Urmel's lubrication-free return to the ice

igus polymer plain bearing technology helps amphibious vehicles to travel 4,000 kilometres under the most adverse conditions

Defrosting glaciers and declining fish stocks are just two examples of the effects of climate change in Alaska. In order to raise awareness of the issue among the population and to promote alternative drives, the Hoepner brothers from Berlin are developing their amphibious vehicle "Urmel". They want to travel across Alaska with it. In order for Urmel to be able to drive over hill and dale and ice and snow, light and wear-resistant bearings are required. With the support of igus, the young inventors opted for lubrication-free iglidur tribo-polymers.

Adventure and inventiveness are in the blood of the brothers Paul and Hansen Hoepner. In 2012 they cycled 13,600 kilometres from Berlin to Shanghai. In 2015, they travelled around the world in just 104 days, without any money, without contacts and without social media. With the self-designed and pedal-operated amphibious vehicle "Urmel", the brothers now want to cross a distance of 4,000 kilometres in Alaska within six months. "Urmel is designed in such a way that it can drive off-road, over slopes, snow and ice, open country and rivers. Urmel can also float, roll and run", explains Paul Hoepner. Extreme conditions, especially for the bearing points: metallic bearings quickly proved unsuitable because they are heavy and require lubricants that wash out when they come into contact with water and seep into the environment. Dirt could also stick to the lubricant and block the bearing. Wear-resistant iglidur plain bearings and thrust washers made of high-performance polymers are therefore the optimal solution. Their lubrication-free quality and low weight were decisive criteria for use in Urmel.

Wear-resistant special solutions made from tribo-polymers

The special design of the Urmel chassis also requires wear-resistant bearings as special solutions. This is why the Hoepner brothers decided on plain bearings and bar stock from igus. "We were able to turn thrust washers and flanged bushings ourselves out of the high-performance polymer iglidur J, which are used in the suspension of the main axis, the pedals or the tie rod," explains Paul Hoepner. In addition to its lubrication-free quality, iglidur J is characterised above all, by its low coefficient of friction. The inventors also banked on the iglidur plain bearings made of the all-rounder material iglidur G in the steering, in the wheels, in the bearing of the drive cables and the drive shaft. In order to be able to mount the gearshift in a narrow installation space with least wear resistance, the inventors relied on the igus liners. The wear-resistant tribo-tape made of the FDA-compliant material iglidur A160 reduces the friction of the metal parts and therefore the drive energy.

Support wanted

Amongst other companies, igus supports the project of the young inventors from Berlin. The two Hoepner brothers are currently looking for further sponsors so that Urmel can start its journey through Alaska next year. Even private individuals can take Urmel a bit further into the ice by donating as little as five euros.

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ABOUT IGUS:

igus GmbH is a globally leading manufacturer of energy chain systems and polymer plain bearings. The Cologne-based family business has offices in 35 countries and employs around 4,150 people around the world. In 2018, igus generated a turnover of 748 million euros with motion plastics, plastic components for moving applications. igus operates the largest test laboratories and factories in its sector to offer customers quick turnaround times on innovative products and solutions tailored to their needs.

Caption:

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iglidur plain bearings will ensure a lubrication-free and maintenance-free journey of the Urmel amphibious vehicle across Alaska. (Source: igus GmbH)