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## Press Release

### **A mechatronic orthosis glove, for restoring mobility to the hand after an accident or stroke.**

**A specially developed glove with maxon DC motors provides strength and mobility to the wearer.**

Two medical engineers have created a glove that restores mobility to the wearer's fingers. The mechatronic orthosis, called the exomotion® hand one, is in its testing phase and available soon to the market. The exomotion® hand one is worn like a glove and consists of custom-fitted exo-finger mechanics, a supporting forearm splint, a sensor, a control unit, and four miniature drives that provide the power to open or close the wearer's fingers. Six types of grip are available, restoring freedom of movement that may have been lost as a result of accident, stroke or degenerative disease.

The hand orthosis was developed by Dominik Hepp and Tobias Knobloch, both medical engineers. They first met in university, where they both focused on this issue and founded start-up company HKK Bionics, in 2017. The two men hope to close a gap with their development: "We offer patients with fully or partially paralysed hands an aid that helps them to perform everyday tasks on their own again," explains Dominik Hepp. Simple tasks like cooking, carrying shopping bags and opening packages will soon become part of the wearer's daily routine again. "With an aid that is suitable for everyday use, these people can regain a degree of independence in their daily lives."

The development of engineering medical prototypes is not without its challenges. The orthosis is intended to be worn all day long therefore it needed to be robust, high-performing and lightweight. After developing the initial prototype, the main focus was on making everything smaller, including finding suitable new components. "That was a real challenge, since we couldn't accept any compromise in terms of stability or performance," says Dominik Hepp. To solve this problem, the two designers collaborated with suppliers to develop special components. At the core of the hand orthosis are four customised EC motors from maxon. These requirement was not only small in size and powerful, also the DC motors had to guarantee years of service with hundreds of thousands of operating cycles. The brushless micromotors deliver the necessary grip strength and are controlled via sensors that respond to still-intact muscles, a principle that is also found in prosthetic arms.

2019 is a year of practical trials for HKK Bionics, as the product goes through extensive testing before it is approved and becomes available on the market. "We want to make the exomotion® hand one accessible to as many patients as possible. That's why we are pursuing collaborative partnerships with selected medical supply stores while expanding our network to include doctors and therapists," explains Dominik Hepp. For the two young businessmen, this is an exciting challenge at the interface between technology and human beings. "It's great to see that with our experience, plenty of creativity, and some tinkering around, we can contribute to improving the quality of patients' lives."

For further information please contact maxon motor Australia tel. +61 2 9457 7477.

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The press release was first published at maxon's corporate blog [drive.tech](https://drive.tech) is available on the internet at: [www.maxongroup.net.au](http://www.maxongroup.net.au)



*The exomotion® hand one © maxon group*

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maxon is a developer and manufacturer of brushed and brushless DC motors, as well as gearheads, encoders, controllers, and entire mechatronic systems. maxon drives are used wherever the requirements are particularly high: in NASA's Mars rovers, in surgical power tools, in humanoid robots and in precision industrial applications, for example. To maintain its leadership in this demanding market, the company invests a considerable share of its annual revenue in research and development. Worldwide, maxon has more than 3000 employees at nine production sites and is represented by sales companies in more than 30 countries.