

5 INDUSTRIES:

USING AIR BEARINGS TO DELIVER
DISRUPTIVE INNOVATION

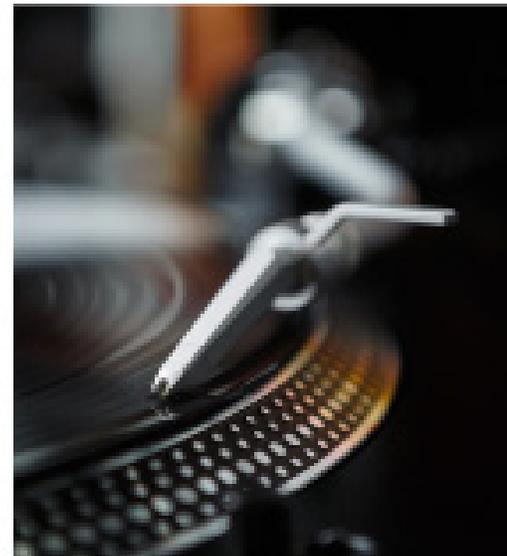


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In his seminal book, "[The Innovator's Dilemma](#)," Harvard professor and businessman [Clayton Christensen](#) describes the theory of "disruptive innovation." Disruptive innovation is spurred by the introduction of new, often unexpected technologies which better serve a new, existing or niche population of customers. [The Christensen Institute](#) describes [disruptive innovation](#) as ***"THE PROCESS BY WHICH TECHNOLOGY ENABLES NEW ENTRANTS TO PROVIDE GOODS AND SERVICES THAT ARE LESS EXPENSIVE AND MORE ACCESSIBLE, AND EVENTUALLY REPLACE—OR "DISRUPT"—WELL-ESTABLISHED COMPETITORS."***

His book serves as an encouragement to entrepreneurial technologists and a caution to even the most well-established organizations.

Perhaps the most critical element of disruptive innovation is an enabling technology.

New Way [porous media air bearings](#), represent such a technology. The non-contact operation provided delivers a broad range of benefits including zero-friction, zero-wear, high-speed, high-acceleration, straighter motion, as well as smooth and silent performance. Further, air bearings do not require lubrication, eliminating issues associated with oil.

This makes air bearings ideal for an array of linear and rotary motion applications, flat or roll-to-roll manufacturing; even sealing and balancing.

