

Strength in nature: Bionic design fortifies igus plastic bearing solution

New igubal bearings are a maintenance-free, economical alternative to classic cast housing bearings.

Nature can provide engineering with great inspiration: The shape of the new igubal pillow block bearings is based on the design of a tree. Flattened radii ensure maximum strength against mechanical stresses, like a tree's base. Thanks to this bionic shape, these lubrication- and maintenance-free high-performance plastic housings are a real alternative to classic cast housing bearings.

Whether used to deflect rollers for conveyor belts in a cement factory or in tilting mechanisms of trailers on the farm, cast housing bearings with metal ball bearings ultimately reach their limits in dusty, wet and dirty environments. Heavy contamination and a lack of lubrication are responsible for 80% of premature bearing failures in these applications. And there is a constant risk of corrosion to metal, all strong reasons to replace the ball bearings with lubricant-free bearing inserts made of high-performance plastic. igubal polymer pillow block bearings, available in standard sizes of 20, 25 and 30mm, allow fast, one-to-one replacement. Also available are two- and four-hole flange stops in sizes 20, 30 and 40mm.

Mimic the tree: Rounding ensures uniform stress distribution

igus engineers are pursuing two strategies to ensure that the plastic pillow block bearings are sufficiently robust in industrial applications.

Firstly, they use fibres and fillers that strengthen the igubal plastic in such a way that it can withstand high surface pressures and edge loads even under continuous loads. Secondly, the design engineers are guided by a model from nature: the tree root connection, which can be found between the branches and trunk or where the tree trunk is firmly rooted in the ground. This design is seen as particularly efficient and robust. The designers have optimised the shape of the housing supports (collars) and removed the constant radii that

distribute the forces more evenly, making the igubal housing bearings highly resilient.

Thanks to their chemical resistance, corrosion-free property and insensitivity to dirt, the bearing inserts made of the material tribopolymer iglidur J already achieve a much higher lifetime than legacy metallic bearings in numerous customer applications. In addition, having no lubricants reduces maintenance and cleaning effort, and improves environmental protection. There are no lubricants at any point in the system that could leak into the environment or the product.

igus expands the igubal bearing range

These new high-performance standing housing bearings and flange bearings are not the only products where igus is expanding its igubal range. New to the range are three bearing inserts for imperial measurements, now available in 1, 1.5 and 2 inch (25.4mm, 38.1mm and 50.8mm) inner diameters. The price of the FDA-compliant plain bearing iglidur A350 will also fall by around 50% in the future. How? Because igus no longer manufactures the bearing exclusively using a turning process from semi-finished products, but now also uses more cost-effective, high volume injection moulding.

For the full igubal range <https://www.igus.co.uk/info/spherical-bearings-spherical-bearings>

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Caption: igus design engineers have based the robust and maintenance-free igubal housing bearings design on the supportive design of a tree root collar. (Source: igus GmbH).

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