



## Motion Cueing Systems

**Stirling is a world leader in motion cueing systems and has been at the forefront of this technology for over a decade.**

We provide our customers with intelligent, integrated and highly reconfigurable Dynamic Seats and G-Seats for combat aircraft, lead-in trainers and helicopter training simulators. Stirling's motion cueing systems offer some of the most advanced and compact technology available on the market today.

Motion cues are provided to the pilot through actuation built into the seat and harnesses. Sophisticated software ties these cues into the flight simulator, which in turn replicates the feel of the aircraft in flight. Stirling's technology can be used to complement existing full-motion simulators or replace them altogether, providing realistic motion for pilot training at a fraction of the cost and at a greatly reduced size. Motion cues available include shoulder harness tension, lap belt tension, sway, surge, heave and roll. Tactile transducers can also be incorporated into our seats to represent other characteristics, such as aircraft vibration. Integration of pilot systems, such as anti-G suits, complete the simulator environment.

"[The Stirling seat] significantly enhances the cueing environment and improves pilot perception of aircraft state and accelerations, whilst improving the immersive nature of simulation."

MoD DE&S Experimental Test Pilot

## Key Features & Benefits

- Rotary or fixed-wing variants
- Six aircraft degrees of motion represented
- Harness tensioning plus multi-axis motion cues replicates aircraft feel
- Integration of other pilot systems, such as anti-G suits, complete the immersive experience
- OEM or high fidelity replica seats available
- Open software interfaces connected via Ethernet simplifies integration with other simulation systems

## Programme Support

- Initial feasibility and concept studies
- Custom solutions developed as required
- System integration and commissioning
- Through-life support packages available
- Training and user guides provided on request





## A Product Innovator

Stirling's high fidelity Dynamic Seats and G-Seats immerse the pilot in a highly realistic simulation environment. Visually, the system aims to be "invisible" to the pilot, enclosing all hardware elements within the same external seat envelope and using identical pilot interfaces that, depending on customer requirements, can include: harness, leg restraints, armed/safe, eject, oxygen, go-forward and height adjust.

Electrical actuators work within the seat to provide negative and positive motion cues, thus increasing the pilot's situational awareness. The seat actuators are commanded directly by Stirling's real-time control system, which itself interfaces with the host simulation environment via simple Ethernet, receiving aircraft motion data and other commands. The mapping of aircraft motion to seat-motion is handled entirely by Stirling's real-time control system.

High bandwidth actuation enables cueing for events such as: buffet, runway rumble, gunfire and weapons release.

## Rotary and Fixed Wing Seat Variants are Available

Fixed and rotary configurations are available to meet a wide range of training simulation needs. Stirling has supported seats for the Hawk MK 128, KAI T-50 Golden Eagle and the AW159 Wildcat, as well as providing a number of customers with our generic rotary wing and generic fixed wing seats.

## Latest Simulators featuring Stirling's Motion Cueing

Hawk MK 128 Advanced Jet Trainer

- (RAF Pilot Training Simulator)
- AW 159 Wildcat Maritime Surveillance Helicopter (Agusta Westland)
- T-50 Golden Eagle Supersonic Trainer/Lead in Fighter (KAI)

