



**Sky Arrow**

# Yes, it's a *real* airplane

**AT** this point, you've seen the picture of me and Brad King of Pacific Aerosystem floating leisurely above the San Diego shore, and the misconceptions are probably taking hold. Maybe you think the beautifully engineered Sky Arrow 650 TCN (under the Italian system, TCN means terra certified night) is "just" an ultralight. You need to read on. ■ The Sky Arrow is a fully certified airplane in Italy under JAR/VLA rules—and has FAA VFR certification by international agreement. It is made by Iniziativa Industriali Italiane SpA, better known as "3I." The company began under the name Meteor in the late 1940s as a manufacturer of fully certified general aviation airplanes and gliders. By the end of the 1950s, Meteor was a world pioneer in remotely piloted vehicles and a successful defense

**Your scenic tourmobile**

**BY ALTON K. MARSH**

PHOTOGRAPHY BY MIKE FIZER



contractor working with such giants as Northrop, Beech, Canadair, Ryan, and France's Nord Aviation.

By 1985, the booming defense business was going bust, and founder Dr. Furio Lauri sold Meteor to concentrate on civilian work once again, moving his firm from Trieste, Italy, to Rome in the process. It was then that 3I was born, and an expertise in working with carbon fiber began to develop. Lauri is a story in himself, having spent much of World War II as a decorated Italian test- and fighter pilot, but ending it aboard a P-51 Mustang flying for the Allied Forces.

In 1989, 3I took part in an industrial design competition for an airborne remotely controlled aerial work system. With a decade of refinements, that is what you see flying on these pages. Only you get to go along.

Imagine yourself sitting in a Lazy Boy recliner, floating 3,000 feet above the San Diego beach in golden sunlight. A bubble canopy extends down to your waist, revealing a spectacular panorama in all directions. Or you can look straight down to your right to spot migrating whales, and straight down to your left to peruse the city's famous Torrey Pines golf course. Hidden no longer among the city's hills are spectacular 15,000-square-foot luxury homes. That view is what attracted you to flying in the first place, right?

You're scooting along at 90 knots—a speed like that of a real airplane—in front of a reliable rear-mounted 81-horsepower Rotax 912 with a pusher propeller. (The aircraft will be available with a 100-hp Rotax this summer.) Mounting the engine at the rear does wonders to reduce the cockpit noise generated by the more common front-mounted engine. Scientists at San Diego State University use the Sky Arrow for atmospheric research because the rear-mounted engine allows the collection of uncontaminated samples through nose probes.

The maximum gross weight is 1,433 pounds; not exactly dinky. The aircraft can handle a 15-kt crosswind, greater than many of the much heavier single-engine GA aircraft on the market. You need more proof that the Sky Arrow is real? It has electric flaps that extend 30 degrees.

There is lots of leg room, even for a 200-pound writer who is more than six feet tall. Adjustable rudder pedals assure your comfort. The engineering is

simple and elegant. Take a look for yourself at the fit and finish of the Sky Arrow in April at Sun 'n Fun EAA Fly-In at Lakeland, Florida, in the outdoor display near the flight line.

Matching the engineering is the way the aircraft handles in the air. Aircraft control is second nature, leaving you free to concentrate on the scenery. It uses a side-stick controller like a jet fighter. But adjustment to it, as opposed to the more familiar yoke, is quick and natural from the first takeoff. Control forces are light, and the passenger on the raised seat in back won't even notice as you tap the Up and Down electric trim buttons on top of the stick. The push-to-talk button is on the front. The sides of the cockpit act as armrests, and the throttle is positioned exactly where the hand naturally falls.

