



USSynthetic[®]
an Apergy company

For a free consultation, visit our website or call us at our headquarters

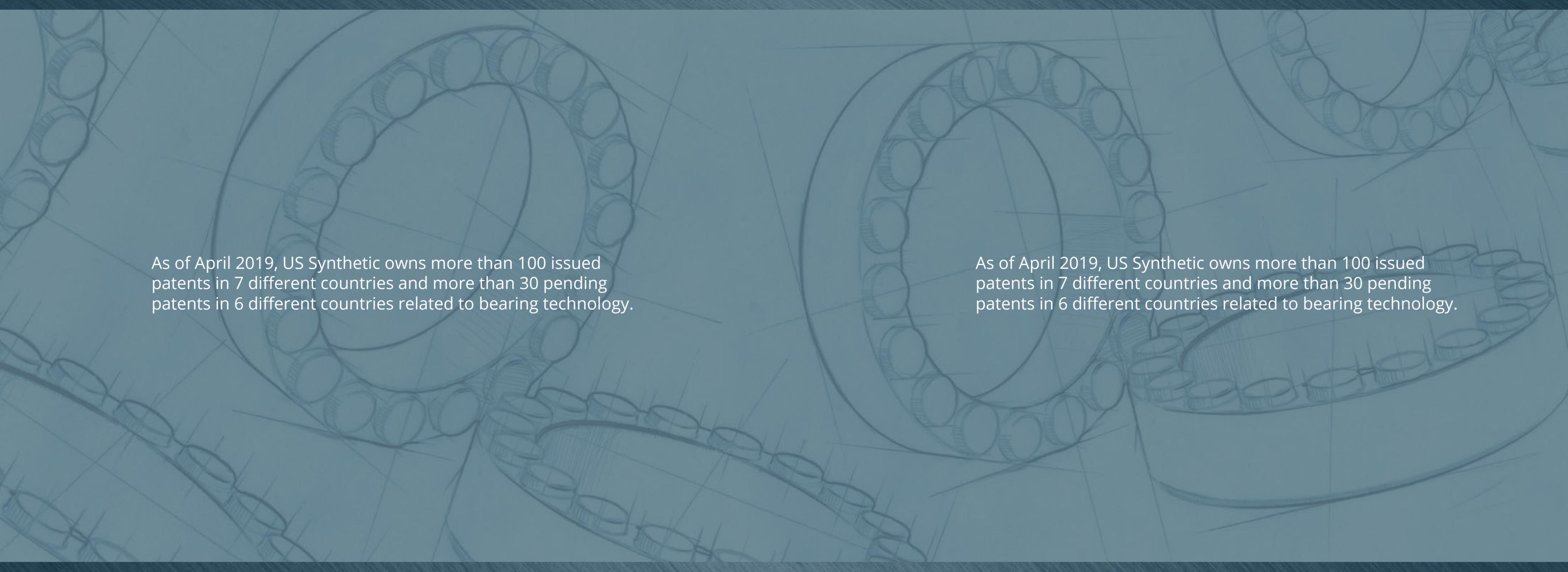
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The only Diamond Bearings you'll ever need.

The background of the entire image is a technical drawing of a bearing cross-section, rendered in a light blue, sketch-like style. It shows the outer ring, inner ring, and the balls held in place by a cage. The drawing is detailed, showing the geometry of the balls and the grooves in the rings.

As of April 2019, US Synthetic owns more than 100 issued patents in 7 different countries and more than 30 pending patents in 6 different countries related to bearing technology.

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Who **We Are**

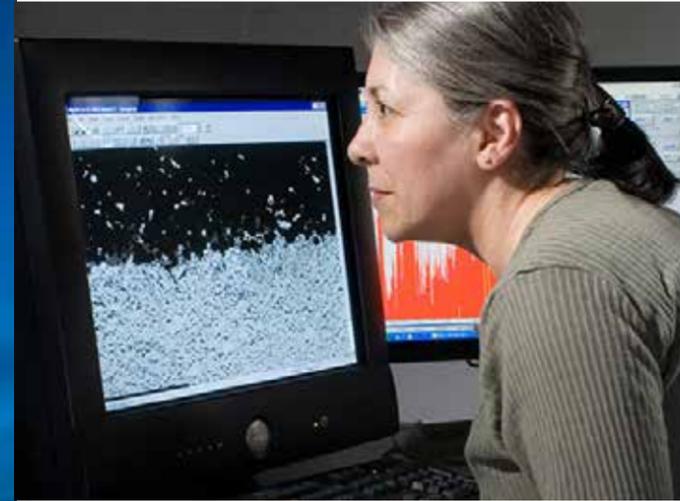
We're working hard to unlock energy and solve the most difficult engineering challenges you face. By teaming up at the wellsite and at the whiteboard, we're focused on fueling performance in the field.

