igus GmbH (2006-02-02)

Plastic plain bearings for artificial intelligence

igus is sponsoring the robot football World Cup in Bremen
Get the round object in the rectangular hole is the motto of the 10th RoboCup 2006. The robot football World Cup is taking place at the same time as the "real" football World Cup between 14th and 20th June at the Bremen Exhibition Centre. Around 2,000 engineers and computer scientists will be gathering to find their world champions. Organisers expect more than 100 teams from 50 countries to enter. Pioneering technologies which prove themselves here have excellent prospects of being used in other fields, too. igus GmbH, official sponsor of the robot World Cup, is providing all participants and applicants as well as other interested parties with plain and spherical plain bearings free of charge for all movable robot parts.

The "RoboCup" is much more than 'just' a robot football World Cup. The international initiative was founded in 1995 specifically to support research in the fields of "artificial intelligence" and "autonomous, mobile robots". In this competition, a direct comparison is made under relevant practical conditions between the very latest developments. The results benefit the work of all the teams. The knowledge gained here will help to make our future lives even easier by using robots and advanced systems of automation.

Plastic technology advancing
Japanese scientists working with the famous Professor Takao Someya at the University of Tokyo have now developed a new electronic skin which is reputed to allow robots to perceive differences in pressure and temperature like humans. Plastic plays the main role here, too: The artificial skin is made from two layers of a thin plastic film.

Maintenance-free and movable - www.igus.de/robo-lager
Robot football World Cup: To guarantee the robot footballers lubricant-free movement in all situations, it makes sense to use lightweight polymer high-tech plain and spherical plain bearings. All RoboCup participants and other interested parties now have the possibility of ordering free plastic plain and spherical plain bearings from the sponsors igus under www.igus.de/robo-lager. They can be used for all movable robot parts such as feet, knees, hips, elbows or shoulders. igus' experience in the field of artificial joints, such as knees, is a real help to the robot designers. Gentle, non-jerky movements under load and impacts can be achieved excellently using plastics. The company will help quickly and directly with any technical questions on the phone.

Automation: Energy chains are robots' lifelines
As an energy chain specialist, igus has been building up comprehensive know-how in the field of humanoid and industrial robot systems for years. In cooperation with the Fraunhofer Institute, for example, the company presented Germany's first "housewife robot" at the Hanover Fair two years ago - equipped with an igus plastic energy chain. Several hundred robots fitted with the three-dimensional energy chain "Triflex R" are also already working in heavy-duty day-to-day industrial applications. As the lifeline of cutting edge machinery in the robot field, "Triflex R" transports data and power safely in the automotive and packaging industries, the chemical/pharmaceutical sector, semi-conductor industry as well as in general fields in complex automated or technical handling applications.

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Optical detection: FireWire cable for goal-getters
igus developed the world's first FireWire cable for energy chains in the automation sector at the beginning of last year. In the field of image reproduction processes, the "Chainflex CFBUS.055 FireWire" cable makes energy chain applications possible with a transmission rate of up to 400 MBit/s. What's good enough for monitoring production quality is also a great help to the fast left winger in the RoboCup team.

Polymer technology for autonomous mobile robots
igus has been carrying out polymer research in its own laboratories for more than 40 years now. The company specialises in plain, spherical plain and linear bearings, among other things, as well as special components made of high-performance polymers. The Cologne-based company also supports national and global research projects in order to examine the multiple technical advantages of lubricant-free bearings in practice. Renowned international projects, such as the RoboCup, demonstrate where new applications are already being found for maintenance-free polymer bearing technology. Incidentally, the RoboCup organisers have the ambitious aim of letting the robots play in the World Cup, according to official FIFA rules, against humans by 2050 - and think they'll win…

University of Graz: Plain bearings rather than ball bearings
A prototype using igus plastic bearings took part in the European robot football championships under real playing conditions in Paderborn in 2005. The inventors of the football-playing robot, students of mechanical engineering at the University of Graz, decided in favour of the "option of using a plain bearing in place of a needle bearing". The wheel turning units for the drive run in a plastic bearing integrated in the robot frame. The young researchers at the University of Graz report that "thanks to the use of a plain bearing, the arrangement is particularly compact and requires little maintenance." What is more, space inside the robot is limited (in this case, by the RoboCup rules), so that the design space required by a ball bearing would have had too much influence on the kinematics.

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