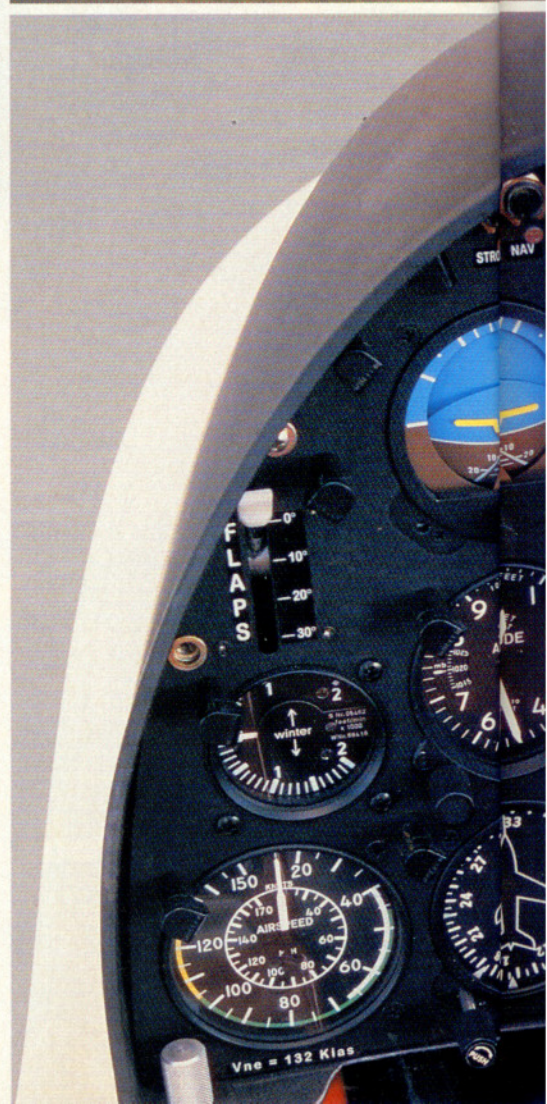
Even more relaxing is the thought that the view is not costing you much.



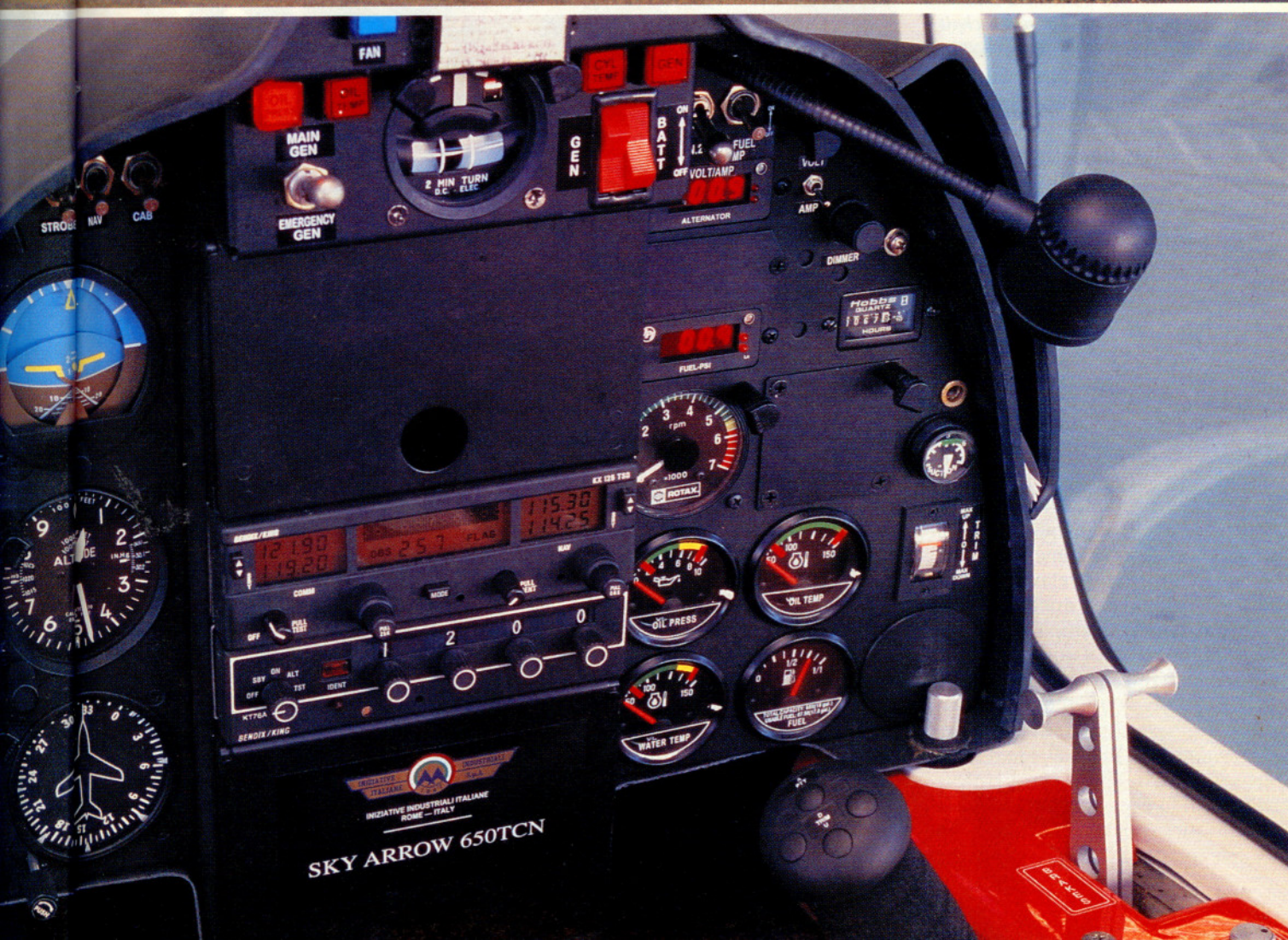
Operating costs, not including hangaring, run about \$17.50 an hour, according to Pacific Aerosystem Operations Manager Wayne R. Johnson. The price includes gas, oil, engine overhaul, and 100-hour inspections including parts. Johnson sells the Sky Arrow from a corporate hangar at San Diego's Montgomery Field. Assuming an hour flight out and an hour back, the "mission" cost of the standard \$100 aviation hamburger has just dropped to \$35. After all, you're burning 90-octane automotive gas, if you prefer that over 100LL avgas, and use only 4.3 gallons per hour. Use of approved automotive oil also saves a few dollars. You can save on hangaring costs by removing the wings, but a mechanic must approve reinstallation. (The wing on the certified 650 is carbon fiber, including the skin, while the wing for the kit model is aluminum. The kit builder can upgrade to carbon fiber.) While a trailer for the aircraft is available in Europe, it may be less expensive to obtain one locally.

