

## **UVC Integrated Knitted Heating Textile Blinds for Self-Sanitization in Healthcare Environments**

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**Abstract:** Infection can only be prevented by routine sanitization process. Surface hygiene systems are remained underexplored. High-touch point cleaning is very much essential in healthcare systems. From primary to emergency healthcare, blinds are most common high touch surface. Antimicrobial based blinds are used to disrupt microbes and inhibit microbial growth. However, the dead microbes, oils and dusts are still sits on the blind's surfaces. Repetitive increase of the event creates a layer over the blinds and thus again reverse the process by increasing the microbial growth. Recent developments on embedded heater based thermal sanitization though widely unused but has potential to explore by adding ultraviolet C light emitting diode (UVC LED). UVC is germicidal. UVC photons destroys the DNA and RNA of the pathogens by penetrating the thin walls of bacteria and the protein coats of the viruses. Conducting yarn based knitted heaters has the advantages like uniform, low power heating with typical temperature ranges from 40 to 120 °C enables for wearable, thermotherapy and industrial applications. Both UVC and Knitted heaters are chemical free methods for sterilization. Controller based UVC and Knitted heating textile integrating technologies into blinds may inhibit microbial growth. This combined system may revolutionize by facilitating chemical free, flexible and programmable dual mode self-sanitization process. Significant research aspects open up after adding the above including washability, durability, hospital cleaning protocol and safety standards. Addressing the above research aspects can lead to develop next-generation self-sanitizing smart blinds by reducing pathogen transmission, inhibit microbial growth, enhance environment hygiene in healthcare industries.