



3D

igus® solutions for 3D printing

plastics for longer life® ... igus

printing

... www.igus.com/3Dprinter ...

igus® solutions for 3D printers ...



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igus® can supply designers of 3D printing machines with their every need, from linear bearings and plain bearings to cables and cable carriers. In addition, we now offer a tribologically enhanced 3D printing filament, shipped from stock and with no minimum order quantities.

Complete 3D printer systems are being developed and manufactured world-wide for rapid prototyping. The automated, digital printing process uses DryLin® linear and drive technology, as well as E-Chain® cable carriers. Many development and design engineers for 3D printers and scanners are already relying on igus® technologies, and our products are incorporated into many construction kits and plans.

Quiet operation is one benefit of using linear plain bearings made from igus® motion plastics in 3D printers or scanners, since there is no mechanical rolling noise, compared with metal or ceramic balls.

igus® E-Chains® and flexible Chainflex® motion cables prevent cable failures, thus extending machine service life.

General advantages of igus® products are:

- Self-lubricating
- Silent operation and smooth gliding
- Long service life
- Corrosion-resistant
- Wide range of sizes and options
- Lightweight, easy assembly and cost-effective
- Available from stock

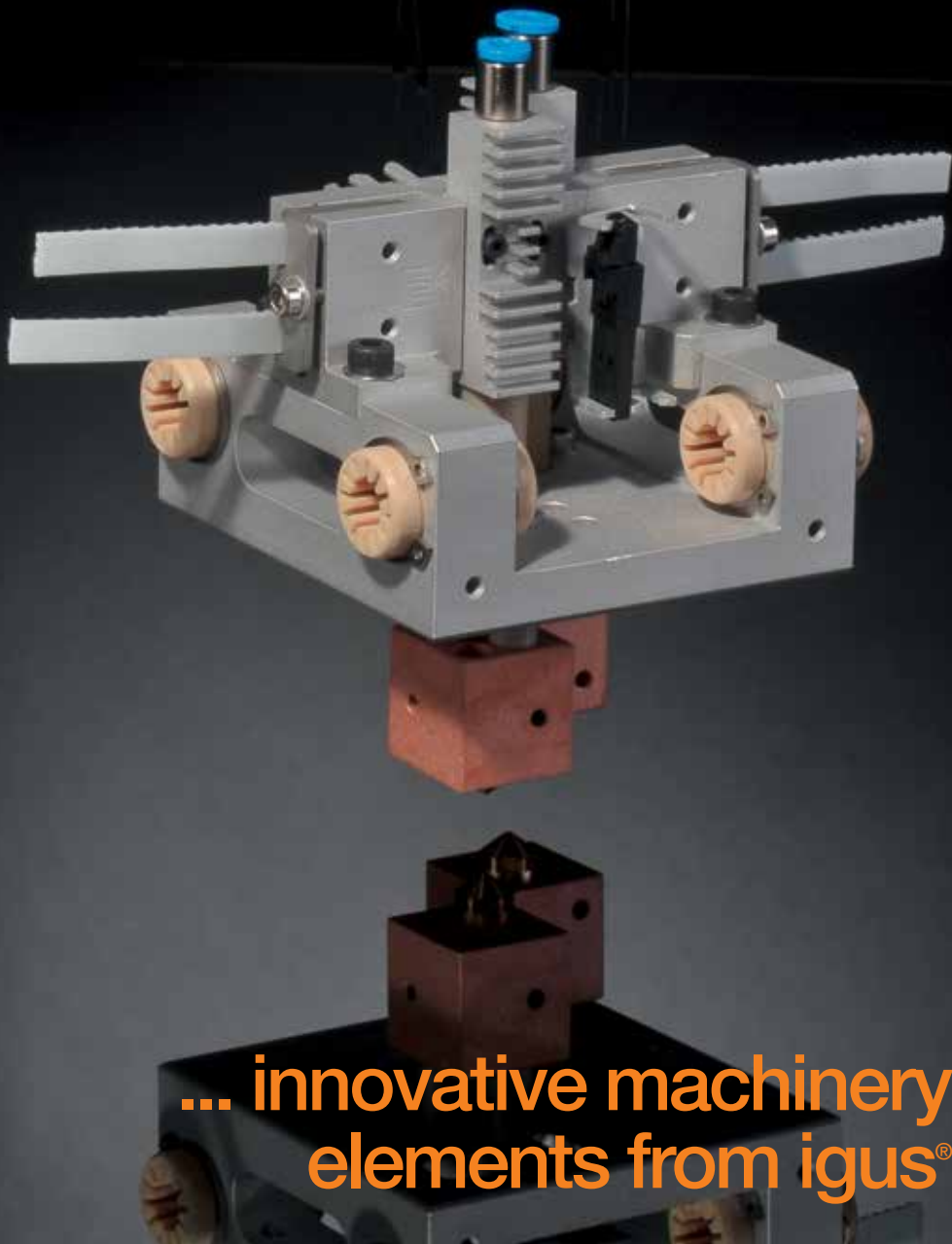
30 online tools also enable you to reduce **process costs**. igus® ships **from stock in 24-48 hours!** Also visit our industry website:

