

Elke's test PM

Nature as a role model

Festo's Bionic Learning Network is once again providing new impetus for the automation technology of tomorrow at the 2014 Hannover Messe. With the "BionicKangaroo", the "DualWingGenerator", the "MultiChoiceGripper" and the "eMotionSpheres" flying objects, Festo is showing how principles from nature can inspire unique solutions for the future of automation technology.

The future fields of this year's projects from Festo's Bionic Learning Network include research activities relating to energy recovery, self-organization, adaptive systems, innovative drive concepts and positioning systems. The focus is on a holistic approach on the way to the production of the future. Fundamental technologies for networked overall systems and the interaction between man and machine are highly relevant.

BionicKangaroo - energy-efficient jumping kinematics based on a natural model

For almost two years, a team of developers from Festo's Bionic Learning Network worked on realistically reproducing the jumping behavior of the natural kangaroo and learning from it. The BionicKangaroo now demonstrates exactly what characterizes the natural kangaroo, namely recovering energy, storing it and using it again in the next jump. The Achilles tendon plays an important role in this, which is why it is particularly pronounced in the natural kangaroo. The function of the natural Achilles tendon is realized with the help of an elastic band made of rubber. It is attached to the back of the foot and parallel to a pneumatic cylinder on the knee joint. The artificial tendon cushions the jump, simultaneously absorbing the kinetic energy and releasing it for the next jump.

Condition monitoring and precise control and regulation technology ensure stability during jumping and landing. The kangaroo achieves its high jumping power with the help of pneumatics. Electric motors are used where maximum positioning accuracy is required - for example to control the tail and hips. With the artificial kangaroo, Festo demonstrates how pneumatic and electric drive technology can be efficiently and intelligently combined into a highly dynamic system using a new generation of control systems from Festo.

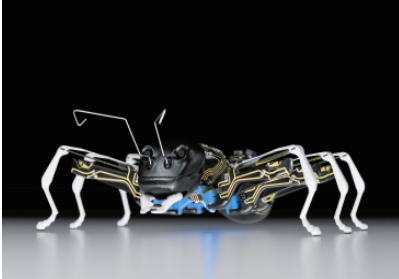
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BionicKangaroo

Like its natural role model, the BionicKangaroo can recover energy, store it and use it efficiently in the next jump. The BionicKangaroo can be controlled using gestures.