VOLUME 19 | ISSUE 9 | OCTOBER 2020

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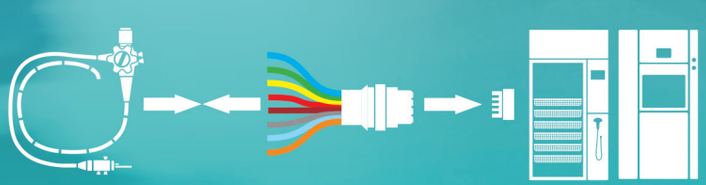

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Designing out error in endoscope connection

A focus on 'human factors' is helping to eliminate errors in endoscope reprocessing through the design of an innovative 'One Connection System'. iM Med offers an insight into the patented breakthrough from Steelco.

iM Med and Steelco

Innovation and a passion for customer service excellence brought iM Med, the UK-based decontamination specialist, to a natural partnership with Steelco for the provision of cutting-edge decontamination solutions to the UK healthcare market.

iM Med was founded by industry specialists, with decades of experience in decontamination and a driving passion for quality, innovation, and patient focused excellence, leading to their selection to supply the Steelco range on the NHS Supply Chain Decontamination Capital Equipment National Framework.

Part of the German Miele Group, Steelco is a leading Italian manufacturer of decontamination equipment and solutions for the specialities of healthcare, pharmaceutical and life science. The Steelco ARES Endoscopy Decontamination range provides the complete workflow of endoscope reprocessing, including pre-cleaning devices, endoscopy washer disinfectors, drying cabinets, endoscope storage transport solutions and traceability software.

Steelco has utilised the opportunity for Human Factor Ergonomic Engineering in the development of the patented One Connection System (OCS).

Human factors in healthcare

'Human factors' describes a multi-disciplinary science that sits at the intersection of psychology and engineering, focused on understanding the interaction between humans and other elements of a system within a given environment. Human factors focused design accounts for psychological and physiological principles and theories to the design of products, processes, and systems, improving safety, efficiency, quality, reliability and when applied effectively, also reduces costs.

The primary purpose of healthcare services is to deliver high quality care to all that is safe, clinically effective and results in a positive experience. However, delivering healthcare can place individuals, teams and organisations under pressure, with staff having to make decisions in dynamic, often unpredictable circumstances. In such intense situations, decision making can be compromised, impacting on the quality of clinical processes and potentially causing harm.

'Inattentional blindness', described by Green (2004), refers to our ability to adapt to our workplace and workloads by focusing our attention on the things that matter according to priority, but allowing other elements of the environment to go unnoticed.

"Experienced people develop expectations and mental models that permit pre-programming of behaviour and minimisation of thought for routine, frequently performed tasks. …One irony of medical error is that the most experienced and able people are likely to make the most egregious and unfathomable errors. They have the most experience, the greatest skill and the strongest expectations." Green, M. (2004, p.2).

The Steelco One Connection System

The Steelco One Connection System is a patented connection innovation to address the potential for human factor error in endoscope connection.

The One Connection System (OCS) which, as the name suggests, means the Operator need only connect the endoscope once at the start of the decontamination process, this connection remains in place for the manual flushing/rinsing of the endoscope at the manual clean stage, then one connection into the automated washer disinfector and then to the drying/storage stages.

This innovation reduces the time it requires to connect and disconnect multiple connection types, i.e. attaching and un-attaching flusher tubing, attaching and un-attaching washer tubing, which also often has multiple connection points into machine.

Reducing the risk with the Steelco OCS

The OCS reduces the risks faced through the decontamination process in a number of ways:

- **Reduced risk of error** by only connecting the endoscope at the start of the process, the operator does not have to repeat this process which eliminates the risk of mistakes further down the process. Often the connection method for dryers is very different to how endoscopy washer disinfectors connect, resulting in excessive manual handling during the process to remove the channel separators and connectors and reconnect dryer tubing.

The OCS removes these steps and reduces this risk.

- **Enhanced Infection Prevention**. The risk of recontamination is reduced which is a particular benefit when removing from the washer to place in a dryer, the OCS head and basket are the only elements touched to remove from the washer and place in the dryer, enabling the safe aseptic handling of the endoscope. The subsequent connection steps can be conducted one handed
- **Improved efficiency of the decontamination process** by reducing the connection time, the speed and efficiency of the process is significantly increased, realising time and cost savings.
- **Reduced handling of the endoscope**. The streamlined process reduces the risk of endoscope damage and potential for costly repairs related to damage incurred through multiple connection handling.
- **The OCS connects 6 channels and the leak test**, with a 7th channel possible, which can be dedicated to channels such as the elevator channel in duodenoscopes, future proofing your decontamination equipment.

iM Med and Steelco – designing your department your way.

