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Detection of Corrosion from Stainless Steel Instruments

Corrosion of medical instruments and objects is an everyday phenomenon in hospital environments. An essential hygienic step in the cleaning of reusable medical instruments is sterilization by high-temperature steam. However, any instruments displaying corrosion signs need to be cleaned manually before the sterilization. If the corrosion is missed, iron oxides present on that instrument will contaminate the batch being sterilized. Manual item-by-item cleaning is required to remove the precipitated iron oxide and the steam sterilizer also needs to be decontaminated, which takes it out of commission. Iron oxide is known to encapsulate certain bacteria and spores, which, if unnoticed, possess a great risk for the patient.

Corrosion in “hidden places” such as hinges of clamps, or inside stents and tubes cannot be evaluated reliably with existing techniques. To overcome the apparent shortcomings of these techniques, our invention relies on electrochemical detection of corrosion in a way, which ensures electric contact between the detecting medium and the surface. The medical instruments are automatically screened batch-wise. The risk that one damaged instrument would contaminate whole the batch during the final sterilization step is avoided, resulting in savings in labor costs, minimizing downtime of sterilizer units, and ultimately, improving patient safety.



Contact info

Juho Lehmusto

Project Coordinator

E-mail: juho.lehmusto@abo.fi

SPARK VALUE: We are planning on utilizing the extensive expertise of the SPARK community regarding the critical first steps towards the commercialization of our invention. We believe that the broad network of SPARK may also facilitate connections with potential future collaborators. Further, we expect that the mentoring provides valuable unbiased feedback, thereby allowing us to test and refine our commercialization plans.