 www.igus.com/3Dprinter

We look forward to speaking with you.

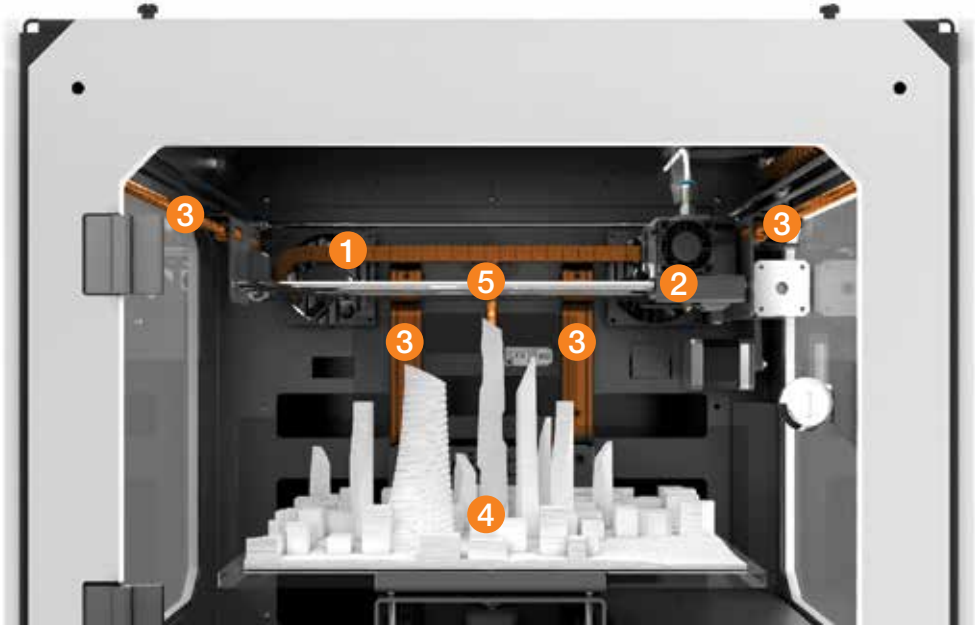


DryLin® R bearings ensure accurate distribution of the print material



... innovative machinery
elements from igus®

Self-lubricating vitamins for 3D-printers



Possible applications of igus® products in 3D printers:

- 1 Guide cables through the tightest bending radii:
igus® E-Chain Systems®
- 2 Low noise, light, and clean:
DryLin® R linear bearings for round shafts
- 3 Compact and low profile:
DryLin® linear guides
- 4 Abrasion-resistant, wear-resistant, tested:
iglide® Tribo-filament
- 5 Efficient, long service life, self-lubricating:
DryLin® SD lead screw units

Selection of igus® products for 3D printers:



1 E-Chain Systems®

E-Chains®, Chainflex® motion cables, connectors and accessories

► pages 6 and 15



2 DryLin® R linear guides

Linear bearings, aluminum housings and shafts

► page 6



3 DryLin® linear guides

linear guides in various shapes and sizes

► pages 6 and 14



4 iglide® Tribo-filament

50 times more abrasion-resistant than conventional 3D printer materials

► pages 7 and 12



5 DryLin® SD lead screw units

Self-lubricating plastic nuts and trapezoidal lead screws

► page 7



iglide® plastic bearings

Self-lubricating, high performance bearings with predictable lifetime

► page 14



igubal® spherical bearings

Self-adjusting rod-end, pillow block and flange bearings

► page 14



DryLin® drive systems

Ready-to-fit linear modules for manual adjustments or electrical positioning

► page 14

motion plastics

For 50 years, we have been driven by a single vision – motion plastics: Innovations from plastics that move machinery.