Unique to Steelco is the breadth of range of endoscopy equipment available when healthcare providers are designing departments and replacing equipment. The One Connection System is integrated through the complete range of endoscopy washer disinfectors and dryers, enabling customers to choose a solution bespoke to fit their needs.

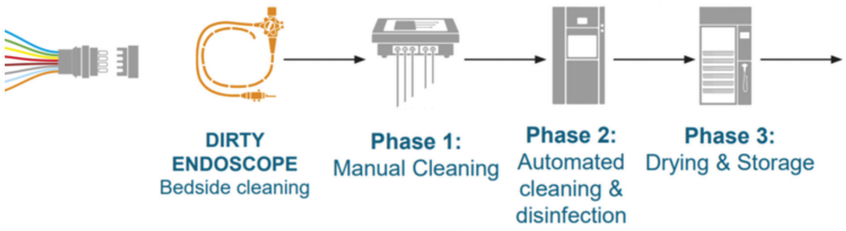
Steelco Endoscope Washer Disinfectors

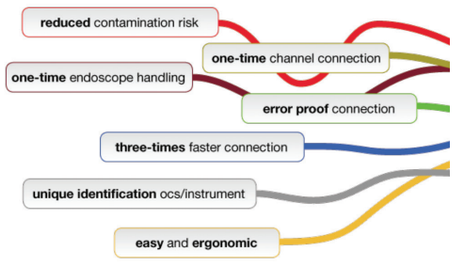
Offering a range of EWDs with efficient cycle times, with the choice of single-scope or multi-scope chambers, and available as single or double pass-through door versions.

EW1 S – One scope capacity, with a fast 18-minute cycle. This can be configured as two stacked, asynchronous chambers, on a single footprint.

EW2 2S / EW2 3S – High productivity AERs for the most challenging work peaks. Synchronous reprocessing capacity of two or three flexible endoscopes.

- ISO 15883 Part 1 & 4 compliant





- Simultaneous reprocessing of 1/2/3 flexible endoscopes per chamber
- Single or double door pass-through options
- Short cycle times with maximum security
- Utilising the OCS, One-time Connection System.

Steelco Endoscope Drying Cabinets

Following processing in an EWD, endoscopes are ready for use or can be stored in an EN 16642 compliant drying cabinet, maintaining their microbial status.

Drying cabinets range:

- EN 16442 compliant
- Single or double door pass-through options
- Horizontal or vertical storage
- Capacity: 8-16 flexible endoscopes
- Full traceability system
- RFID or Barcode
- Utilising the OCS, One-time Connection System.

With a wealth of experience and expertise in the fields of decontamination and infection prevention and a specialist team in both Service and Sales, iM Med has already made a significant impact in the UK market with the successful provision of the Steelco Endoscopy capital equipment range into Decontamination units across the Country.

Providing the Steelco range of Endoscopy equipment directly on the NHS Supply Chain Framework enables NHS Trusts to procure equipment in a streamlined manner from concept, through design, procurement, expert project management, installation, commissioning, training and beyond. iM Med ensure they are the trusted long-term partner for their customers.

iM Med, Steelco, the OCS and continuous quality improvement.

James Reason, professor emeritus of psychology at the University of Manchester and recognised expert in human error, refers to these unnoticed flaws in our safety systems as "latent errors." Dr. Reason notes that latent errors are constantly changing and moving, with new ones introducing themselves all the time. Given the right environmental circumstances, a number of these latent errors may combine with an active error (a slip, lapse, or mistake caused by the provider on the sharp end of healthcare) to cause a serious event. We need to design our systems to help providers "do the right thing," avoid active errors, and detect and eliminate as many latent errors as possible before they combine and cause a serious event.

The OCS is an example of such a system design, Steelco apply a programme of continuous quality improvement to all of their products and services, supported by their application in the UK by iM Med, with patient safety as a central principle combined with a dedication to customer service and feedback, the design of safe solutions remains as an ongoing commitment to a global safe patient strategy.

Reference

1 Green, M. 2004. Nursing Error and Human Nature. *Journal of Nursing Law*, 9:37-44.
2 Reason, J. (1997). Managing the risks of organizational accidents. England: Ashgate.

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