

Tomorrow's mobility from yesterday's waste: igus unveils the world's first urban bike made from recycled plastic

No maintenance, no corrosion- the igus:bike sets new standards in sustainable mobility

Experts in plastic for motion, the company is making the engineering concept and key components available to all bicycle manufacturer via the new igus:bike platform. With its expertise in plastics for movement, the company is making the concept and components available to all bicycle manufacturers on the new igus:bike platform. The first model should be available by the end of the year.

The world is drowning in plastic waste. The huge piles in landfill sites are growing fast. Some of this plastic ends up in the ocean, enters the food chain, and becomes a danger to marine, animal and human life. Therefore it is most urgent to move away from the traditional linear economic model and migrate to a fully circular economy. To help this transformation, igus the motion plastics specialist has been developing and investing in ideas for recycling plastics for many years. The company is now presenting a world first at the Hannover Messe: The concept of a robust, durable urban bike made entirely of plastic, from frame to bearings to toothed belt. One special feature of this new bike is that the recycled version will be primarily made of reused plastics originally "single use". "The plastic in rubbish dumps around the world is becoming a valuable resource," explains Frank Blase, igus CEO. He first had the idea of a bicycle, now known as the "igus:bike", on a beach while on holiday. In conversations with employees of a bicycle rental company on the beach, he found out about their major problems with beach bikes. These were continuously exposed to sand, wind and saltwater and sometimes only lasted three months before they had to be replaced. Maintenance and replacement are often expensive and time-consuming in this industry.

"The igus:bike does not rust."

The igus:bike is easier to own than any other bike. Owners can leave the single-speed bike outdoors in all weather and clean it in seconds with a garden hose. "As all components are made of plastic, no part of the bike rusts, even the gears – bicycle gears made of plastic were unthinkable for a long time," says Blase. Lightweight, lubrication-free high-performance plastics are used in all parts of the bicycle, from two-component ball bearings in the wheel bearings to plain bearings in the seat post, brake levers and pedals. All of these components have integrated solid lubricants and ensure low-friction dry operation – without a single drop of lubricating oil. This ensures that sand, dust and dirt cannot accumulate.

These tribo-plastics from igus have been used successfully for a long time and are currently used in more than 70 industries: in automobiles, tractors and robots. And they have also had many fans in the bicycle industry for decades. They have been proving their worth there for a long time in such applications as mountain bikes and e-cargo bikes.

Innovation with experience from industry

In the igus development laboratories, eight developers are currently working on all moving components of the all-plastic bicycle. Ball bearings, brakes, sprockets, gears and drives are being coordinated by Andreas Hermeijer, the development manager for energy chains and in close cooperation with the bicycle start-up MTRL from the Netherlands. Tried and tested existing developments from igus were adapted to the new application. The result is smooth-operating, quiet, durable plastic components that give suppliers all over the world the opportunity to benefit from the igus:bike platform.

Platform for bike and component manufacturers

The new igus:bike platform offers bicycle manufacturers all over the world the opportunity to jointly advance this technology. The platform continuously shows the status and progress of all components and explicitly invites market players to participate. “We want to enable the bicycle industry to produce plastic bikes,” says Blase. The platform is intended to become a contact point for manufacturers who want to build a plastic bicycle and for all manufacturers of suitable components, such as plastic frames, wheels, drives, and pinions. The platform is already hosting initial corporate collaborations. One example is Helix.eco for recycled plastics. Many more will follow.

First functioning model is planned for the end of the year

Another partner is MTRL, a Dutch start-up that has successfully put 400 bicycles with plastic frames and wheels onto the Netherlands' roads. “Founders Johannes and Benjamin Alderse Baas are partners who share our vision completely,” says Blase, who is himself an investor in MTRL. “Together, we are refining the all-plastic bicycle.” The bicycle start-up will begin production and sale of a children's model and an adult bicycle for cities by the end of this year. The German launch will be in early 2023. Other versions, such as an e-bike, have also been planned. In the future, the all-plastic bicycle is to be available both in a variant made of new plastic and in one made entirely of recycled material. The first prototypes, successfully produced and tested, were made of material from old fishing nets, for example. The adult bike made of virgin plastic is to cost 1,200 euros. There will be a surcharge of 200 euros for the recycled-plastic variant. MTRL is planning manufacturing facilities near plastic landfills around the world. “From ocean plastics to motion plastics – the igus:bike concept has what it takes to become a high-tech ecological product,” says Blase.

“We have lots more ideas, such as installing condition monitoring using igus smart plastics. That would let you use your smartphone to see how many more thousands of kilometres the bike can take. That will hopefully convince many people who are still sceptical about plastic.”

Caption:



Picture PM2722-1

No corrosion, maintenance or lubrication: igus presents the world's first urban bike made from recycled plastic. (Source: igus GmbH)

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ABOUT IGUS:

igus GmbH develops and produces motion plastics. These lubrication-free, high-performance polymers improve technology and reduce costs wherever things move. In energy supplies, highly flexible cables, plain and linear bearings as well as lead screw technology made of tribo-polymers, igus is the worldwide market leader. The family-run company based in Cologne, Germany, is represented in 35 countries and employs 4,900 people across the globe. In 2021, igus generated a turnover of €961 million. Research in the industry's largest test laboratories constantly yields innovations and more security for users. 234,000 articles are available from stock and the service life can be calculated online. In recent years, the company has expanded by creating internal startups, e.g. for ball bearings, robot drives, 3D printing, the RBTX platform for Lean Robotics and intelligent "smart plastics" for Industry 4.0. Among the most important environmental investments are the "change" programme – recycling of used e-chains - and the participation in an enterprise that produces oil from plastic waste.

The terms "igus", "Apiro", "chainflex", "CFRIP", "conprotect", "CTD", "drygear", "drylin", "dry-tech", "dryspin", "easy chain", "e-chain", "e-chain systems", "e-ketten", "e-kettensysteme", "e-skin", "e-spool", "flizz", "ibow", "igear", "iglidur", "igubal", "kineKIT", "manus", "motion plastics", "pikchain", "plastics for longer life", "readychain", "readycable", "ReBeL", "speedigus", "tribofilament", "triflex", "robotlink", "xirodur", and "xiros" are protected by trademark laws in the Federal Republic of Germany and internationally, where applicable.