UW-Madison: Fitter increases the benefits of wearing a mask during the COVID-19 pandemic

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MADISON – Whether homemade or commercially manufactured, breathable cloth and disposable face masks fit everybody differently, leaving gaps at the top, sides, bottom – or any combination thereof – that could allow virus particles to escape.

Now, a team of University of Wisconsin-Madison engineers has developed a simple and inexpensive do-it-yourself fitter that ensures a tighter mask seal around the wearer's nose, mouth and face.

Known as the Badger Seal, the mask fitter is a soft, adjustable "frame" with elastic worn either as ear loops or behind the head. With readily available materials, such as elastic cord, foam wire or pipe cleaners, the fitter is easy to make at home in minutes.

When worn over non-medical-grade disposable masks, the Badger Seal significantly improves the masks' filtration performance, according to research conducted by Scott Sanders and David Rothamer, UW-Madison professors of mechanical engineering and experts in measuring gases and particles in internal combustion engine processes.

The idea for the Badger Seal evolved out of Sanders' research on the efficacy of face masks. In those tests, Sanders used a mannequin wearing various face coverings – a shield, a homemade four-layer tightly knit mask, and a disposable non-medical-grade filtering mask – to demonstrate how tiny particles from a human breath and larger droplets from a sneeze escape from, or are trapped by, each mask. His results, outlined in a new video, show each mask's effectiveness at

containing both.

During his tests, Sanders also taped the edges of the masks to the mannequin's face – resulting, unsurprisingly, in the best filtration performance. But while a mannequin might not mind a taped mask seal, Sanders knew he needed a practical solution for people who wanted to "up" the performance of their masks.

He turned to Lennon Rodgers, who specializes in engineering design and directs the Grainger Engineering Design Innovation Laboratory, the engineering makerspace at UW-Madison. During the COVID-19 pandemic, Rodgers pioneered several personal protective equipment, or PPE, solutions now in wide use around the world.

STORY CONTINUES AT https://news.wisc.edu/fitter-increases-the-benefits-of-wearing-a-mask-during-the-covid-19-pandemic/