



# Mechanical Auto-tuning for High Magnetic Fields (20120121, Dr. Tommy Vaughan)

Technology No. 20120121

**IP Status:** Issued US Patent; **Application #:** 14/469,527

## Resistance Inductance Capacitance Technology

A variable resistance inductance capacitance (R-L-C) technology electrically controls a mechanical movement device (e.g., linear positioner, rotary motor, or pump) that selectively controls an electrical element to vary, and maintain at a selected value, its electrical resistance, inductance, and/or capacitance. The method uses an electrical signal to automatically move a portion of the electrical component in relation to another portion (to vary at least one of its parameters) by using a non-magnetic mechanical movement device. Its components are compatible with and function in high fields (such as a magnetic field of one tesla or more, or even ten tesla or more and/or an electric field of many thousands of volts per meter).

## Compatible with High Magnetic and Electric Fields

Conventional electrical components that vary resistance, inductance, and/or capacitance under electrical control typically have somewhat limited component values available and are not compatible with being located in high fields (e.g., the fields of 1 tesla or more, typically found in high-energy physics experiments). Low-power circuits use varactors, field-effect transistors and directly electrically-adjustable components for adjusting frequency, impedance or other circuit characteristics and parameters, but such components are often unsuitable or inoperative in high fields. This technology provides a variable-parameter electrical component in a high-field environment and, based on an electrical signal, automatically moves a movable portion of the electrical component in relation to another portion to vary at least one of its parameters.

### **BENEFITS AND FEATURES:**

- Electrically controls a mechanical movement device (e.g., linear positioner, rotary motor, or pump)
- Selectively controls an electrical element to vary—and maintain—its electrical resistance, inductance, and/or capacitance.

- Compatible with high fields (e.g., magnetic field of one tesla or more, ten tesla or more, and/or an electric field of thousands of volts per meter)

## **APPLICATIONS:**

- High magnetic fields
- Resistance, inductance and capacitance (R-L-C) technology
- Linear positioners
- Rotary motors
- Pumps

**Phase of Development** - Prototype development

## **Researchers**

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### **Interested in Licensing?**

The University relies on industry partners to scale up technologies to large enough production capacity for commercial purposes. The license is available for this technology and would be for the sale, manufacture or use of products claimed by the issued patents. Please contact us to share your business needs and technical interest in this technology and if you are interested in licensing the technology for further research and development.

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