



Remember riding in a car when you were a kid and you would put your hand out the window? You could hold your hand flat and zoom your arm up and down like an airplane. Or you might hold your hand flat against the wind, relax your arm and just let the air blow your arm back.

Those same airstream forces work on the barrel of a machine gun poking out from a helicopter door or window. That 3 or 4 foot long gun barrel is a major windbreak. The airstream on the barrels push the weapon just like your hand out the car window when you were a kid. And, the faster the helicopter flies and the more barrel exposed to the airstream, the more torque on the weapon.

Helicopter gunners must counter the airstream forces. They must overcome the force to sweep

the gun onto the target and hold it there. They have to adapt to the change in force too as the helicopter slows or turns to block the airstream on the weapon. Gunners must engage the target, adapt to the airstream forces, and overcome the changes to keep on the target.

It's engage, adapt, and overcome.



It's important that gunners get to train for the airstream forces. The gunners need to feel forces on the guns just like they will feel in the aircraft. And, the forces must be dynamic, varying to meet the flight changes. But,

training on the aircraft is expensive! An aircraft and crew must be sourced and a machine gun range with targets. In-flight training needs costly ammunition and puts wear and tear on the weapons. Plus, there's weapon cleaning, arming/disarming and secure storage.



ENGAGE - ADAPT - OVERCOME

Train with actual airstream forces to practice getting the weapon on target and keeping it there. Practice adapting as the helicopter maneuvers or changes speed.



Wind Forces Affected by Speed and Weapon Angle

ACME applies variable wind-loading force to the weapons that is proportional to the speed of the aircraft in flight and the airstream angle-of-attack on the weapon.

Realistic weapon training with the variable windloading forces is available for helicopter gunners using ACME's replica weapon systems. ACME's replica helicopter weapon systems can be equipped with Aerodynamic Torque Systems that replicate the windloading force on the barrels.

The Aerodynamic Torque System is built right into the simulated aircraft weapon mount and hidden from the gunner's view. The system uses flight model data from the simulator and weapon position to calculate the forces applied to the replica weapon. ACME bases the Aerodynamic Torque System force on data we have from in-flight helicopter tests. The force can be tuned to match Subject Matter Experts expectations too.

ACME's Aerodynamic Torque System is available for any replica helicopter weapon type on any aircraft mount. Ramp mounted guns don't include windloading as the weapons are shielded from the airstream forces by the aircraft fuselage. ACME has a full range of helicopter mount designs available with windloading - no design costs for our Commercial-Off-The-Shelf mounts.

Helicopter gunners can get realistic training with ACME's realistic weapons, realistic recoil and realistic windloading. Call ACME for details.

ACME's Aerodynamic Torque System