Our core technology is tribo-plastics – high-performance plastics that we optimize for friction and wear properties. This technology makes us a world leader in development and production of energy supply systems and plain bearings.

igus® solutions for 3D printers

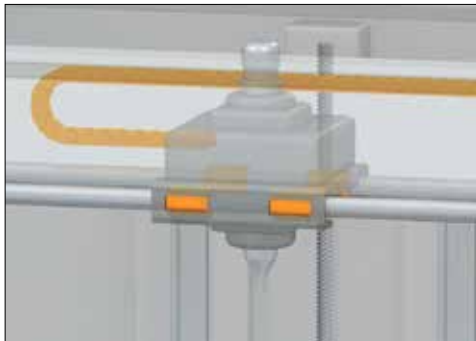


Cable guide for print head

igus® E-Chains®

- Solutions for tight bending radii
- Low weight, high speed

 www.igus.com/E2micro

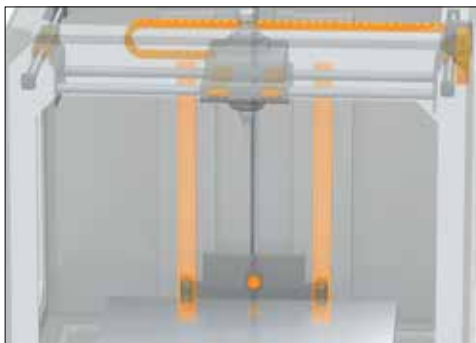


Linear movement of XY axis

DryLin® R shaft guides

- Superior operating properties, long service life
- Wear-resistant, and resistant to dirt
- Compatible with linear bushings

 www.igus.com/drylinR

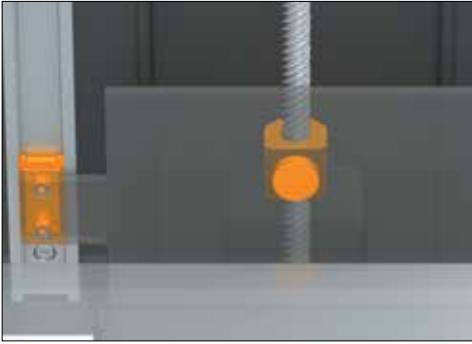


Height-adjustable Z axis

DryLin® linear guides

- Linear construction kit based on rails, linear bearings and carriages
- Light, clean, quiet
- Maintenance-free, dry-running operation

 www.igus.com/drylin

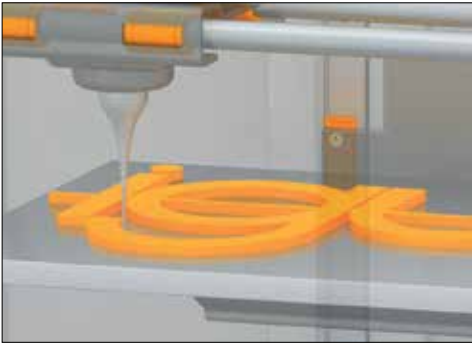


Print table/bed lowering mechanism

DryLin® SD lead screw units

- Trapezoidal or high helix thread
- High efficiency, long service life
- High speeds

 www.igus.com/drylinSD



Print material

iglide® Tribo-filament

- Wear-resistant
- Can be processed by commercially available 3D printers
- Choice of 2 materials

 www.igus.com/tribofilament

What do you get out of this?

- Self-lubricating for the life of the part
- Silent operation and smooth
- Long service life
- Wide range of sizes and versions
- Light, easy assembly
- Cost-effective
- Available from stock

... 100% self-lubricating

Successfully in use ...

