HydraElectric™

Breakthrough Technology *in Sensors and Switches*

PRESS KIT

3151 Kenwood Street, Burbank, CA 91505 | 818.843.6211 | www.HydraElectric.com | info@hydraelectric.com

Company History

Over six decades ago, Hydra-Electric developed and patented the snap action sensing of pressure by means of the negative rate disk spring, employing an additional trim spring for pressure adjustment. This environmentally superior powered snap action design has since become the standard for critical aerospace applications.

As the sole supplier of negative rate disk spring pressure switches, Hydra-Electric grew quickly furnishing pressure switches for fuel, hydraulic, pneumatic airspeed and barometric (altitude) applications for most high performance jet powered aircraft programs. Hydra-Electric has continued to innovate the negative rate spring and pressure sensing systems, applying its designs to thousands of aircraft and missile systems.

Hydra-Electric has also introduced breakthrough technology in high performance sensors. These patent pending designs address problems that older technologies cannot.

AN AEROSPACE INDUSTRY PIONEER

Hydra-Electric has played an integral role in the growth and innovation of the aerospace industry, a distinction no other developer of switches and sensors can claim. From our first pressure switch—designed for the Lockheed T-33—to our pressure and temperature sensors based on breakthrough technology, we've cultivated a reputation as an innovator in the industry.

HydraElectric

3151 Kenwood Street, Burbank, CA 91505 | 818.843.6211 | www.HydraElectric.com | info@hydraelectric.com

Historical Overview

In 1948, Hydra-Electric invented the "negative rate disk spring" design that is still the standard for most aerospace pressure, temperature and liquid flow switches.

Hydra-Electric products were selected for numerous early military and space applications:

P80, F86, F100 through F104, X15, SR71 and U2 Aircraft; Mercury, Gemini, Saturn and Apollo Space Programs

Hydra-Electric has also introduced breakthrough technology in high performance sensors. These patent pending designs address problems that older technologies cannot.

AN AEROSPACE INDUSTRY PIONEER

Hydra-Electric has played an integral role in the growth and innovation of the aerospace industry, a distinction no other developer of switches and sensors can claim. From our first pressure switch—designed for the Lockheed T-33—to our pressure and temperature sensors based on breakthrough technology, we've cultivated a reputation as an innovator in the industry.

HydraElectric

3151 Kenwood Street, Burbank, CA 91505 | 818.843.6211 | www.HydraElectric.com | info@hydraelectric.com

Hydra-Electric Products

Sensors

PRESSURE SENSORS & TEMPERATURE SENSORS

Hydra-Electric's patent-pending technologies address many challenges older technologies don't solve. Our aerospace designs deliver high accuracy, extend service life, eliminate pressure spike damage, are safe at millions of pressure cycles, are protected from electrical transients, and resist electro-magnetic HIRF interference.

MULTI-FUNCTION SENSORS

Our multi-function sensor capabilities include combined temperature/pressure options, multiple pressure-sensing elements and mechanical switch + sensor solutions.

Switches

PRESSURE SWITCHES

Our pressure switches are designed to reliably perform over the long term, even in the harshest environments and under high vibration and shock conditions.

TEMPERATURE SWITCHES

Our temperature switches feature a lightweight, miniaturized design for hydraulic, oil and fuel system temperature control in ambient conditions from -65° to 275° F.

LIQUID FLOW SWITCHES

Our liquid flow switches are available in a wide range of designs for coolants, fuel, oil or hydraulic flow applications, and their service life is a robust 75,000 cycles.

HydraElectric

3151 Kenwood Street, Burbank, CA 91505 | 818.843.6211 | www.HydraElectric.com | info@hydraelectric.com

Hydra-Electric NEW Products

introduced at the 51st Paris Air Show

Disc-Con™ Pressure Switch

Unique patent pending design utilizing a disc contact that performs two key functions

1. **Sensing**
   The disc spring snaps into action when the pressure actuation point is reached
2. **Switching**
   Simultaneously the contact within the disc spring snaps and makes contact with an electrical interface sending an electrical signal

Eliminates the need for a micro switch, and its related problems

- False signals and chattering of the contacts in high vibrational environments
- Dead break problems
- Contamination of contacts
- High contact resistance

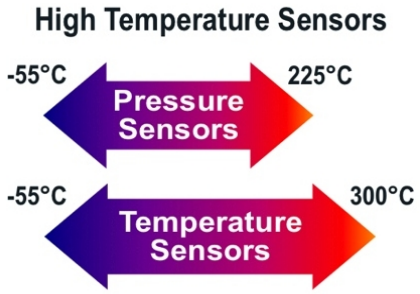
Other Features

- Streamlined design requires 50% fewer parts
- Allows for external adjustment

High Temperature Pressure Sensor

Superior performance and reliability for aircraft engine systems and other aerospace applications exposed to extreme conditions.

