

## Italian engineering, flight-tested

BY JOE SAGE

Italian design—concept, styling and engineering—is well known and highly coveted worldwide. From illustrious automotive brands such as Alfa Romeo, Ferrari, Fiat, Lamborghini and Maserati, to fashion and decor, the brands are universally revered. (It was obvious the old Soviet Union

was on its last legs when it was revealed that Mikhail Gorbachev would travel to top choice Italy when he needed top quality suits.) And Italy manufactures aircraft, including stunning fighter jets.

To get a broader feel for the engineering culture behind Pirelli P Zero tires (see feature), in an over-the-top super trifecta of powerful engines and speed, our cool-down lap after hours of high speed driving at Las Vegas Motor Speedway had us moving straight from supercars to helicopters to jets.

We took a short walk from the paddock to an impromptu helipad, where we boarded an ECOSTar EC-130, an Airbus-built single-engine helicopter powered by a Turbomeca Arriel 2B1 turbine engine with dual-channel FADEC digital engine control system and back-up control box, powering an auto-

matically-varying three-bladed Starflex main rotor matched to an enclosed Fenestron anti-torque, low-noise tail device. These aircraft, with a top speed of 155 knots (178 mph), have the largest cabin of any single-engine helicopter in their class, can carry over a ton, and have a ceiling of 15,655 feet (they are also adapted by EMS for medevac). Our six-passenger version is operated by Mavericks Helicopters, the craft's largest single operator in the world, who offer tours of Las Vegas, Hoover Dam and the Grand Canyon. Ours was a fast and low flight of some 30-35 air miles through rugged terrain from Las Vegas Motor Speedway (13 drive miles north of Las Vegas) south-south-east toward Lake Mead, then southwest to Henderson Executive Airport (20-25 drive miles south

Pirelli turned us loose for a flight south of Las Vegas in two SIAI-Marchetti S.211A fighter jets (in the back seat) to further absorb the connections among velocity, aerodynamics, style and control—all elements also inherent in the equally advanced Italian engineering of Pirelli P Zero tires.



of Las Vegas).

Here we met a team of NATO and commercial (or both) pilots, who would take us on a demonstration ride-along flight in the SIAI-Marchetti S.211A sweptwing fighter jet, a fully aerobatic version of the S.211 fighter jet trainer. There are about 60 of these jets in the world.

The airframe uses extensive structural bonding and composite materials—Kevlar, Nomex and carbon fiber composites. There are five hardpoints that can be armed with a range of weapons, photo and reconnaissance pods, or auxiliary fuel tanks. The S.211 has been in service with Singapore, Philippines and Haitian Air Forces (and is still in active use in the Philippines).

Powered by a single 2500-lb-ft JTI 5D-5C Turbofan engine from Pratt & Whitney of Canada, the SIAI-Marchetti S.211A can climb 5100 feet per minute, has a ceiling of 40,000 feet, and has a speed of 414 knots (475 mph) at an altitude of 25,000 feet. Dive speed is 400 knots (460 mph) and acceleration limits are +6g or -3.0g, with a load factor of +7 at 3.5g.

We would do all of that except the weapons part (or probably the 40,000 feet part).

After a briefing on the aircraft and the nature of our flight, we were fitted with flightsuits, flight helmets and oxygen masks, and headed out on to the tarmac. These are two-seat trainers, and we would be in the rear seat. Trained in the sequence of very specific steps involved, we climb up and in and are strapped in among the instruments and told to keep our legs and arms clear of the pedals and stick. We taxi out in tandem with a second jet. Takeoff is side-by-side, wingtip-to-wingtip.

Our flight took us east and southeast, throughout Nevada's southern tip, where Arizona, California and Nevada meet, along the Colorado River below Hoover Dam—though all of the above definitions are rendered somewhat meaningless during heavy aerobatics. The river, the sky, the mountains and rocks—all quickly alternate positions above, below and/or straight ahead of us.

The commonality is clear. We have dropped straight to earth, done barrel rolls and wingtip-to-wingtip maneuvers at over 400 knots, with total confidence in not only our highly skilled NATO pilot, but also our superbly engineered aircraft. We never gave one second's thought to our safety and security being in their hands.

We had driven 185-193 mph in a variety of supercars and Cup racers at Las Vegas Motor Speedway, on new Pirelli P Zero tires, and it was the same thing—total confidence, with never one second's thought to our safety and security being in the hands of Pirelli engineering. And that's just as it should be for anyone enjoying their time at the controls. ■

