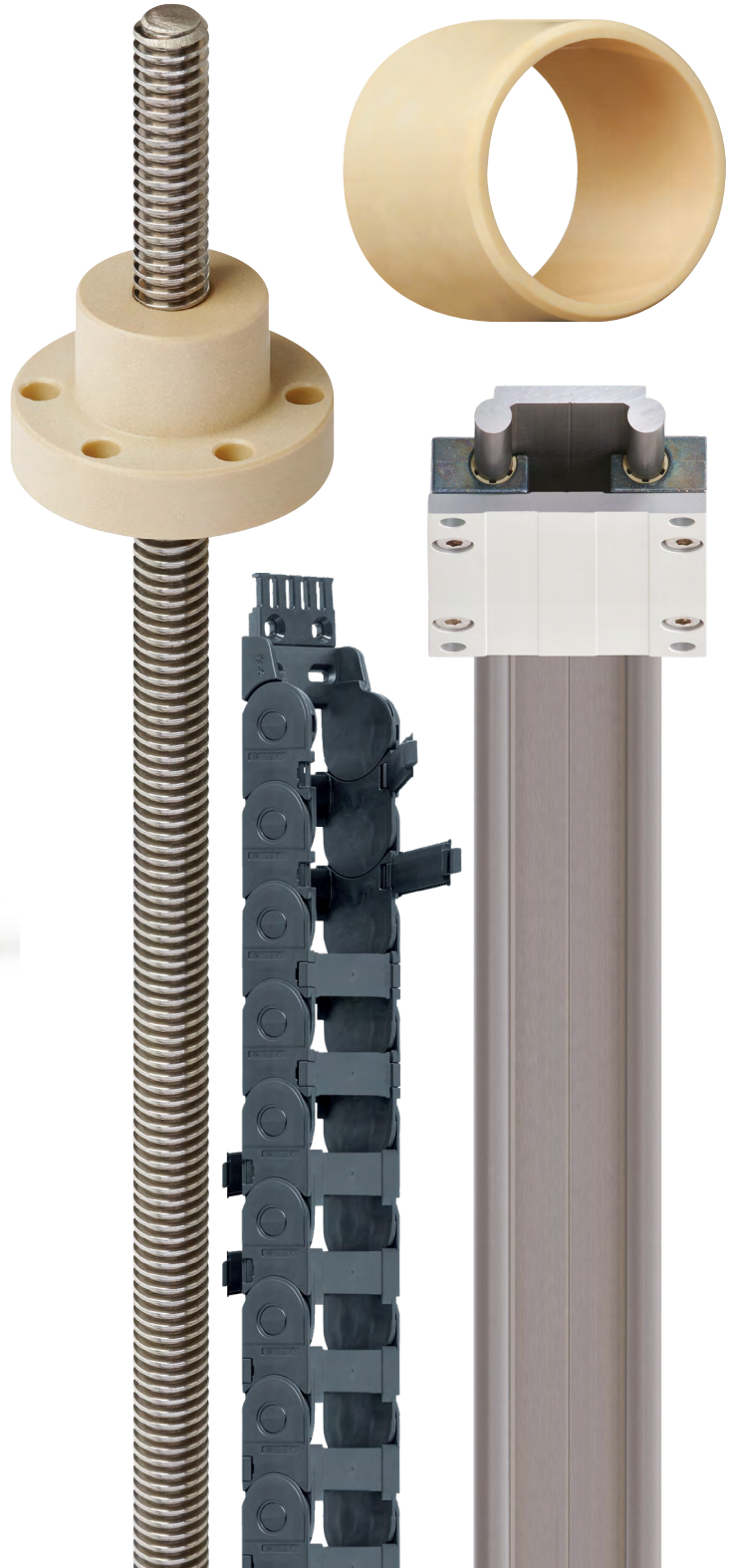


application

STORIES

Hygienic, dry-running plastic components for training robots

Swiss company Dynamic Devices AG develops and manufactures robotic systems for the sports and health sector under the brand name “ddrobotec”. The robots promise the user’s physical fitness, strength, balance, and walking speed in a playful and motivating way. Grease-free and maintenance-free plastic components from igus® play a key role in this.



Overview

- What was needed: dryspin® trapezoidal lead screw assemblies, iglide® plain bearings, drylin® shafts and linear guides, e-chain® cable carriers.
- Requirements: 100% grease-free and maintenance-free, dirt and dust resistance, robustness, long service life, quiet operation.
- Success for the customer: The igus components used meet all application requirements and have been used in the training robot for over 10 years without any complaints.



Problem

ddrobotec training robots are self-learning systems that adapt to the specific needs, fitness level, and progress of each user. Training takes place in a standardized environment in which training intensity, duration, and cognitive engagement are precisely measured and analyzed. Artificial muscles replace traditional weights and electric motors. Sophisticated control algorithms ensure smart load adjustment individually, in real time, and independent of the leg. The technology enables highly dynamic, performance-adapted strength training that can be finely dosed and is gentle on the joints.

In order to offer a maintenance-free and absolutely safe system. The designers at Dynamic Devices were looking for suitable components. The initial requirement was for a plain bearing solution without grease or constant lubrication, as dirt, dust and grime were constantly present.

Solution

When the designers first heard about the grease-free plastic solutions from igus, they were initially sceptical about being able to easily replace the previously used bronze nuts, metal recirculating ball bearings guides and brass parts with plastic alternatives. But tests were carried out and the results were so impressive that these concerns quickly disappeared.

Dynamic Devices then began to gradually replace more and more plain bearings and lead screw nuts with

igus components. It even went so far as to make design changes in order to be able to convert all of the previously used bearings to igus products.

In the training robots, trapezoidal dryspin lead screw assemblies, drylin W linear guides and shafts, iglide bearings, and a miniature e-chain cable carrier were all used. The iglide bearings and dryspin lead screw nut are made with wear-resistant, high-performance polymers and are 100 percent grease-free and maintenance-free.

Two spindle systems with a linear guide were used for the seat adjustment and for additional safety precautions. Hard anodized aluminum was used as the rail material for the drylin W linear guides, which ensured the best possible friction and wear results were achieved. The absence of grease made the linear guide system extremely resistant to dirt, and its cleanliness also made it suitable for applications in clean and hygienic environments such as hospitals and rehabilitation centers.

In addition to standard products, ddrobotec also received a lead screw assembly custom-manufactured according to the customer's individual requirements.

"The decision to rely on igus is based not only on the excellent products, but also on the high level of commitment. The people in charge at igus were always very committed, interested, customer-oriented, and ready to try out new things, constantly trying to find a solution together with us."

-Raja David, CDO, ddrobotec