We make durable, process-fluid-lubricated diamond bearings for use in down-hole drilling tools, oil field pumps, and other equipment used in harsh environments. US Synthetic—a 30-year industry veteran and a leader in the development and production of polycrystalline diamond cutters (PDCs) for oil and gas exploration and development—is a dedicated business division of Apergy.



In **the Field**

Harsh environments, abrasive-laden liquids, and mixed-phase fluids, in combination with parts that must run true are perfect applications for diamond bearings. That's why, US Synthetic diamond bearings have found application in turbo drills, mud motors, electric submersible pumps, and many other oil field applications.



Our **Promise**

We will deliver:

- Well-executed designs, based on the best data and methods available.
- Exceptional material and manufacturing quality.
- On-time shipments.
- Best possible product performance.
- Responsive customer service from design through the entire product lifecycle.



Thrust and Radial Bearings

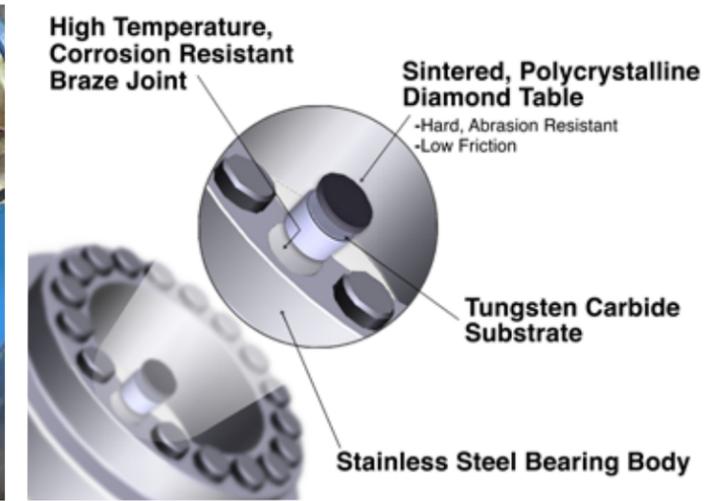
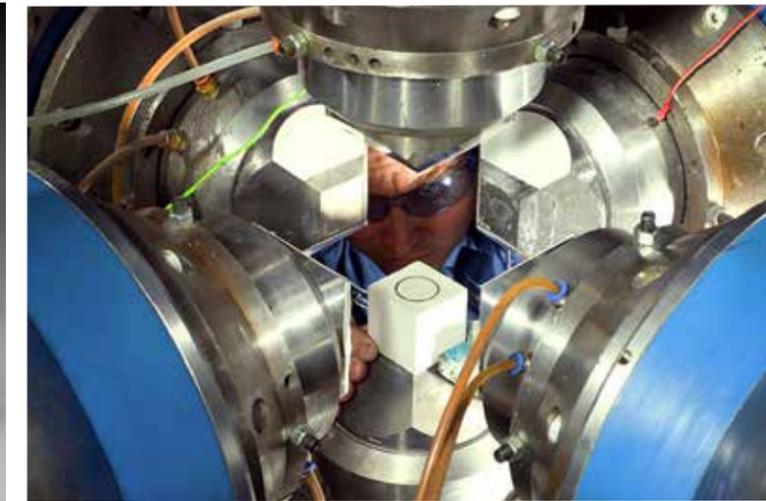
Typical applications for our thrust and radial bearings include mud motors, turbo drills, power generation applications, and rotary steerable systems. Diamond thrust and radial bearings provide the advantage of a simple bearing system that is robust and durable in a compact package. These bearings make an ideal replacement for mud-lubricated ball bearing, carbide-coated bearings, and sealed roller bearing systems.



Wear Parts

Diamond is the hardest known material. Tools and machine components that are in constant contact with abrasive surfaces or abrasive-laden fluids will benefit from the use of polycrystalline diamond.

Wear parts, such as: stabilizer wear pads, valve components and stems, etc., can all benefit from diamond technology.



