

# HIGH-G SEAT

## A REDESIGNED SEAT MECHANISM TO ABSORB HIGH VERTICAL LOADS



### TECHNOLOGY BRIEF

An improved crashworthy seat mechanism for industrial seating to reduce potential occupant injuries sustained from high vertical loads.

### IP PROTECTION

U.S. Patent No's 9,981,574 & 9,327,623

### EXPERT PROFILE



Dr. Gerardo Olivares is the Director of the Crash Dynamics and Virtual Engineering Laboratories at WSU's National Institute for Aviation Research. Dr. Olivares has assembled a world-class research program, personnel and laboratory facilities in the areas of computational and experimental crashworthiness, virtual product

development, and certification by analysis methods. Since 2005 Dr. Olivares has been the principal investigator in over 110 research projects with funding in excess of \$30M funded by various US Federal Agencies and private companies from 15 different countries. For the last twenty years, Dr. Olivares has successfully negotiated and executed complex international engineering programs in the aerospace and automotive industry by demonstrating the capacity to envision and create solutions for future needs of the industry.

→ The development of crashworthy seating is a continual area of interest as manufacturers seek for more effective ways to limit and reduce occupant injuries during emergency landing conditions, or on-site accidents. With this in mind, researchers at Wichita State University's National Institute for Aviation Research (NIAR) created a redesigned seat mechanism that reduces vertical loads applied to a passenger by more than 60% compared to other designs currently in use.

### ADVANTAGES

This seat-mechanism design provides a space-saving and cost-effective means for minimizing passenger lumbar loads under vertical load conditions. It can reduce a vertical lumbar load of 2,300 lbs to 895 lbs, which exceeds well-beyond all safety and regulatory testing requirements, and is optimized to accommodate the 5th to 95th percentile of occupants.

### APPLICATIONS

This redesigned absorbing seat mechanism is useful for any seat system that may be subject to high vertical deceleration loads. Examples of such safety-critical industries include:

- ✦ Aircraft
- ✦ Helicopters
- ✦ Ground-based military vehicles
- ✦ Heavy construction vehicles
- ✦ Next-Gen civilian transport vehicles

### For additional information, please contact:

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