Patent pending design incorporating thin film technology.



Able to withstand temperatures up to 225°C for pressure sensing and 300°C for temperature sensing

Unlike solutions which utilize silicon on insulator with oil-filled assembly, our high temperature sensors are able to

- Survive pressure spikes
- Avoid failure due to pump ripple
- Survive high cycle counts
- Avoid burst diaphragms and broken wire bonds
- Provide for linear accuracy over the entire spectrum
- Allow the ability to tailor the sensor to any operating parameter

Robust, reliable, and competitively priced

HydraElectric

3151 Kenwood Street, Burbank, CA 91505 | 818.843.6211 | www.HydraElectric.com | info@hydraelectric.com

What makes Hydra-Electric superior?

A PROVEN INNOVATOR

Switches and sensors powered by innovation and imagination

Soon after Hydra-Electric was founded in 1948, the company introduced breakthrough technology to the aerospace industry, designing and patenting the snap action sensing of pressure by means of the negative rate disk spring, which employed an additional trim spring for pressure adjustment. This environmentally powered snap action design has since become the standard for critical aerospace applications.

Over the course of our history, Hydra-Electric has continued to introduce innovative designs for temperature and pressure sensing for a variety of aircraft programs. Within the past decade, we have introduced breakthrough technology in sensors, patent-pending technology that excels and addresses problems that can't be addressed by older technologies.

SOLVING THE UNSOLVABLE

Sensing technology that eliminates common operational shortcomings

Until now, aerospace engineers have come to accept that sensing technology will inevitably succumb to various conditions, such as:

*Pressure spikes *High-speed impulses *High cycle counts of one million or more *Pump ripple *Burst diaphragms *Broken wire bonds

These engineers have resigned themselves to accept reduced accuracy at the low and high ends of the temperature range.

All these issues—previously unsolvable—can now be addressed with Hydra-Electric's breakthrough sensing technology.

CONTINUOUS IMPROVEMENT

A steadfast focus on quality and exceeding expectations

Hydra-Electric is committed to a program of Continuous Improvement to ensure the highest levels of product quality and on-time delivery to our customers in accordance to their requirements, which we strive to exceed. We believe this is the only way to develop long-term business relationships with customers that work to our mutual benefit.

To achieve these levels of quality, beginning from the design stage and on through every step of the production cycle, our employees build quality into our products at every stage. This is accomplished through training, procedural documentation, commitment to excellence in quality and with the mindset of how can "I" improve our products.

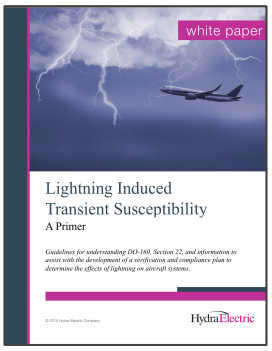
Hydra-Electric's commitment to continuous improvement is accomplished through a strict regimen of Lean Manufacturing and Six-Sigma methodology,

HydraElectric

3151 Kenwood Street, Burbank, CA 91505 | 818.843.6211 | www.HydraElectric.com | info@hydraelectric.com

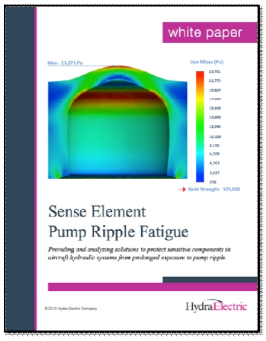
Publications

White Papers



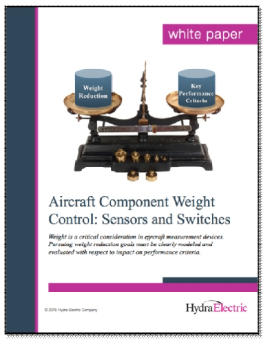
Lightning Induced Transient Susceptibility—A Primer

Guidelines for understanding DO-160, Section 22, and information to assist with the development of a verification and compliance plan to determine the effects of lightning on aircraft systems.



Sense Element Pump Ripple Fatigue

Providing and analyzing solutions to protect sensitive components in aircraft hydraulic systems from prolonged exposure to pump ripple.



Aircraft Component Weight Control: Sensors and Switches

Weight is a critical consideration in aircraft measurement devices. Pursuing weight reduction goals must be clearly modeled and evaluated with respect to impact on performance criteria.

HydraElectric

3151 Kenwood Street, Burbank, CA 91505 | 818.843.6211 | www.HydraElectric.com | info@hydraelectric.com

Contact

Media contact

Lisa Leight
Director of Marketing

818.843.6211
lleight@hydraelectric.com

https://www.linkedin.com/company/hydra-electric-company

@hydraelectric