

Inspired by nature. Created by engineering. Powered by maxon.

Biology and engineering have been combined to create the world's first prosthetic foot with propulsion powered from a maxon DC motor.

Our calf muscles provide the essential power, control and stability for walking. Those who've had below the knee amputation tire very quickly walking on a prosthetic foot. Step in Hugh Herr, Professor at MIT Boston who developed The Empower bionic prosthetic foot along with the Ottobock Group, a world-leading supplier of prostheses. Hugh himself is a double transtibial amputee resulting from a mountaineering accident. Hugh and his team drew inspiration from nature to create The Empower combining both biology and engineering together.

The Empower is a third generation newly developed bionic foot. A research team spent 16 months to make walking feel more natural by using a carbon spring which transfers energy directly to the foot. A powerful maxon DC motor refines the energy pulse delivered by the spring and provides the missing power of a calf muscle, step by step with each toe push-off. Several sensors "tell" the prostheses which phase of movement the foot is in, at any given time, so that it can perform the corresponding action. This allows for short sprints, which were previously deemed impossible, as well as walking on uneven ground and up inclines. What's more, the greater the load on the prostheses, the greater its energy output becomes, just like a natural foot. The DC motor providing the propulsion is maxon's EC-4pole 30. Selected for its power-house features and high output per unit of volume and weight it provides an ideal ratio between size, weight and power – a key factor in developing prosthetics.

For more information on prostheses and robot assisted rehabilitation please contact maxon motor Australia tel.+ 61 2 9457 7477.

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The Empower prostheses
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