3D printer manufacturer uses ready-to-install system solution

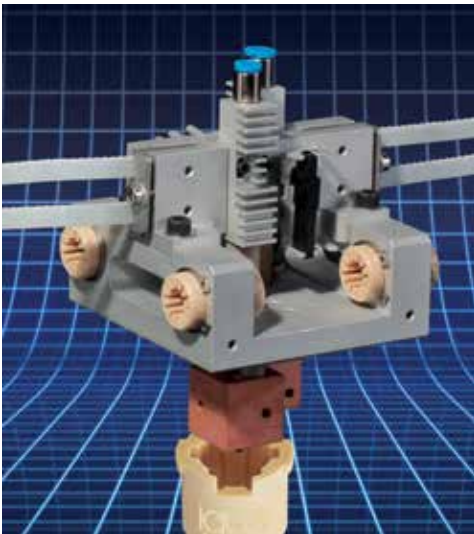
For both rapid prototyping or mass production – 3D technology provides a wide variety of options

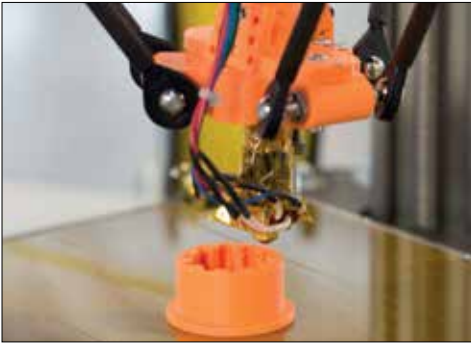
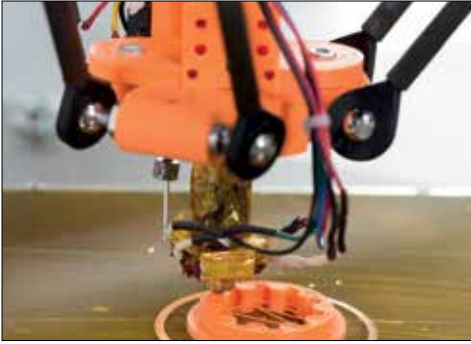
3D printers with dry running and maintenance-free plain bearings

Quiet operation is essential, as is the quality of the parts produced. In addition, contaminants from lubricated bearings can cause considerable difficulties if coming into contact with either the printed part or raw material. Plain bearings from igus® are made from high-performance plastics and run completely dry due to the integrated solid lubrication. The dry-running properties also render 3D printers maintenance-free, and increase operational reliability. Factors such as acceleration and positioning accuracy also play a role in 3D printers to accurately reproduce the product based on CAD models. Regardless of the travel, the DryLin® linear guides can be used in combination with either slow or fast movement.

Everything from a single source: system solutions for the 3D print industry

Additionally, igus® E-Chains® ensure that connection cables are supported during the computer controlled print process. Due to their low-profile and tight bending radii, the Micro Chain series are particularly suited for dynamic applications in any direction of movement on 3D printers. As is the case for linear plain bearings, the Micro Chain series also have a very low weight. The Chainflex® control and power cables guided in these chains are specifically designed for continuous motion applications, guaranteeing a long service life for 3D printers. Combined with motorized DryLin® linear axes, which include motor flanges, couplings, and DryLin® electrical stepper and DC motors, igus® is able to supply a fully complete, ready-to-install operating unit from a single source.



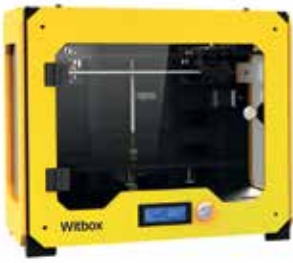


The print head and cables on this Delta 3D printer are guided by DryLin® SAW linear axes, igubal® spherical joints, and a Triflex® R E-Chain®.



Precision printing even after extended use: igubal® spherical joints and DryLin® linear bearings in this 3D printer.

In use ... successfully ...

