

REVO CARE

The circular pathway to smarter, safer care



NiBP cuff

The Revo Care cuff is A redesigned NiBP cuff developed to support safe and sustainable reuse in hospitals. It is made entirely from recyclable polypropylene, eliminating fused materials that block recycling. A new hook-to-hook fastener reduces the cuff's footprint, while large, visible sizing and placement indicators improve accuracy and ease of use for nurses. The cuff also features a detachable hose connector, reducing total material use and allowing for easy disassembly after use.



Sensor Station

The Revo Care Sensor Station is a smart dispensing and collection unit that enables a shift from single use to safe, circular reuse of NiBP cuffs in high-acuity care. Installed in treatment rooms, it gives nurses efficient access to clean cuffs, reducing infection risk and improving workflows. By transferring cleaning tasks to certified staff, it removes a major barrier to reuse. RFID tracking allows for real time usage monitoring, maintenance planning, and efficient stock control.



The goal:
“Developing redesign solutions to improve the circularity of in-hospital NiBP monitoring cuffs, to generate insights and recommendations for circular design in similar in-hospital patient monitoring sensors.”

Solution:
This thesis explores how circular design can reduce the environmental impact of in-hospital monitoring sensors, using the Philips Gentle Care NiBP cuff as a case study. The proposed solution, Revo Care, combines a recyclable monomaterial cuff with a smart collect-and-dispense system for local reprocessing inside of hospitals. RFID tracking enables traceable usage and efficient inventory, while a performance-based business model supports viable implementation. The redesign reduces manufacturing impact by 76% and lifecycle impact sixteenfold compared to current single-use practice. Revo Care balances infection prevention, usability, and sustainability, aligning with the goals of hospitals, clinicians, and manufacturers. While focused on NiBP cuffs, its design logic offers a scalable foundation for circular innovation across in-hospital monitoring sensors.

16X

reduction in lifecycle impact

76%

reduction in manufacturing impact



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