Transparent film for antimicrobial protection of touch screens

Development status

Phase 2

Feasibility study. There is a realistic design of the technology and the initial tests in the laboratory are leading to the specification of the technology requirements and its capabilities.

IP protection status

Registered utility model of the Czech Republic No. 37511

Partnering strategy

Collaboration, licensing

Institution

Univerzita Tomáše Bati ve Zlíně
Tomas Bata University in Zlín

Tomas Bata University in Zlín

Challenge

Touchscreens are a widely adopted communication platform, not only in the public sector. These surfaces are at risk of contamination by a broad spectrum of organic impurities and microorganisms. Consequently, screens can serve as potential sources for the spread of various infections. Their decontamination can be achieved through: a) standard disinfection (it poses a risk of rapid recontamination and irritation of the skin and mucosa), b) surface treatments containing standard biocides, which come with the danger of biocide release and dermal issues, or c) protective films treated with biocides (usually nano-form), which bear similar risks as mentioned above. The motivation was to create an alternative to expand the market offering, providing sufficient antimicrobial and mechanical protection with adequate efficacy against a wide range of microorganisms, functioning under various lighting conditions with only a minimal concentration of the permitted limit of biocidal substance.

Description

The technical solution relates to the area of long-term antimicrobial protection of touchscreens, specifically a transparent film designed for antimicrobial protection of touchscreens with enhanced resistance to the accumulation of organic and microbial pollutants. The essence of the solution lies in the fact that the transparent film comprises at least two layers that are bonded together across their surfaces (a transparent carrier film and an antimicrobial film consisting of PVC, PP, or a combination thereof, and incorporates an embedded antimicrobial component). This component is composed of a photocatalyst based on a phthalocyanine derivative with a central atom of aluminum or zinc, and/or a biocidal substance. The film can be manufactured using conventional plastic processing technologies. The technology was developed within the framework of applied research in collaboration with an industrial partner specializing in touchscreens, prompted by the insufficient availability of similar products on the market. The benefit lies in the long-term elimination of organic contamination, not

only in public spaces, through the use of minimal concentrations of biocidal components. The solution is designed to ensure that the functionality and readability of the display are not compromised. Currently, transparent films applied to touchscreens primarily protect the display from mechanical damage. This technology offers added value by reducing microorganisms and organic pollutants on displays without the use of biocidal agents in nano-form.

Commercial opportunity

The technology is primarily developed for the mechanical and antimicrobial protection of touchscreens used in public places (e.g. fast-food kiosks, airport check-in terminals, self-service checkouts) so that pollutants are not transferred by touching hands. However, the technology is also suitable for other applications where there is contact with the general public. Some of the examples can be applications for handles in public transport, door handles, personal electronics (protective film for a mobile phone or laptop) or control panels of devices (e.g. for CNC machines or equipment in hospitals).