The price also seems like that of a real

*The Sky Arrow is so well-balanced that the tail will remain on the ground for inspection of tail surfaces. Main-wheel brake handles are shown on the right side of the cockpit (bottom).*









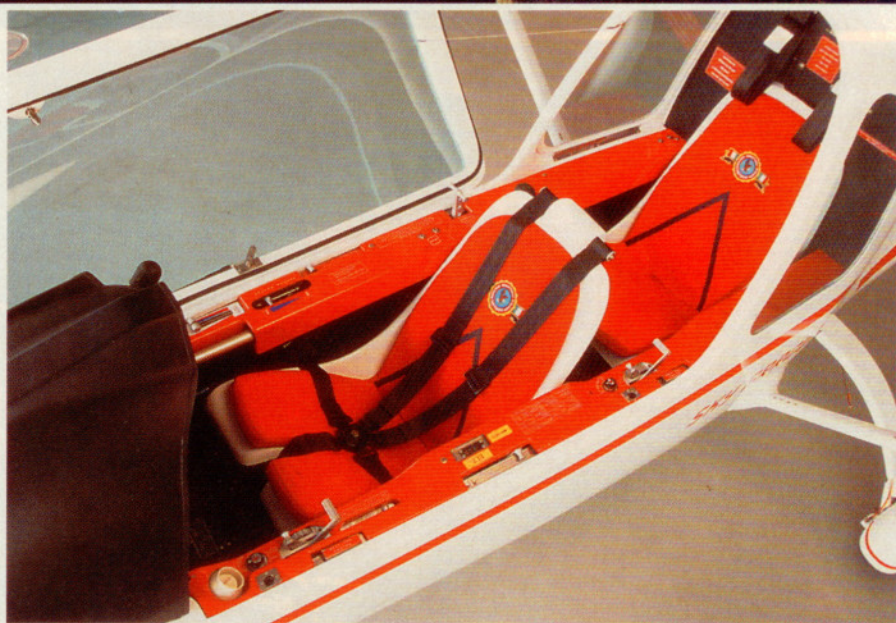


*Flight controls are well-positioned at the end of comfortable armrests. The rear cockpit is raised, offering the rear passenger a good view.*

aircraft—\$99,000 including transponder and nav/com radio—but remember that you are buying a lifetime of low operating costs. (And how much did you pay for that boat or motor home? \$80,000?) You are also buying the peace of mind that comes from knowing that the aircraft meets FAA standards. And, you are buying a low-pilot-workload aircraft, just the thing for a relaxing afternoon.

The company also offers an uncertified quick-build kit version called the Sky Arrow 1450; when ready to fly, you will realize a savings of \$30,000 to \$40,000 over the certified 650 model. Construction will require about 500 hours of work, but all the major components are completed at the factory in Rome.

