Intelligent prosthetics

Using two brushed DC motors from maxon motor, prosthetic specialist Endolite, have developed a new award winning foot and ankle system that will revolutionise amputees walking abilities.

It can be difficult for amputees, particularly lower limb amputees, to be able to walk uninhibited and with comfort as their prosthesis can't adapt in real-time to changing walking conditions such as walking up and down slopes and avoiding obstacles. The élan foot uses two microprocessors to automatically alter the resistance around the artificial ankle joint so that it replicates how a human ankle works and allows amputees to walk more easily on inclines. The microprocessors work in tandem with the hydraulic ankle, which sits on top of carbon-fibre foot springs. The ankle control ensures silent operation and sinuous movement that biomimetically matches the user's body and walking style. The system uses DC motors, gearheads and encoders from maxon motor. Two brushed DC motors from the RE family noiselessly operate the precision hydraulic valves. The RE10 motors use precious metal brushes to give the advantage of low stiction at low speed plus a low current draw. A maxon motor Menc encoder (Magneto-Hall-Effect) is used as it requires little space and is also low power, which is very important in a battery powered application.

Endolite is the products division of Blatchford, who have been involved in the design, manufacture and innovation of lower limb prosthetic solutions for over a century. Dr. David Moser, PhD, Beng, BSc, MIET, Head of Research commented 'The maxon motors have operated flawlessly from the start, with great technical support from the maxon team during the design, development release phase.'

'As the motors and gearheads run on every step an active user can easily generate several million movements' Ian Bell, Senior Sales Engineer at maxon motor uk, said, 'To date we haven't had a

failure. The precise nature of the valve requires tight tolerances to be maintained, which we are set up to achieve. If the tolerances couldn't be maintained the motor would have to be larger, the product heavier and the battery life shorter'.

Ian has been working with Blatchford since the development of the first microprocessor controlled joint in the early 1990's . Then the valve motor in the artificial knee was 15mm diameter; in future it will be possible to do the same work with the new 10mm DCX .

Britain has a long tradition of prosthetics development and manufacture. maxon motor are proud of their involment in the industry and look forward to many more innovative developments improving the life of amputees.

YouTube:
http://www.youtube.com/watch?v=f7mqfdtQXP4&feature=player_embedded

About maxon motor

maxon motor is the world's leading supplier of DC motors, brushless motors, gearheads and controllers. We offer high quality, innovation, competitive pricing and highly specialised solutions.

Where are maxon motors used today?

Aerospace
Robotics
Medical science
Industrial automation
Instrumentation & inspection
Communication
Surveillance cameras
Automotive
Consumer applications

maxon's motors, gearheads, encoders, brakes and controllers are all perfectly compatible and offer an almost unending number of possible combinations. The maxon modular system gives the ideal combination for the required application.

For additional information, contact:

Karen Whittaker
Marketing
maxon motor uk
Maxon House
Hogwood Lane
Finchampstead
Berkshire RG40 4QW
Telephone +44 (0)118 973 3337
Fax +44 (0)118 973 7472
Email
karen.whittaker@maxonmotor.com
Web www.maxonmotor.co.uk