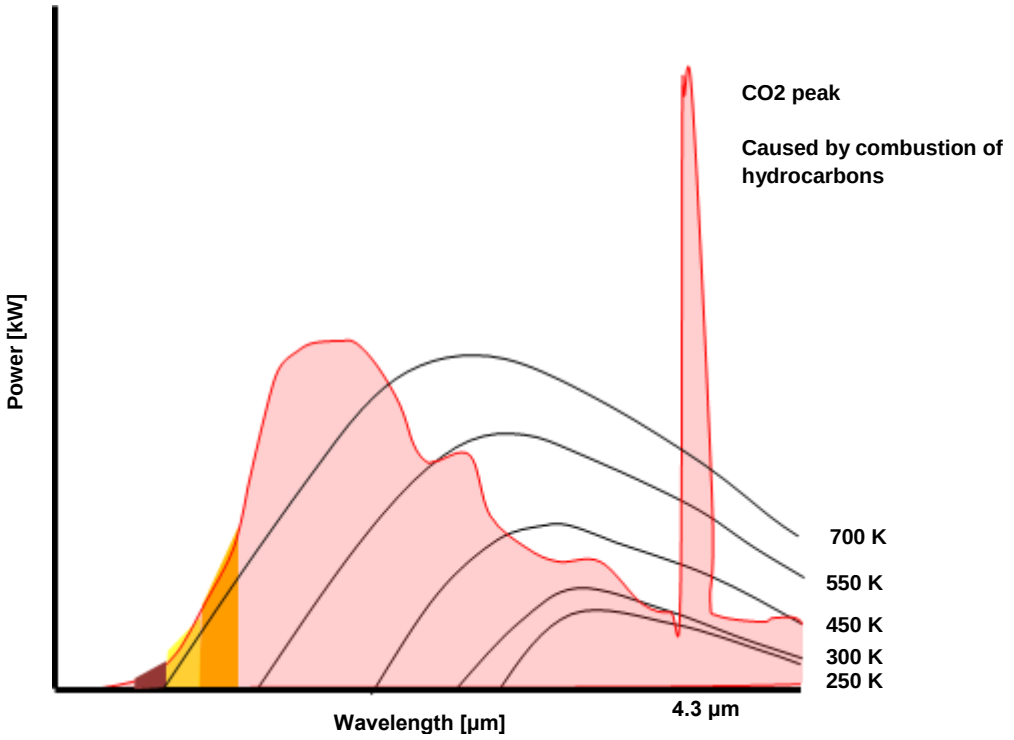
Black body radiation



Black body Radiation.

Infrared sensors are also effected by Infrared Radiation that is not coming from a fire. The fire can be masked by this Black body Radiation. Every object that has a temperature higher than the absolute minimum (0 Kelvin or -273 ^{o}C) radiates energy and at room temperature the energy is already detectable for the most sensitive Infrared sensors. Some flame detectors have the feature that a moving hand close to the sensor of the detector is sufficient to generate an alarm. At 700 Kelvin a hot object already emits visible light energy (glowing). Dual or Multi Infrared detectors suppress the effects of Blackbody Radiation by sensing energy just besides the CO_2 radiation peak e.g. on 4.1 or 3.9 micron. The principle works on the fact that a real Hydrocarbon fire causes a difference between the sensors. See S1 and S2 in the picture above. A drawback is that there must be a larger difference in sensor output than the background radiation present. In other words, the detector gets insensitive when Black body Radiation is present. Every multi IR Flame Detector based on IR frequencies around 4,3 micron deals with this problem, no matter what the price of the device is.