	Technical Information	730-048-EN		V03
	Where to place the BDS-Test or batch monitoring systems in a steam sterilization chamber	Created	17.02.2004	KH
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The GKE Bowie-Dick Simulation Test and GKE Batch Monitoring Systems consist of a Process Challenge Device (PCD) with a chemical indicator inside, to monitor non-condensable gases (NCG) which result from insufficient air removal, leaks in the sterilizer during the vacuum phase, NCGs in steam and/or from pneumatic leaking door seals.

NCG, like air and carbon dioxide, are always mixed with steam inside the sterilization chamber. Due to their higher specific weight compared to steam, their concentration gets higher in the lower areas of the sterilizer. Walls and doors, which are not heated, consume steam, condensing at the walls to compensate the heat being transferred to the outside of the sterilizer.

During steam condensation at those walls and/or doors, steam-air mixtures separate by condensation of steam. Condensate is flowing down to drain and the NCG are leftover and due to their higher specific weight run down close to those walls to the lower areas of the sterilizer chamber.

Therefore the places close to the doors in the lower part of the sterilizer are most suitable to place the indicator systems since the highest concentration of NCG can be expected there and detected with the highest sensitivity. The indicator system should not be placed directly on the bottom of the sterilization chamber but about 2-5 cm above on top of a tray or rack to prevent that the PCDs drain in condensate.

It is not recommended to put the PCD system close to the condensate outlet. When the pump starts running or the condensate valves open to eliminate condensate, NCG may be taken out as well and the detection sensitivity will decrease.

If NCG are left in the chamber after the heat up phase or taken out by the drain, NCG don't harm directly, since the instrument packs have already reached the steam temperature and do not consume steam and/or NCGs anymore. However, if NCG are present in the lower areas of the sterilizer during the heat up phase, it is a sign that NCG also accumulate in the instrument packs, tubes and MIS-instruments. PCDs also being present during the heat up phase also accumulate NCG and detect potential risks for the sterilization process. As a consequence, it is misleading to believe, that NCG taken out by the drain during the process, can minimize the risks in steam sterilization processes.

Therefore the most sensitive place to monitor NCG is in the lower section of the sterilization chamber close to the door.