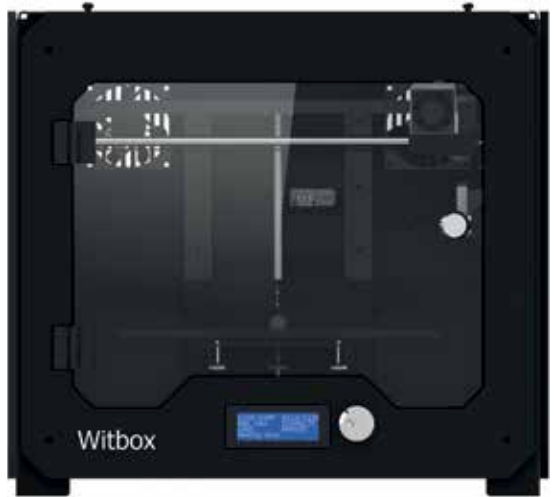


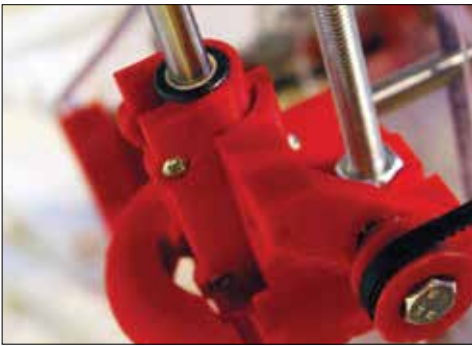
E-Chains® and DryLin® low-profile linear slides with lead screw drive systems unit in a 3D printer

The Witbox 3D printer combines technology in an aesthetically compact housing, and relies on self-lubricating products from igus®. These components perform important tasks for each print process and ensure reliable operation.

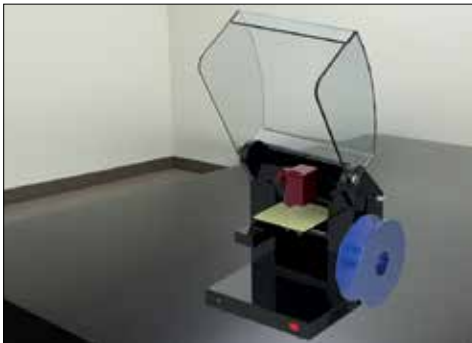
DryLin® N low-profile guides and DryLin® SD lead screw units perform the height adjustments. Using a black anodized profile, the DryLin® N carriage ideally integrates into the design of the 3D printer. The E045 E-Chain System® reliably guides all connection cables during travel. Similarly, DryLin® R linear slides guide the print head.

All components are completely self-lubricating, travel accurately, are very quiet, low in weight, and corrosion-resistant.





Accurate printing of 3D plastic models: DryLin® linear guides and iglide® plain bearings in use at high speeds.



Speed and positioning accuracy are the most important technical factors in this 3D printer. This is precisely the function of the DryLin® guide rails and iglide® plain bearings.

A small **yes** with big impact

Our **young engineers support** program donated a 3D printer to Otto-Hahn-Gymnasium in Bensberg to participate in a technology competition.

The students needed a specific wheel that allows their robot to travel in any direction. In August, the students from the Robot team are planning their second year entry in the *FIRST*® Lego® League robotics competition. Using the igus® sponsored 3D printer, the students were able to fabricate the missing wheel on their own. Learn more by visiting:

 www.igus.com/yes



Tribo-filament for 3D printing

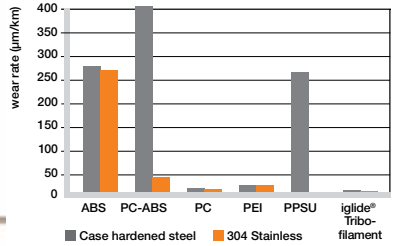


The first iglide® Tribo-filament for 3D printing

The new materials are **50 times more abrasion-resistant** than conventional 3D print materials. Going forward, the new filament will give customers even greater design freedom for their bearing requirements. Even prototypes can be produced quickly and at relatively low cost. The 3D models of igus® products already available on the igus® website in STL format can be directly downloaded and used as input data for 3D printing.

- Wear-resistant
- Can be processed by commercially available 3D printers
- 1.75 mm and 3 mm thickness available
- Choice of 2 materials: iglide® I170-PF (yellow, superior wear-resistance, for large feed radii) and iglide® I180-PF (white, flexible, also suited for tight feed radii)

 www.igus.com/tribofilament

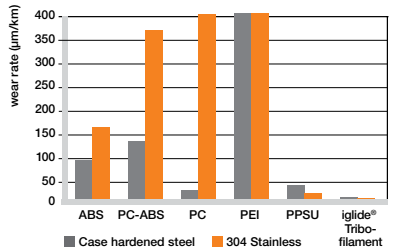


Materials table iglide® I170-PF

Color	yellow
Max. moisture absorption at +23°C and 50 %r.h.	0.5 weight-%
Max. water absorption	1.6 weight-%
Max. long-term application temperature	+167°F
Max. short-term application temperature	+185°F
Min. application temperature	-40 °F