Contributing to the relaxing ride are the conventional and docile handling characteristics. For example, you'll need your imagination in addition to the stall-warning horn to detect when this aircraft is fully stalled. It's a ho-hum event. After spending a few seconds in what *could* be the full stall, I told Pacific Aerosystem checkout pilot Howard Hawkins, "I'm declaring a stall." Later I held the stick full back, power off, and was able to raise a drooping wing when



fully stalled with easily timed—almost lazy—jabs at the rudder pedals. Although not approved for aerobatics, the Sky Arrow sports the five-point seat harness commonly seen in aerobatic airplanes. During final air work I reduced power to idle and the Sky Arrow descended only reluctantly, thanks to a 12-to-1 glide ratio.

Prior to the photo-formation flight, I had asked the pilot of the photo aircraft—a Cessna 172—to climb at 65 kt and cruise at 75 kt, assuming the Sky Arrow would be out-powered. Never

assume. The Sky Arrow, taking off several seconds after the lead Cessna 172, quickly caught up during the early portion of the climbout. The Sky Arrow also could have easily outclimbed the Cessna, said Pacific Aerosystem technical support specialist Brad King. King, who rode along on the formation flight, got his private certificate in the Sky Arrow. The cruise speed also was increased to 80 kt, since the slower speed proved unnecessary.

Cruise speeds aside, what you really want to know is whether the average



pilot can land it—the ultimate test for any airplane. Are you kidding? Pilots at any skill level have time to plan the roundout and flare, considering that short final is flown at 50 kt and touchdown occurs at less than 40 kt. Without thinking about it, I too quickly accepted a request from Montgomery Tower to land short. A forward slip for the remainder of downwind, base, and final was required to dump altitude. The rush-rush approach resulted in rounding out a little high. The result? A gentle touchdown,

thanks more to the aircraft than its pilot. Takeoffs are equally simple: Just a slight tug on the side stick after reaching 45 kt gets you into the air.

Once the flight is over—and that will come as a disappointment—the procedure for taxiing back to the ramp is to open the bubble canopy and steer using differential braking provided by two fingertip levers on the right side of the cockpit. Now you're a go-cart. And a happy camper. And if it isn't warm enough to open the canopy, the aircraft

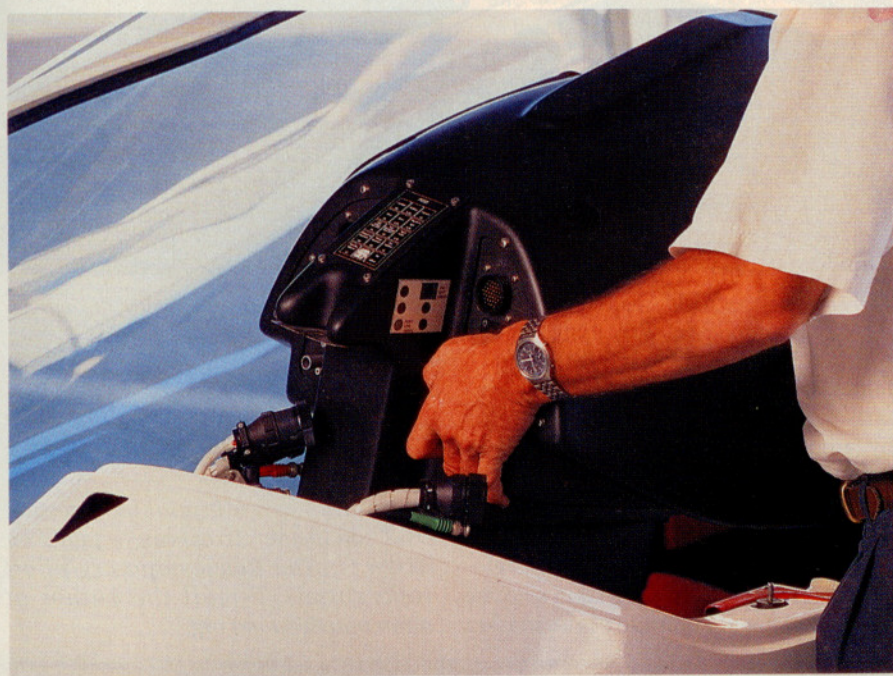
is equipped with an effective heater with vents for the front and backseat positions.