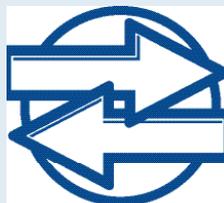
5 INDUSTRIES



Automotive Industry



Medical Industry



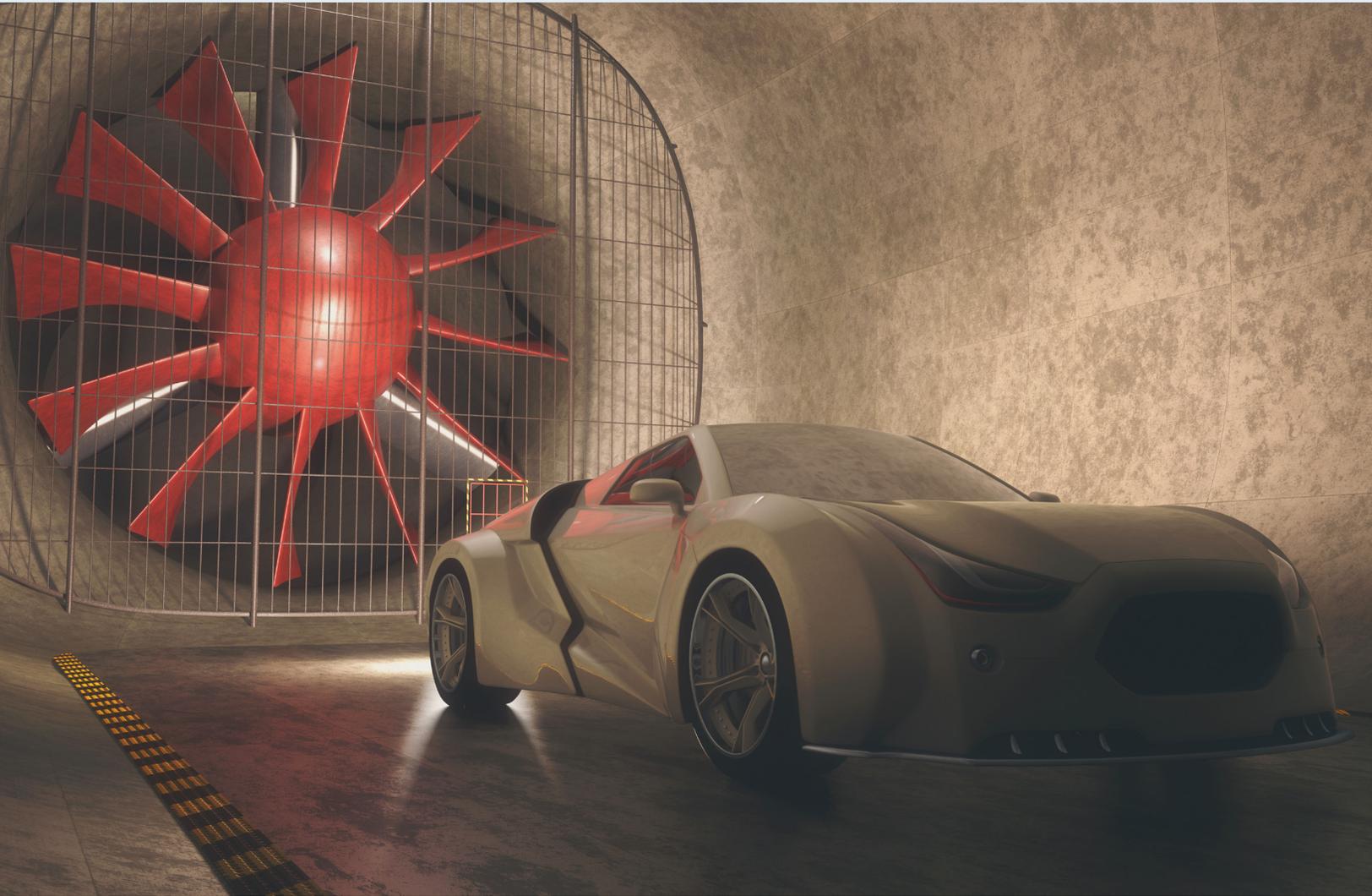
Converting Industry



Oil and Gas Industry



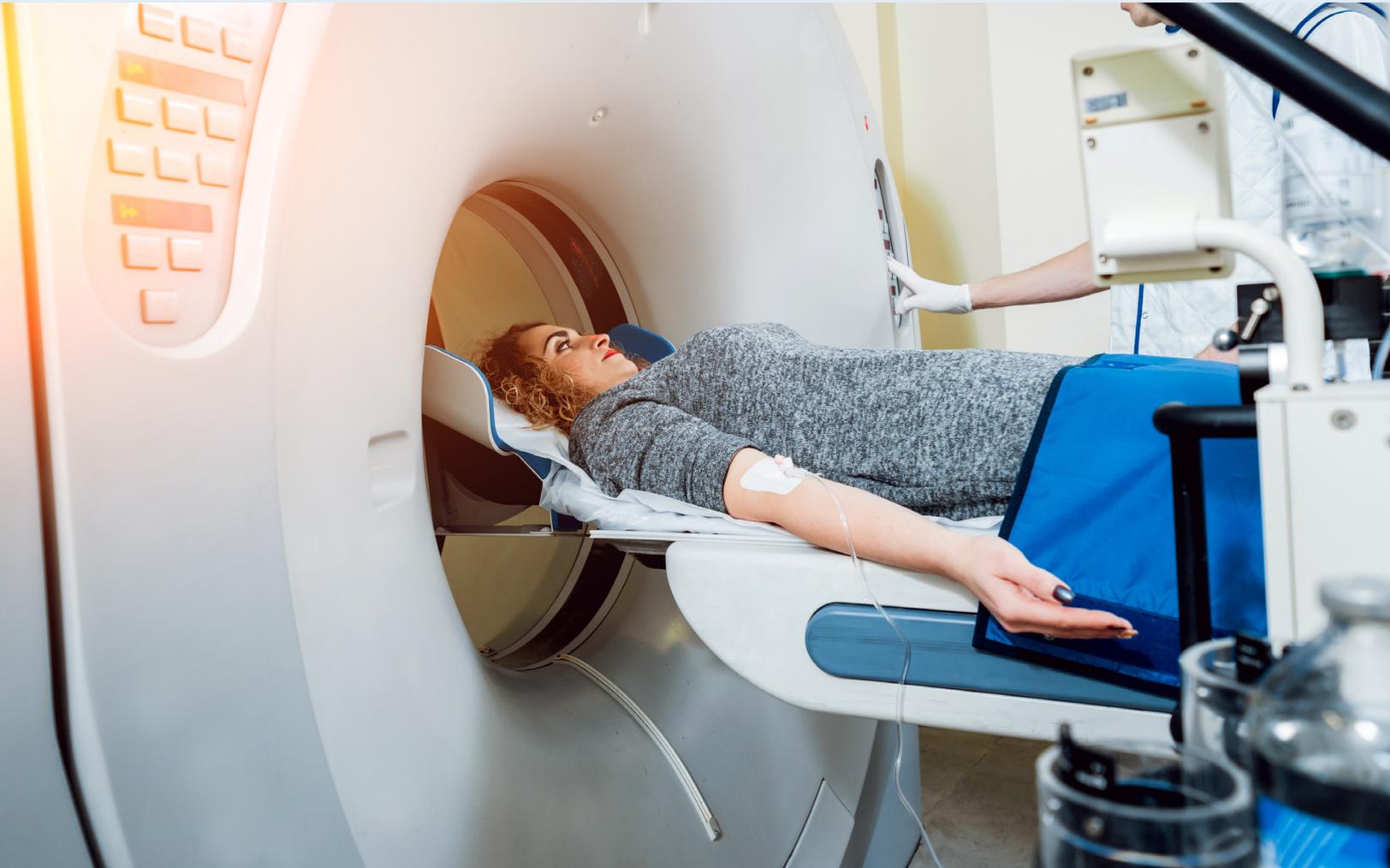
Audio Industry



Testing applications dominate air bearing usage.

New Way's 'sexiest' automotive applications are for wind tunnel testing, where air pressure, combined with vacuum pre-load, reduces friction beneath the massive conveyor belts on which the automobile 'rides.' The technical requirements of this [Rolling Road](#) application necessitated a custom product-set developed with heavy reliance on the New Way engineering team.

Beyond the wind tunnel, air bearings are used extensively in dynamic testing applications, where non-contact performance enables manufacturers to get an 'honest read' on their equipment across the automotive supply chain. They can actually focus on the characteristics they're interested in without the impact of friction on their test. New Way [flat bearings](#) and [air bushings](#) enable the repeatable, frictionless linear motion required for fatigue, torque, frame, vibration and other simulation testing.



Testing applications In the field of medicine.

New Way has gained the most traction in [Computed Tomography Imaging \(CTI\)](#).

CTI scanners use the company's segmented [radial air bearings](#) to facilitate the high-speed rotation of X-ray assemblies for patient imaging. Without contact, the air bearings provide significantly faster rotation speeds for the 3000-lb gantry rings than conventional bearings. This enables 360-degree rotation of the camera equipment between the heartbeats of a single cardiac cycle for superior image resolution.

Non-contact rotation also eliminates wear for long-term repeatability, and noise, reducing patient anxiety.



Turbomachinery represents a constant challenge.