Processing instructions

- Nozzle temperature: ~ 392°F (200°C)
- For large material feed radii (R min. 50 mm)
- Good ventilation should be provided during processing
- When heated above 572°F (300°C), hazardous fumes are produced



Materials table iglide® I180-PF

Color	white
Max. moisture absorption at +23°C and 50 %r.h.	0.3 weight-%
Max. water absorption	0.9 weight-%
Max. long-term application temperature	+176 °F
Max. short-term application temperature	+194°F
Min. application temperature	-40 °F

Processing instructions

- Nozzle temperature: ~ 428°F (220°C)
- For tight material feed radii



100% external lubricant-free



iglide® and igubal® bearing technology

Wear-resistant plastics, tested by the thousands, proven by the millions: iglide® plain bearings and igubal® spherical joints from igus® are self-lubricating, maintenance-free, cost-effective, predictable, and versatile.

- Predictable service life
- Customer-specific solutions possible

 www.iglide.com  www.igubal.com

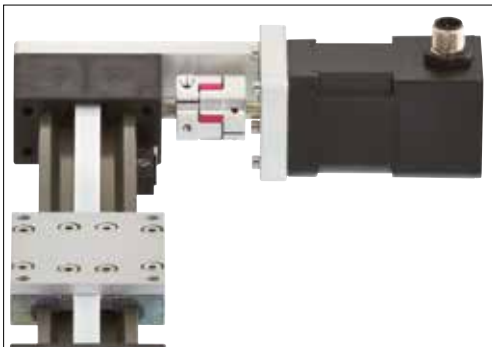


DryLin® linear technology

The self-lubricating and maintenance-free product range for DryLin® linear technology includes 5 differing types, all with various benefits.

- DryLin® T as alternatives to conventional recirculating ball bearings
- DryLin® N low-profile guides for confined installation spaces
- DryLin® W as universal linear construction kit with many profiles and carriage versions
- DryLin® R supported shafts – compatible with standard spherical bearings
- DryLin® Q torque-resistant square guides
- DryLin® SD lead screw drives, self-lubricating, quiet and for all speeds

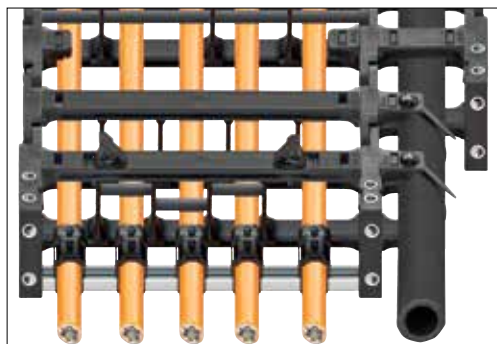
 www.igus.com/drylin-linear



DryLin® drive technology

- Complete linear axis with lead screw drive (trapezoidal or high helix thread) or toothed belts
- Choose your own stroke length
- For manual adjustments or electrically with motor (NEMA/DC)

 www.igus.com/drylin-drive



E-Chain Systems® and accessories

100,000 varieties from stock. E-Chain Systems® reduce down-times and increase the service life of cables and hoses.

- A wide range of versions and sizes
- .20" -13.78" (5 - 350 mm) inner height
- For all types of applications and installation methods

 www.igus.com/e-chains

Available from stock


More than 97% of our catalog of parts are available from stock. Find detailed information about our delivery times online.

 www.igus.com/24



Chainflex® motion cables®

More than 1,040 types from stock – suitable for very small bending radii, highly wear-resistant jacket materials (PVC, TPE, PUR), halogen-free and/or flame-retardant, various certifications and standards (e.g. UL, CE, CSA, Desina, cleanroom). Including guarantee options.

 www.chainflex.com

... proven by the millions

Plastics for longer life®



igus® at a glance

igus® has been manufacturing motion plastics for 50 years. From its start in a garage in Cologne, Germany, igus® operated as a supplier of complex custom components. Today, igus® is an important supplier of motion plastic solutions, with lines of cable carrier and motion cables as well as self-lubricating bearings and linear systems.

With more than 2,400 employees and a network of 35 subsidiaries and dealers in more than 55 countries, igus® has a global footprint.



