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Mitglieder News

TECHNOLOGY MADE IN LUXEMBOURG MAKING SELF-DISINFECTING FACE MASKS TO FIGHT AGAINST COVID-19

Facemasks are supposed to protect against viruses, but during and after use they could become sources of infection themselves. This is a source of fear and stress for healthcare personnel and workers exposed to the public. A start-up from Luxembourg has developed a solution.

In theory nobody should touch the exterior of facemasks, because scientific studies have shown that respiratory viruses do collect on the outer surfaces of facemasks. In practice, it is very hard to work for hours without adjusting and touching the facemask. If someone touches them, what should actually offer protection may become a risk of contamination. This is an even higher risk for the staff in the hospitals, who often come very close to infected patients.

This problem will soon be a thing of the past. The Luxembourg company Molecular Plasma Group (MPG) has developed a process to make facemasks "self-disinfecting". It is a virucidal coating that eliminates 99.9% of the viral load on the fabric of the facemask within minutes.

MPG, founded in 2016, was created as a spin-off from the Luxembourg Institute of Science and Technology (LIST) and the Flemish Institute for Technology Development (VITO). Its revolutionary cold atmospheric gas plasma coating technology has been described as 'magic' due to its limitless application potential. It is very different from spray coating because the gentle gas plasma enables molecules to react with the surface and stay there.

Most of the applications for this coating technology developed so far were in industrial and consumer applications, working with companies like Heineken, Ariane Space and Samsonite. Some projects had shown that it is possible to use MPG's technology to apply highly sensitive organic molecules such as antibodies and proteins.

Then the pandemic arrived. Instead of trying to survive by cutting R&D work, MPG attacked the problem, trying to develop disinfection technology to fight the virus. Since March, MPG worked with the Luxembourg Institute of Science and Technology (LIST). They tested hundreds of combinations of process parameters and chemical compounds to find solutions with virucidal function

that could be totally safe for the wearer and patients.

The one-step, dry coating process is environmentally friendly because it does not use and solvents or aggressive chemicals, and it consumes little energy. This results in a virucidal function that is affordable and can be used on single-use medical facemasks.

The final product, for which a CE declaration of conformity was already filed, is highly effective and based on a completely natural solution: citric acid. „It's completely harmless," says Marc Jacobs, CEO and co-founder of MPG. As a bonus, MPG's gas plasma coating only adds a microscopic layer that does not interfere with breathing.

The development was done in collaboration with the Hôpitaux Robert Schuman in Luxembourg, which has local production of the facemasks through their affiliate Santé Services. Their facemasks can be purchased online at www.medlogistics.lu or www.letzshop.lu and the plan is to have the self-disinfecting type available next year. Other producers in Europe are already testing the virucidal technology from MPG.

Prototypes for testing and CE certification were made using MPG's advanced R&D installations at the Technoport in Luxembourg. The first industrial machines for coating rolls used in facemask production are already being developed and will be delivered next year.

And even when the corona crisis will be over one day, self-disinfecting masks will continue to protect people against contamination of influenza and other viruses. MPG's scope of impact is limited only by imagination as they are can functionalize any surface and deposit a vast number of different precursors to increase performance and reduce environmental impact of products.

Marc Jacobs is CEO and Investor at MPG. He has a Master's in Engineering from the University of Leuven and a Sloan Master's in Leadership and Strategy from London Business School. He is a serial entrepreneur and is widely involved in the Luxembourg start-up ecosystem. He is also a cross-cultural consultant in the Hofstede Insights Network and author of the book 'Negotiate like a Local' which applies Geert Hofstede's 6D model of culture to the world of business.

Régis Heyberger is COO and shareholder at MPG and holds a Ph.D. in Cosmology from the University of Strasbourg. He has several patents in his name and is an expert in robust upscaling of innovative technologies having worked for General Motors, Sony and Plastipak. He is certified as a Six Sigma Master Black Belt expert and leads the scientific team as well as the operations of the company.

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