NIAR deploys MTS crash simulator

In January, MTS Systems delivered a horizontal acceleration crash simulator to the National Institute for Aviation Research (NIAR), located on the campus of Wichita State University in Kansas. NIAR is deploying the simulator in its Crash Dynamics Laboratory to enhance its ability to host proprietary research, testing, and certification of aircraft components under dynamic impact conditions.

"Acquiring the MTS crash simulator is integral to our efforts to maintain our status as the premier dynamic testing facility for the nation's aircraft and aircraft component manufacturers," said John Tomblin, Executive Director of NIAR. He added that the capabilities gained from the system should help NIAR achieve its goal of having all U.S. aircraft seat manufacturers use the Crash Dynamics Laboratory.

The crash simulator employs a servo-hydraulic drive to achieve speeds of 81 km/h with a 1500-kg payload. Impact pulse peak profiles can be adjusted to reach accelerations of 65 g with the same payload, or 75 g with a 1000-kg payload. The system is said to feature state-of-the-art data-acquisition capabilities, and it employs a high-resolution digital video system to capture high-velocity simulations at 1000 frames/s.

"High-performance MTS crash simulation solutions are designed to help aircraft and ground vehicle manufacturers adapt quickly to increasingly stringent occupant safety regulations and reduce the time required to gain valid, meaningful test data," said Joseph Mitchell, NIAR's Director of Crash Dynamics. "They deliver a [wide] operating range of acceleration, frequency response, and payload capabilities..., giving test engineers the flexibility to replicate both high- and low-acceleration events."

The new crash simulator is the latest MTS equipment procured by NIAR. MTS digital controllers, actuators, and servo-hydraulic and electromechanical load frames are deployed throughout the institute's 17 research laboratories to gain insight into the static and dynamic load-carrying capabilities of aircraft materials and structures. MTS also recently delivered an I-STIR friction-stir welding system to NIAR's newly established Advanced Joining Laboratory, which assists the institute's Aircraft Design & Manufacturing Research Center in studying practical problems associated with aircraft manufacturing.

Ryan Gehm

Astro-Med workstation for flight testing

A new rackmount data-acquisition workstation from Astro-Med’s Test and Measurement Product Group offers an open architecture design, 18.1-in color display for real-time viewing, intuitive touch-screen interface, integrated computer, and 32 analog or digital input channels.

Designated EV2, the unit is designed and engineered for aerospace applications, including flight testing, missile testing, flight simulation, and satellite telemetry. With its six PCI slots for third-party PCI cards and software, and multiple expansion bays for removable media, the EV2 extends beyond the capabilities of Astro-Med's flagship Everest telemetry recorder-workstation and enables telemetry facilities to consolidate large amounts of equipment into one system.

In addition to a hard-copy paper option, the new workstation includes four drive bays for installation of internal CD-RW and DVD-RW drives, Kingston removable drive shuttles, and other memory options. The CD and DVD drives are suitable for upgrading software, saving test setups and archiving captured data.

The unit's VDIS operating software allows data to be monitored in real time and simultaneously displayed in strip chart, numeric data-logging, and x/y plot formats. “Moving pen tips” driven by the signal data mark the real-time data points. Alarm limits can be set to allow waveforms to change color when predefined limits are exceeded. IRIG (Inter-Range Instrumentation Group) time code is displayed, and grids can be synchronized with time, allowing data to be interpreted in military time. The unit accepts IRIG A, B, H, and NASA 36 time codes.

Virtual Chart (VC) allows users to save an entire test to the internal hard drive without the need for printing. VC data can be reviewed on the display, printed on the chart, or transferred to a PC for offline analysis. Up to 32 waveforms and 32 events can be displayed on the screen and recorded at any one time. The user can design personal grids with custom formats of channel widths, number of divisions, etc.

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