Modern and economic molding technology

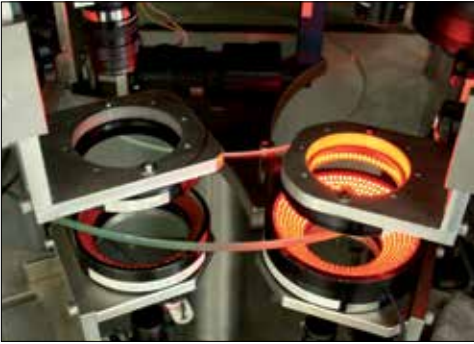
igus® utilizes high-tech solutions that are also cost-effective. Modern injection molding technology allows more than 7,000 standard and countless custom components to be manufactured with high precision and quality.



The igus® quality promise

igus® always aims to objectively identify and meet customers' needs, and to maintain its reliability and competency as supplier. Always committed to producing products of the best possible quality and consistently developing innovative solutions is what igus® continues to stand for year after year.





Extensive test database

More than 15,000 tests are run on iglide® bearings each year in the igus® test lab in Cologne, Germany. Results from these tests have been compiled, to develop what is possibly the world's largest database for the tribological, or low-friction properties of plastic bearings. This database allows igus® to help select the bearing with the best price/performance ratio for any specific application.

Better for the environment

Because iglide® is free of external lubricants, no contaminants are discharged into the environment. Additionally, the low weight of iglide® plastic plain bearings reduce power requirements, making them better for the environment.



igus® plastics for longer life®

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Home > 3D Printing machine

Solutions in 3D Printing machines


igus® gives designers of 3D printers access to a wide variety of linear technology, plain bearings, energy supply chains and lead screw units - always completely lubricant-free, shipped from stock in 24 hrs., and with no minimum order required.

3D printers use computer controls to print three-dimensional components. Complete printer systems are being developed and manufactured world-wide for rapid prototyping and for mass production. The automated, digital printing process uses DryLin® linear and drive technology, as well as Energy Chain® energy supply systems. 3D printer and scanner design engineers are already relying on igus® technologies, and igus® components are incorporated into most designs on the market.

Quiet operation is one benefit of using linear plain bearings made from high-performance plastics in 3D printers or scanners, since there is no mechanical rolling noise, as is the case with metal or ceramic balls.

igus® Energy Chains® and flexible, Chairflex® compatible cables p...

Your contact


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➤ Your requirements?

➤ Subscribe to e-newsletter
➤ Contacts in your location (can be on-site within 24-48 hours)
➤ myigus
➤ myCatalog

Energy Chains

➤ Product Overview
➤ Product Selector
➤ Application examples

High precision

Easy to use

Quiet operation

Order

Product Selector

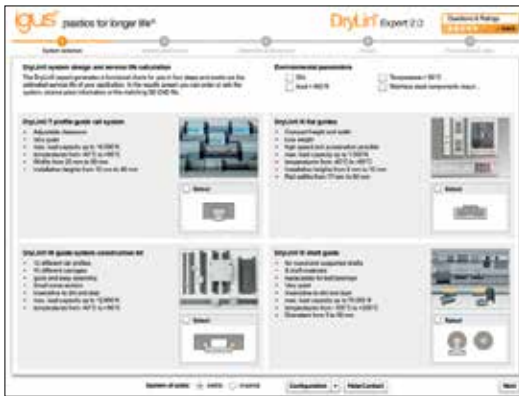
High precision

Easy to use

Quiet operation

Order

Product Selector



 www.igus.com/DryLin-expert

Configure and calculate linear bearings – constantly expanded with new sizes and products

- Calculate and configure the service life of your desired linear guide with only a few clicks
- Select a DryLin® system and add the relevant environmental parameters
- Product finder for all igus® product lines available online – quickly find the desired product, configure and calculate



**For all tasks -
in all batch sizes**

Different industries call for different solutions. Ranging from mechanical engineering, automotive assembly, to the robotics industry – igus® offers customized solutions for specific applications. igus® already has many years of experience and specialized resources for many industries.

 www.igus.com/industries

9001:2008

igus® is certified in accordance with ISO 9001:2008 and ISO/TS 16949:2009 in the field of energy supply systems, cables and harnessing, as well as plastic bearings.



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