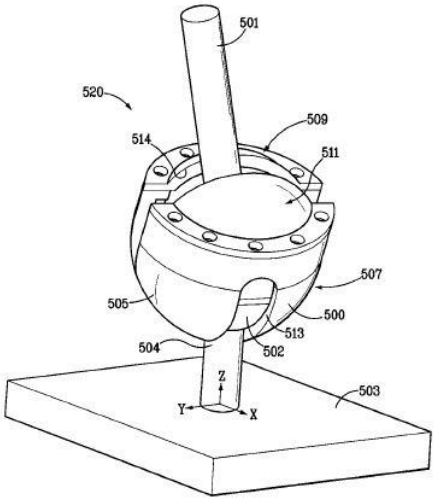
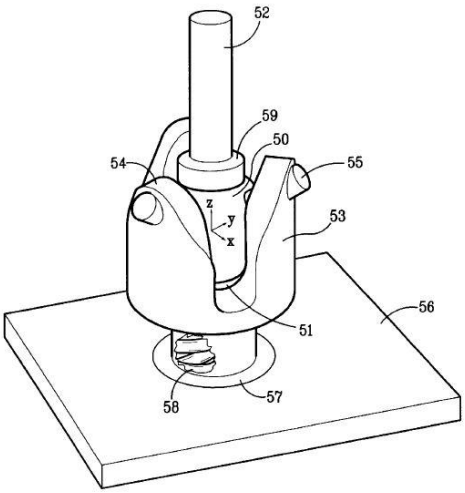
Technology Summaries for Ready to Sign License Page on External IP Website

Spherical Joint Technologies

Sandia National Laboratories has developed two distinct yet complementary spherical joint technologies, described in detail in US 6,409,413 and US 6,234,703.

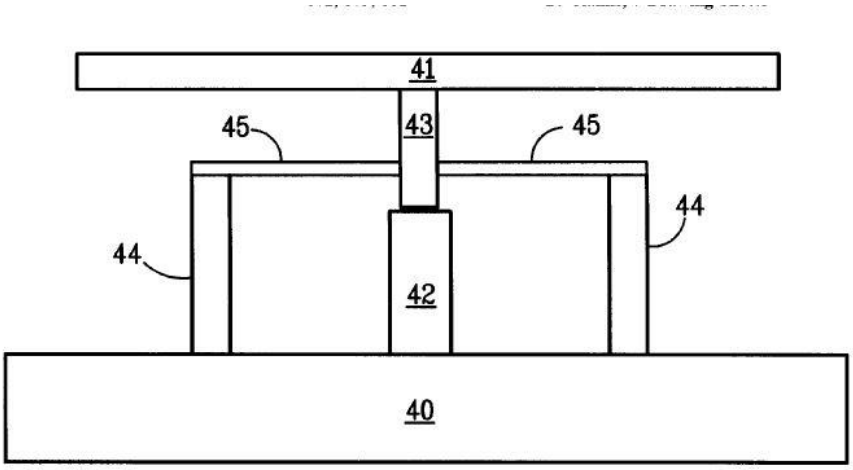
Sandia has developed a new class of freely-moving spherical joints with a very large accessible full cone angle (>270°). These joints exhibit no singularities or dead spots in their range of motion. This large and accessible angle is beneficial for a wide range of applications, including parallel mechanisms on which flexible machining platforms and robotic manipulators are sometimes based. The full cone angle provides increased workspace of the machine and an overall increase in efficiency due to the reduced total equipment setup time.





Micromechanisms with Floating Pivot

Sandia National Laboratories has developed a new class of tilting micromechanical mechanisms. These mechanisms utilize floating pivot structures to relieve many of the problems encountered in the use of solid flexible pivots. Floating pivots are easy to fabricate and can replace conventional micromechanical pivots in many cases.