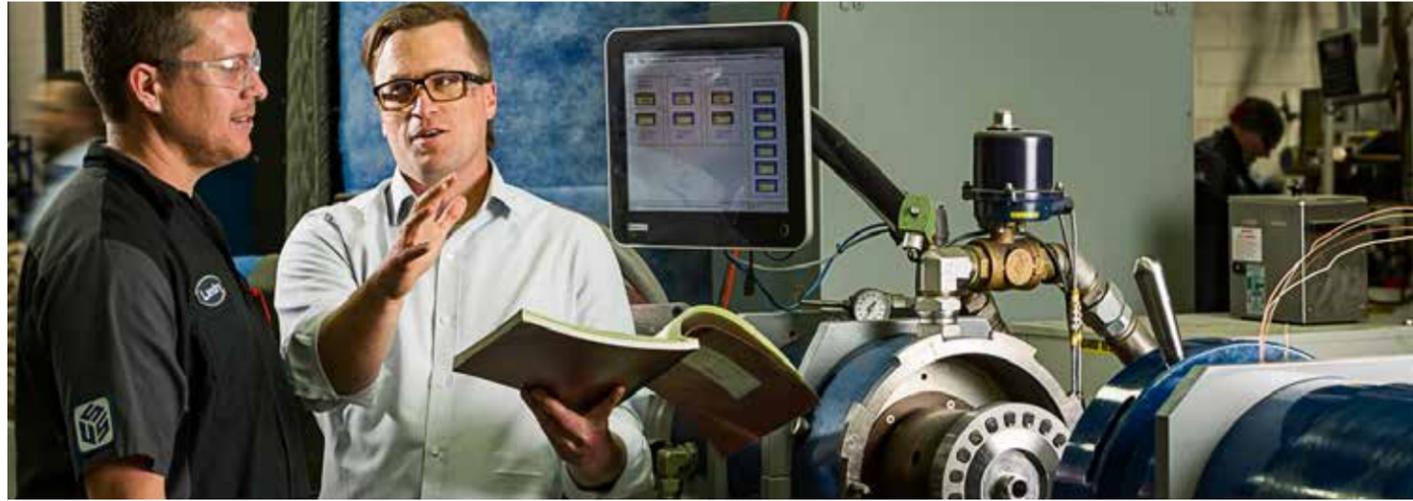
What is a Diamond Bearing?

Diamond bearings are extremely resistant to abrasion and provide bearing life that is 4 to 10 times longer than traditional tungsten carbide or other hard-metal bearings. A diamond bearing utilizes polycrystalline diamond pads that have been formed, machined, and placed using patent pending techniques to form a diamond radial or thrust bearing that runs smoothly on polished precision diamond surfaces.

Despite precision clearances, these diamond bearings can withstand the rigors of drilling-fluid lubrication and dynamic down-hole environments. Diamond bearings are finding application as near-bit bearing sets in mud motors and turbines. In these applications, bearing life has been extended and bearing reliability improved.

Diamond radial and thrust bearings have also found application in power generation and rotary steerable tools where bearing life has been at least tripled when compared to conventional tungsten carbide bearings. These bearings are available in sizes from 1 inch to more than 10 inches in diameter.





Why **Choose Us?**

We have a singular focus on innovation, using the best design methodologies and data available. We are committed to building quality parts that are delivered on time, every time. Our engineering teams are dedicated to providing superior customer service.

What we will deliver:

- Each bearing is designed from the ground up to meet specific needs.
- Our engineers use the best engineering practices, coupled with performance data from our own lab and test facilities.
- Each bearing is manufactured using exacting processes, process controls, and materials.
- Our bearings are finding success with some of the world's most demanding energy customers.
- Our bearings have lasted 4-10 times longer in some field applications.
- Our bearings provide a short, compact bearing section for more efficiency in directional drilling.
- Our bearings have been recognized by the industry as truly innovative.
- Our products use the best diamond material in the world, sintered and prepared at our manufacturing facility—specifically selected to function well as a bearing or wear element.

Our **Products**

Our diamond bearings and wear parts are custom-built to exact customer specifications. Each product is equipped with US Synthetic polycrystalline diamond (PDC) material that has been specifically selected to function optimally in each intended application. Our PDC material is the result of more than 30 years of diamond research and development in high pressure and high temperature sintering.

Our diamond bearings are unique in the large load / speed combinations that they can accommodate. Added to this benefit is each bearing's ability to operate in harsh drilling fluid environments—outlasting other conventional bearing systems by a large margin. Finally, our diamond bearings allow

customers to design bearing systems that can be compact, simple and robust. Fitting in a smaller package can make a big difference when drilling tool geometry or size is important (for example, the length of bent housings in mud motors). What's more, simplicity in bearing designs can make all the difference when reliability is important.

Our diamond bearings improve:

- **LIFE** - longer tool life
- **LENGTH** - compact and robust design
- **LOAD** - increased load capacity