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More and more customers report that representatives of competitors state that metal PCDs are disadvantageous compared to plastic PCDs because they are supposed to heat up too much and therefore provide false results.

We have to disagree with this statement from a physical point of view for the following reasons:

1. In a sterilisation process, all goods, also plastic or metal PCDs heat up to the set sterilisation temperature (121°C or 134°C) during the sterilisation time. At the end of the sterilisation process, both PCDs cool down depending on the external temperature and condensate present. The evaporation of the condensate removes heat from the PCD, so that the temperature of both the plastic and metal PCD decreases far below 100°C during the drying phase. Below 100°C the GKE chemical indicators do not react anymore, therefore the actual temperature has no influence on the result (however, there are competitive indicators which still react even below 100°C, but should not do so).

2. Although plastic and metal PCDs have a similar temperature below 100°C when removed. However, a plastic PCD seems to feel colder than a metal PCD when touched. This is due to the fact that metals have a faster heat transfer rate than plastics by a factor of 100 and therefore transfer the heat faster onto the fingers, so that subjectively the impression of a much higher temperature exists. In contrast, a plastic part of the same mass takes much longer to cool down because it transfers the heat slower. The specific heat capacity in relation to the volume of plastics and metal PCDs are similar.

3. The plastic PCD is used in EN 14180 to monitor low temperature steam/formaldehyde sterilisation processes that operate at temperatures of 50-70°C. When used in steam sterilisation processes at temperatures above 100°C, we have found that over time plastics can go out of shape and the PCDs may leak, therefore we already use metal PCDs for more than 20 years.

4. Furthermore, research has shown that the detection of residual air and NCG is more sensitive in metal PCDs (with the same inner volume of the PCD). The GKE metal PCDs are very durable and can be used for several 1000 cycles, if the seals are replaced after every 500 cycles and then tested for leakage.