Frequency Modulation Drive for a Piezoelectric Motor

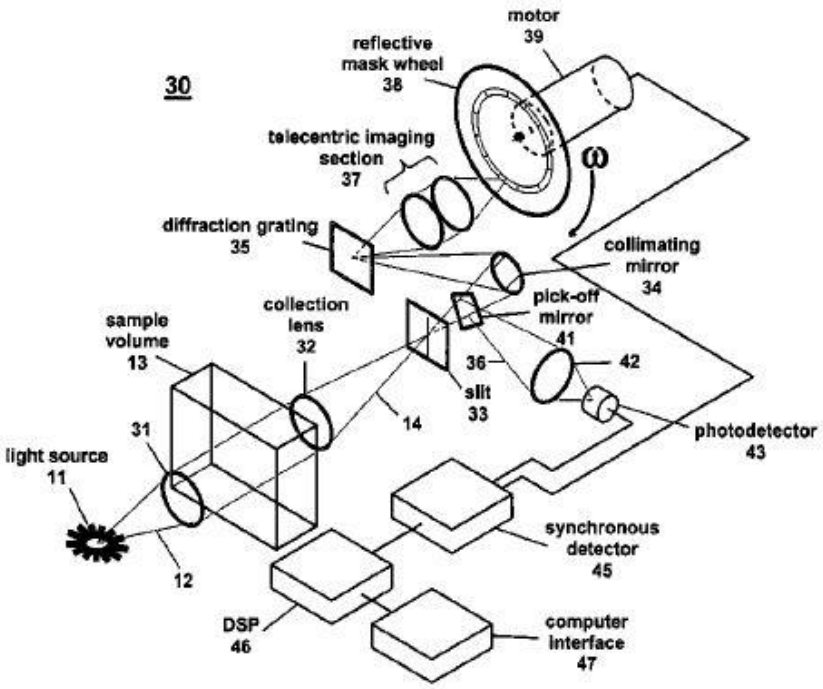
Piezoelectric rotary motors are key components of industrial applications that require high torque and low rpm. Other types of motors, such as magnetic flux motors, are typically too large and have a high rpm, rendering them unusable in specific applications. Early evaluation of piezoelectric rotary motors proved that the drive frequency required to operate the motor at peak performance (highest output torque and speed) is the most critical variable associated with its operation. Therefore there is a critical need to be able to shift the drive frequency to maintain optimum motor performance.

Sandia National Laboratories has created a drive system to address this critical need. This technology allows operation of a piezoelectric motor at peak performance without feedback.

Correlation Spectrometer

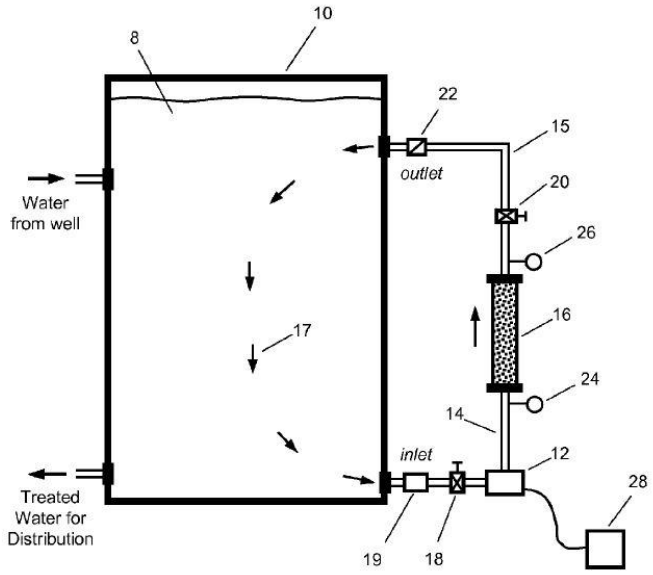
Sandia National Laboratories has developed a correlation spectrometer capable of determining the concentration of a target compound in a sample. The spectrometer can measure the transmission spectrum from a given sample of gas using infrared light. The spectrometer can detect the transmission or emission spectra in any system where multiple species are present in a known volume.

In contrast to many conventional spectrometers, the SNL spectrometer is simple and can be miniaturized.



In-Tank Recirculating Arsenic Treatment System

US 7,514,004 describes a Sandia-developed low-cost water treatment system and method for reducing arsenic contamination in water storage tanks. A submersible pump on the bottom of the tank continuously recirculates contaminated water through a bed of arsenic-sorbing media. The pump and treatment apparatus can be placed inside the tank or attached to the outside of the water storage tank, allowing easy replacement of the sorption media. The in-tank system could be built and run at minimal cost (likely less than $50 per year) and would be particularly useful for small systems. Relative to existing approaches, the in-tank system confers large cost savings because no operators or new constructions are needed. The in-tank system might also be applicable to other contaminants, including chromate, perchlorate, heavy metals, TCE, PCE selenium, vanadium and radionuclides.



Comparison of Convention vs In-Tank Systems

Treatment System Characteristics	Conventional	In-tank System
		higher water velocity
O&M Training requirements	Level II or higher	Level I
Infrastructure requirements	Building, power, pump pressure vessels, piping, instrumentation and appurtenances	Media column, power, pump, piping, valving and appurtenances
Media change out frequency	1-2 times/year	3-4 times/year (estimate)