The Crash Dynamics Laboratory at Wichita State University’s National Institute for Aviation Research is a premier dynamic testing facility providing research, testing and certification of aircraft and non-aviation components under dynamic impact (simulated crash) conditions.
Established in 1992 and updated in 2005, the Crash Dynamics Laboratory at Wichita State University’s National Institute for Aviation Research is a state-of-the-art facility that encompasses 4,500 square feet. The driving force of the lab is a MTS Model 888.20 crash simulator with an accelerator sled. Other lab equipment includes Hybrid II, Hybrid III and EuroSID II instrumented test dummies, Endevco and Entran accelerometers, DSP Technology signal conditioning and analysis system, denton load cells, a SpeedCam Visario high-resolution digital color video system and 1,000 square feet of client office/work space. The lab’s capabilities are backed up by high-tech support units such as NIAR’s CAD/CAE Labs and Research Machine Shop.

The lab’s MTS Model 888.20 servo-hydraulic crash simulator is capable of duplicating almost any type of crash pulse. The facility is used for research, testing and certification of aircraft and components, air bags, child safety seats and other various components. It is also equipped to perform automotive, handicap mobility and various other types of passenger seat testing.

Crash sled specifications:
- Nominal force: 2,000 kN (450 kips)
- Max velocity w/ 1,500 kg: 81 km/h (50 mph)
- Dynamic response: >150 Hz
- Acceleration w/ 1,500 kg: 65g
- Acceleration w/ 1,000 kg: 75g

Without impeccable document of crash impacts, a lab’s capabilities can only go so far. That’s why NIAR’s Crash Dynamics Lab uses a SpeedCam Visario camera system to accurately capture each crash and support future research.

Photometric Specifications:
- High-resolution color (1536 x 1024)
- 1,000 frames per second (10,000 fps at reduced resolution)
- Immediate download of video to DVD

Current Areas of Research
- Aircraft occupant protection
- Implementation of child restraints in aerospace applications
- Mass transit occupant safety
- Aircraft component certification

Vehicle Safety - Sled Testing Capabilities
- FMVSS 208
- CMVSS 208
- ECE R94
- US NCAP
- Euro NCAP
- IIHS
- OSA