



CASE STUDY

HYDROGEN-POWERED VEHICLE

APPLICATION OVERVIEW:
igubal[®] plastic rod end bearings and iglide[®] plain bearings in a hydrogen-powered vehicle

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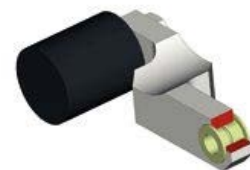


Plastic bearings are a crucial part of the design

This hydrogen-powered vehicle successfully completed a 1,864 mile-long European tour in 2004. The vehicle required only 7.3 lbs of hydrogen to cover the distance between Berlin and Barcelona. This corresponds to 3.2 gallons of gas and a consumption of 0.1 gallons per 62 miles. A prerequisite for the world-record attempt was to save as much weight as possible and, at the same time, to guarantee the reliability of the system. A crucial design engineering detail was rod end and plain bearings from igus[®], which have a low mass and ideal mechanical properties.

Record-breaking vehicle

The vehicle's entire steering system used spherical bearings. The steering linkage alone uses 14 spherical bearings. This had involved a weight of around 6.2 lbs with conventional metallic spherical bearings. igubal[®] rod end



bearings with a male thread are maintenance-free, provide a dry operation and are lightweight. They are resistant to dirt and dust. The steering system is lighter by over 3.3 lbs, which corresponds to an extended range of around 62 miles.

High speeds

The fast rotary motions of the mounted shaft take place directly in the bearing ball, which is made from iglide[®] L280. This high performance, maintenance-free plastic ball is an important

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advantage for the bearing, as it possesses all the usual advantages of iglide® polymers. Maximum rotational surface speeds reached are up to 1.6 ft/s. The bearing elements also permit linear shaft movements.

Dirt-resistant and space-saving

The HTD belt connects the rear wheel and the engines with one another and is tightened with a tension pulley. This needed to be insensitive to dirt, as it is close to the ground. iglide® W300 plastic plain bearings were used, because they have a high compressive strength, are maintenance-free, vibration dampening and insensitive to dirt. They also have very low coefficients of friction and extremely high wear resistance.

More on applied products here

[igubal® overview](#)

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[iglide® L280](#)

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[Plastic bearings - applications overview](#)