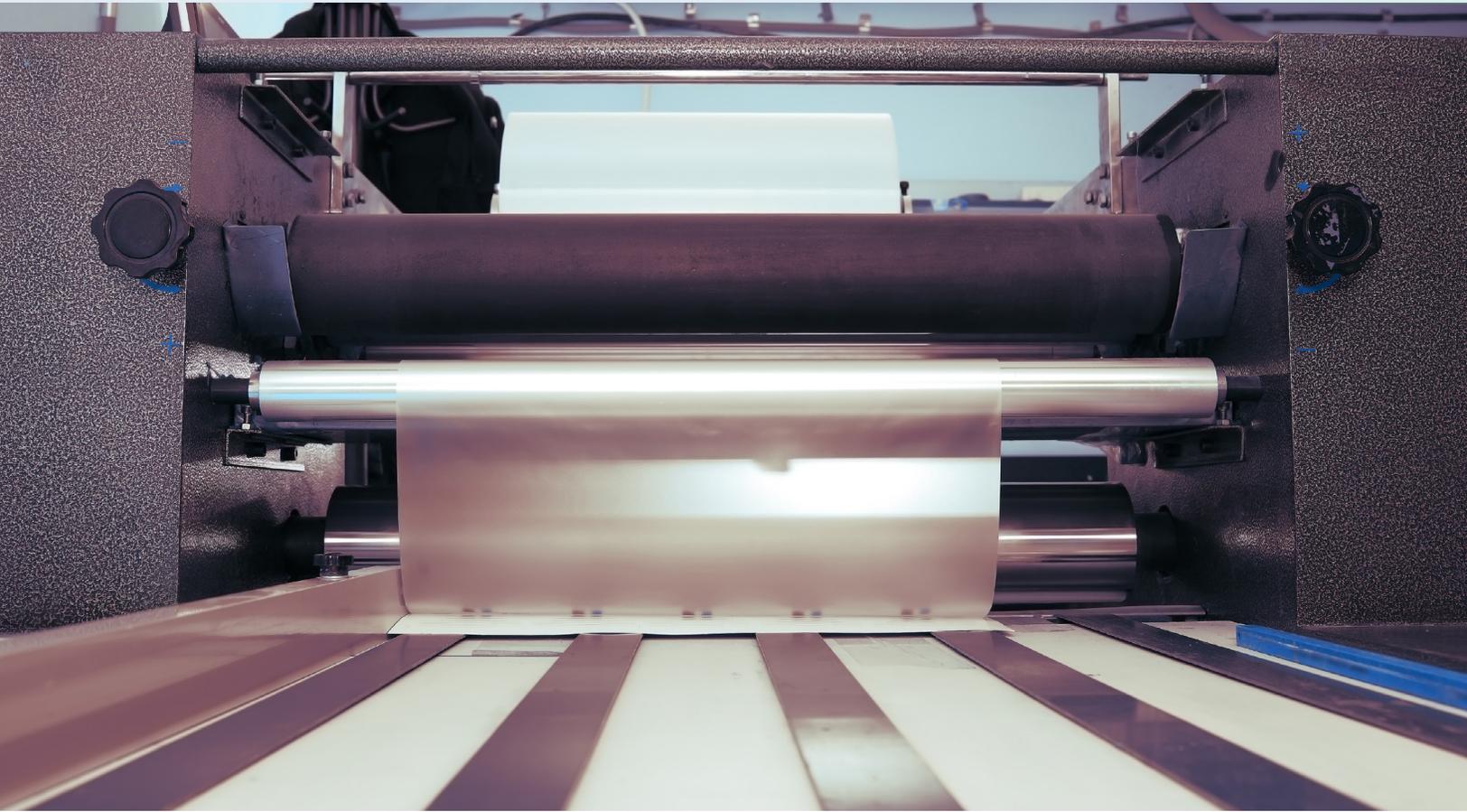
Conventional turbine and [compressor](#) seals are subject to friction, causing costly wear, performance, safety and downtime issues.

New Way has engineered chasm-crossing solutions for both bearing and sealing in the harsh oil and gas environment.

