

## ELASTO-HYDRAULIC LEAD-LAG DAMPER



Our Lead-Lag Dampers are installed on helicopter rotor heads either between the hub and the blade or between two consecutive blades. They're essential rotor components that ensure dynamic stability of the aircraft under all operating conditions. These solutions are especially critical for preventing ground and air resonance.

Our Elasto-Hydraulic Lead-Lag Dampers combine the advantages of hydraulic dampers (high damping levels, adjustable force vs. velocity characteristics depending on operating conditions) and elastomer bushing (long lifecycle, elimination of external dynamic seals). Dynamic characteristics, for example force vs. velocity for specific operating conditions, can be adjusted to meet helicopter OEM requirements.

There are a number of settings to adjust the technical features:

- For the elastomer components: size, hardness and damping.
- For hydraulic components: fluids, pressure loss management and setting threshold.
- Coupling and decoupling the different layers of elastic and hydraulic parts.

- Products family: **Lead-lag dampers for helicopter**

## **TECHNICAL FEATURES**

- Life cycle by eliminating the need for inside/outside dynamic sealings.
- Extended range of achievable dynamic characteristics:  $K'$  vs.  $K''$ .
- Eliminates gaps by using elastomer rod-ends.
- Can be inspected visually to ensure security.
- Combines the performance of hydraulic technology and low maintenance of elastomer products.

## **BENEFITS**

- Durability
- Safety
- Low Maintenance
- Comfort

## **MARKET AND EXPERTISE**



AEROSPACE



Vibration Control Systems

## **ALL PRODUCTS FAMILIES**

# Aerospace Vibration Control Systems



## Engine Mounts

Our Engine Mounts are designed for jet engines (piston engines, turboprops and turbofans ) and auxiliary power units. Thanks to their excellent vibration and acoustic insulation, they enhance passenger comfort and safety.



## Elastomer Motion Control Products for Helicopters

We develop all types of elastomer/metal laminated bearings for main and tail helicopter rotorheads. Stiff in some directions while flexible in others, our solutions comply with stringent life and safety OEM requirements.



## **Lead-lag dampers for helicopters**

We design, develop, and product both the visco-elastic and hydro-elastic models of our lead-lag dampers for helicopters. Our solutions ensure dynamic stability in all operating conditions for helicopters.



## **Avionic racking systems**

Our Avionic Racking Systems are containers that protect black boxes. They protect electronic components from very high temperatures, powerful vibrations and shocks. Compliant with standards (ARINC 404 and 600; MIL...)



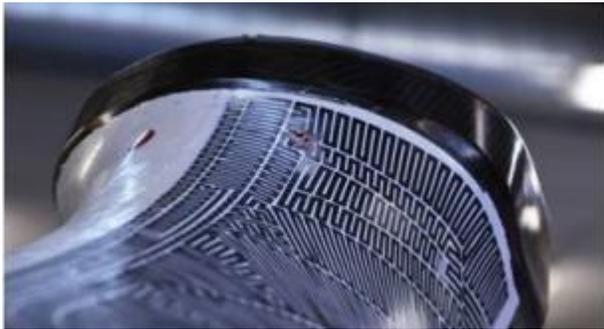
## **Health & Usage Monitoring Systems**

Sensing and health control systems are embedded into parts to allow key data measurement for the health assessment of components or systems. Maintenance operations based on actual operating conditions are optimized.



## **Active Noise & Vibration Control System for Helicopters.**

Active noise & vibration control systems measure and analyze noise and vibrations and generate optimized dynamic forces in real time. They reduce vibrations by up to 30 dB and noise within helicopter cabins.



## **Electro-thermal ice protection products**

Heating mats are made of heating elements (electrically resistive materials like metal or carbon) embedded in a thin electrical insulating multilayer composed of polymers.



## **Control & Display**

In the cockpit, the need for information through control panels is essential, namely for communication, warning, advisory, flight and engine systems. CLAROPAN multidisciplinary team means a fully developed, cost effective, plug-and-play solution.

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