Once back at the hangar, Hawkins and King pointed out several of the more clever engineering highlights. Worried about your avionics? Loosen a few thumb screws, unplug a cable or two, and the entire instrument panel is easily removed. Avionics cost a lot, so lock them up at home when not flying. Need a camera port on the floor? One can easily be ordered for your aircraft, since the Sky Arrow got its start as a remotely piloted reconnaissance vehicle. The Sky Arrow can also be ordered equipped for night flight.

Want to ride in back and remove the windows for better pictures? Finger-operated fasteners can be released in seconds to remove either of the rear windows. A second set of engine and flight controls is standard for the rear seat. Another sign of thoughtful design: The pitot tube in the nose of the aircraft pulls out easily so that you don't stumble into it while in the hangar.

Obviously the company knows a lot about creature comforts, and it plans to use that knowledge soon to produce a four-passenger aircraft. The story of well-engineered aircraft from 3I won't stop with the Sky Arrow. In a year, Lauri

*Worried about thieves stealing your avionics? Loosen a few finger-operated fasteners, disconnect the cables, and take the panel home.*







*You buy an aircraft like the Sky Arrow for the view. This is one window seat worth the name. The airplane even carries 99 pounds of baggage in the rear for overnight trips.*

hopes to have a prototype flying of a four-passenger carbon-fiber F3000 designed by famous Italian aircraft designer Stelio Frati, father of the Falco and the SIAI Marchetti SF260. Lauri expects the cruise speed to be near 220 kt. The powerplant will be in the range of 300 hp. In a telephone interview from Italy, Lauri said the new aircraft will compete in the market

against the Mooney and Lancair Columbia. Sounds like Lauri is operating a *real* airplane factory, doesn't it? ☐

**i** *Links to additional information on the Sky Arrow can be found on AOPA Online ([www.aopa.org/pilot/links.shtml](http://www.aopa.org/pilot/links.shtml)). E-mail the author at [alton.marsh@aopa.org](mailto:alton.marsh@aopa.org)*

#### Sky Arrow 650 TCN Price as tested: \$99,000

Specifications		Rate of climb, sea level	
Powerplant	81-hp Rotax 912 F-81	Cruise speed/endurance (fuel consumption)	600 fpm
Recommended TBO	1,200 hr	@ 75% power, best economy	90 kt/4.1 hr
Propeller	Hoffman two-blade, fixed-pitch, 66-in dia		(4.3 gph)
Length	24 ft 11 in	Service ceiling	13,500 ft
Height	8 ft 5 in	Landing distance over 50-ft obstacle	705 ft
Wingspan	31 ft 10 in	Landing distance, ground roll	443 ft
Wing area	146 sq ft	Limiting and Recommended Airspeeds	
Wing loading	9.8 lb/sq ft	V <sub>X</sub> (best angle of climb)	57 KIAS
Power loading	17.7 lb/hp	V <sub>Y</sub> (best rate of climb)	65 KIAS
Seats	2 tandem	V <sub>A</sub> (design maneuvering)	90 KIAS
Cabin length	7 ft 8 in	V <sub>FE</sub> (max flap extended)	67 KIAS
Cabin width	2 ft 4 in	V <sub>NO</sub> (max structural cruising)	104 KIAS
Cabin height	4 ft 1 in	V <sub>NE</sub> (never exceed)	132 KIAS
Empty weight	925 lb	V <sub>R</sub> (rotation)	45 KIAS
Maximum gross weight	1,433 lb	V <sub>SI</sub> (stall, clean)	40 KIAS
Useful load	508 lb	V <sub>SO</sub> (stall, in landing configuration)	38 KIAS
Payload w/full fuel	400 lb	<i>For more information, contact Pacific Aerosystem, 5760 Chesapeake Court, San Diego, California 92123; telephone 800/844-1441 or 858/571-1441; fax 858/571-0803; or visit the Web site (<a href="http://www.skyarrow.com">www.skyarrow.com</a>); e-mail <a href="mailto:pacaero@earthlink.net">pacaero@earthlink.net</a></i>	
Fuel capacity, std	18 gal (17.8 gal usable)		
	108 lb (107 lb usable)	<i>All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.</i>	
Oil capacity	3.2 qt		
Baggage capacity	99 lb		
Performance			
Takeoff distance, ground roll	781 ft		
Takeoff distance over 50-ft obstacle	1,345 ft		
Maximum demonstrated crosswind component	15 kt		