With fewer parts, a better internal seal, and improved load-handling capabilities, New Way's [New Seal](#)[™] Externally-Pressurized Porous (EPP) Media gas circumferential seals enable non-contact shaft sealing for liquids, gases, fine powders, or slurries. Further, they can be designed to serve as both a thrust bearing and a seal. With an easy path to retrofit, these non-contact seals improve equipment reliability while reducing operating expenses.

New Way Externally Pressurized Porous (EPP) Media gas bearings for rotating equipment enable non-contact, oil-free operation for improved reliability and process uptime, lower energy consumption, reduced maintenance and a smaller environmental footprint. These [Bently Bearings](#)[™], by New Way, are engineered specifically for small, high-speed rotating equipment, where they replace foil or rolling element bearings, as well as for large turbines, motor generators, or compressors, where they replace oil hydrodynamic or magnetic bearings.

With load capacities up to 400 psi, Bently Bearings can withstand temperatures to 400°C, while providing nearly frictionless operation and near zero cross-coupled stiffness. Bently Bearings enable innovative new equipment designs, and retrofit easily into existing equipment.



Relying on the passive conveyance of flexible substrates.

The converting industry currently relies on the passive conveyance of flexible substrates, including paper, film, plastic, glass and printed circuits.

But next-generation consumer electronics devices are increasingly requiring flexible form factors which, in turn, necessitate polymeric film substrates. Most of these materials are manufactured in roll form, so there has been a corresponding acceleration in the utilization of Roll-to-Roll (R2R) processing.

Increasingly, these R2R production methodologies require active, non-contact handling. The efficiency of concurrent tactical coating operations on both sides of a substrate exemplify this need.

New Way [Air Turns](#) were developed specifically to address this issue. The air turn provides a thin, stiff air gap above a cylindrical surface that supports the moving substrate. By avoiding mechanical contact, the defects and contamination prevalent in roll-to roll production can be greatly reduced.



High-end Audio using air bearing technology.

Vinyl records are still regarded by audiophiles as the most-pristine source of recorded sound. For these enthusiasts, the ultimate phonographic experience is produced using air bearing technology.

High-end-audio engineers have discovered that using a New Way [Air Bushing](#) in a [cantilevered tonearm](#) structure maintains stylus perpendicularity, enabling it to follow precisely the same straight line as did the cutting head when the record grooves were first created.

According to those with the ear to know, this produces the closest possible representation of an original studio recording.



Disruptive innovation for your industry using air bearings

The disruptive benefits of New Way porous media technology is ideal for applications in a broad range of other industries beyond the five listed above, from aerospace to nanotechnology, from semiconductors to solar cell manufacturing, from [flat panel display manufacturing](#) to [large-format printing](#). Wherever there is a need for precision linear or rotary motion, non-contact handling, balancing or sealing, air bearings are an enabling technology for disruptive differentiation.

When you're ready to disrupt your industry, make sure that New Way Air Bearings are a part of your next application. For more information visit Newwayairbearings.com. Or, to start the revolution right away, contact us directly for your complimentary consultation!

About Drew Devitt

Drew Devitt founded New Way Air Bearings in 1994 to realize business success through the commercialization of porous media air bearing technology. From the time of New Way's founding, Devitt, as CTO, has maintained its research efforts, and its connections with research and academic institutions, in order to foster the continued development of air bearing technology and the dissemination of the knowledge gained. Devitt is a major figure in the world of precision and was elected President of the ASPE for the 2007 calendar year. He holds a Bachelor's Degree in Business Administration.



About New Way Air Bearings

New Way® Air Bearings, Inc. is the world's leading independent designer and manufacturer of modular air bearing products, and the recognized provider of porous media air bearing solutions, sold in over 30 countries worldwide. The company manufactures a standard line of modular, off-the-shelf components as well as custom products, and is ISO 9001:2008 Certified. New Way is headquartered in Aston, Pennsylvania, USA, just fifteen minutes from Philadelphia International Airport.

NEWWAY[®]

air bearings

Way Air Bearings, 50 McDonald Blvd., Aston, PA 19014
610.494.6700 | www.newwayairbearings.com

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