



December 10, 2019

**German Bionic and Nidec-Shimpo Collaborate on Development of Miniaturized Actuator for Active Exoskeletons**



German Bionic prototype power suit based on the company's Cray X model



Nidec-Shimpo's super flat actuator

**German Bionic power suit prototype featuring Nidec-Shimpo's super flat actuator to be showcased at exhibition in Tokyo (December 18-21)**

A German Bionic exoskeleton prototype based on its Cray X power suit that uses Nidec-Shimpo's innovative super flat actuator will be displayed at the International Robot Exhibition 2019 (iREX 2019), a trade show focusing on industrial and service robots and related equipment, taking place December 18-21 at Tokyo Big Sight. "After investing substantially in its development, we are very proud to now see our groundbreaking actuator integrated in the German Bionic exoskeleton prototype that is being shown at this year's iREX," says Hitoshi Inoue, CTO at Nidec-Shimpo.

The super flat actuator combines Nidec-Shimpo's strain wave gear unit FLEXWAVE with a Nidec-designed brushless DC motor compact enough to fit inside the gearbox, resulting in a slim solution that is among the world's thinnest (diameter: 90 mm, thickness: 40.5 mm, output: 170w). The slim actuator profile makes it particularly suited for exoskeletons, light electric wheelchairs and other applications that require a combination of power and compactness.

German Bionic, a leader in the field of exoskeletons, has been recognized with the Automatica Award 2018, the German Entrepreneur Award 2019 and numerous other awards. The company presented the first connected robot exoskeleton for use in the

Industrial Internet of Things (IIoT), at the Hannover Messe and has a track record of supplying exoskeletons to companies such as BMW and IKEA. The Cray X-based prototype exoskeleton has lifting support of up to 25 kg while also being ultra-light. Powered by one super flat actuator on each side, the power suit assists workers with a variety of tasks and alleviates the burden of lifting and moving heavy loads.

Exoskeletons are seeing more and more use in fields that involve heavy lifting and moving—such as logistics, construction, agriculture and nursing care—against a backdrop of declining labor force populations in aging societies with falling birthrates and a drive for increased efficiency through “work-style reforms” in countries like Japan. Moving forward, Nidec-Shimpo will be able to offer full-package solutions for lifting and moving objects by combining the German Bionic Cray X with the company's S-CART line of Automated Guided Vehicles (AGV).

German Bionic and Nidec-Shimpo are both exhibiting at iREX 2019. The German Bionic prototype featuring the Nidec-Shimpo FLEXWAVE 2-in-1 gear and actuator will be shown at the Nidec-Shimpo booth in West Hall #W2-24. In addition, demonstrations of the current German Bionic Cray X exoskeleton will be given in the “Kanagawa Robot Innovation” pavilion located in West Hall #W4-41-14.

#### **About German Bionic**

German Bionic, located in Augsburg, Berlin and Tokyo, is the first European manufacturer to develop and produce exoskeletons for use in industrial production. Exoskeletons are human-machine systems that combine human intelligence with machine power by supporting or amplifying the movements of the wearer. The German Bionic team is also committed to researching the role of humans in industry 4.0. Learn more about German Bionic, its products and the minds behind the company at: [www.germanbionic.com](http://www.germanbionic.com)

#### **About Nidec-Shimpo**

Nidec-Shimpo Corporation, headquartered in Kyoto, is a manufacturer that produced the first continuously variable transmission (CVT) for commercial use in Japan in 1952. Its servo motor gearbox has the No.1 market share in Japan, and its electric pottery wheels for ceramics have the top share in the world. Recently, Nidec-Shimpo has taken steps to produce gears for robotic applications. This time, Nidec-Shimpo Corporation is providing German Bionic with the super flat actuator: a combination of a high-precision flat gear for robotic applications and a super flat motor. We continue to provide all kinds of precision gearing solutions to the world.

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