# Alan and Dale's excellent idea

If you build it, they will buy one BY STEVEN W. ELLS

> ou can hear it when you talk to a Cirrus employee. It's evident in the professional salespeople who have jumped aboard the Cirrus bandwagon, and it's prompted a number of industry experts to pick up their families and move to Duluth, Minnesota. Cirrus is on a roll.

#### **The Cirrus SR22**

The FAA presented Cirrus Design with the type certificate for the SR22 in November 2000. Since then sales of the 200horsepower SR20 and the 310-hp SR22 have been accelerating. In June 2003 the 1,000th Cirrus was presented to its new owner. From August through September 2003, Cirrus set a new company record by selling 223 airplanes.

On July 27, 2003, Alan Klapmeier announced that Cirrus was offering a Centennial edition of the SR22 to commemorate the first 100 years of powered flight. Each airplane had special touches such as an embroidered Centennial logo on the pilot and copilot seats and a chrome detail package (which trashed the 1950s hot-rodder's motto of "If it don't go, chrome it") to go along with a Centennial decal on the tail. But the real story is that the 100-airplane run of fully loaded---Avidyne FlightMax Entegra flight deck, Garmin avionics suite including dual GPS navigation and mapping systems, S-Tec Fifty Five X fully coupled autopilot with altitude preselect, TKS Ice Protection package, and L3 Stormscope WX-500 and SkyWatch traffic avoidance

PHOTOGRAPHY BY MIKE FIZER

systems—Centennial SR22s sold out in 93 days.

Why has this airplane caught on with the air-

plane-buying public? Three reasons: value, the public's perception that the Cirrus airplanes are safe, and the company's efforts to promote Cirrus airplanes beyond the normal light-airplane marketplace.

For the money, a Cirrus buyer gets an airplane that's fast, carries a good load, is economical to operate, is fully certified to FAR Part 23 regulations, and has the latest in avionics and information technology.

The SR22 is powered by a 310-hp, sixcylinder, fuel-injected Teledyne Continental IO-550N engine with a 2,000hour TBO. This engine has advanced features such as cross-flow heads for improved breathing, and a 9.5-1 compression ratio for better thermodynamic efficiency. The exhaust system is tuned to increase exhaust air-flow and aid efficiency.

The SR22 has a maximum gross weight of 3,400 pounds, and a fuel capacity of 84 gallons. The base price is \$313,900 for a well-equipped IFR airplane. Options include upgrades to the S-Tec autopilot, a Garmin GNS 430 in place of the standard GNS 420, the addition of L3 Stormscope and SkyWatch systems, the addition of an Avidyne EMax engine and fuel monitoring system, and the TKS Ice Protection system.

The location of the sidestick makes it easy to see and reach the soft-key-selected menus on the two 10.4-inch LCD screens of the Avidyne Entegra flight deck. Markings on the sidestick control tube let you check takeoff elevator and aileron settings. Circuit breakers, TKS lce Protection system controls, fuel boost switch, fuel tank selector, and the engine controls are on the lower console.

An additional year of warranty can also be purchased.

#### **The Cirrus line**

Cirrus also sells two other models. The SR20 is a four-place airplane with a fuel-



injected, six-cylinder, 200-hp Continental IO-360-ES engine, a 2,900pound maximum gross weight, a fuel capacity of 56 gallons, and a 950-pound useful load. Cirrus advertises the cruise speed of the SR20 as 160 knots, although owners report that 150 knots is a more realistic number. The base price of an SR20 is \$229,700.

The newest addition to the Cirrus fleet is the SRV. The SRV is an SR20 with VFR equipment and, while the panel has both an Avidyne primary flight display and multifunction display, the SRV is neither certified nor equipped for IFR flight. The base price for an SRV is \$189,900.

All models of Cirrus airplanes are offered with extensive options that permit the buyer to outfit the airplane to fit his or her needs. Yet, according to Heike Berthold, the regional director of the Southern California sales staff and my shepherd during a cross-country flight

from California to Duluth, Minnesota, "Everyone wants the TKS, and almost every SR22 I've sold has been fully equipped."

#### The big XC

I talked Kate Andrews, the media guru at Cirrus, into letting me fly a long crosscountry in an SR22. Berthold was dispatched to keep an eye on me (and the company's airplane). We launched from Paso Robles, California, at 6:39 a.m. on July 25, 2003, and landed at Duluth International Airport after a total flight time of eight hours and 19 minutes. One landing was made at Rock Springs, Wyoming, for fuel, a weather check, and snacks. Our vending-machine lunch reinforces a proverbial aviation truth-it doesn't matter whether you fly an airplane worth \$383K or one worth \$15K, the airport snack machine is the great equalizer.

The fully loaded demo airplane we flew weighed 2,347 pounds, or 97 pounds more than the standard advertised empty weight. We topped off the two fuel tanks with 84 gallons (81 usable) of 100LL, and added baggage and golf clubs totaling 113 pounds into the baggage compartment. Another 35 pounds for flight gear, charts, survival gear, and other assorted items such as CDs, a CD player, sunglasses, snacks, and bottled water were added for crew comfort and safety. As we taxied out, the airplane was 70 pounds below maximum gross weight.

We cruise climbed upward at 880 feet a minute to 11,500 feet to get to a suitable crossing altitude for California's Sierra Nevada. Four hours and one minute later we landed into a cold, blustery wind at Rock Springs. We had used 54.6 gallons of gas for an average fuel consumption of 13.64 gallons per hour. Our routing covered 680 nm. Our average groundspeed worked out to be 170 knots. True air speeds worked out to be 173 to 175 knots—slightly slower than advertised. Part of this can be explained by our decision to use lean-of-peak mixture settings in cruise—as recommend-



The free-castoring nosewheel is steered by differential braking. Composite structures can be molded into drag-reducing shapes. Low drag, combined with manufacturing tooling that guarantees a high level of fit and finish, results in excellent cruise speeds.



## SPECSHEET

#### Cirrus SR22 Base price: \$313,900 Price as tested: \$383,000

#### **Specifications**

Powerplant	310-hp Teledyne	
Continent	al Platinum IO-550N	
Recommended TBO	2,000 hr	
PropellerH	artzell PHC-J3YF-1RF	
	3-blade, 78-in dia	
Length		
Height	8 ft 9 in	
Wingspan		
Wing area		
Wing loading		
Power loading	11 lb/hp	
Seats	4	
Cabin length		
Cabin width	4 ft 1 in	
Cabin height	4 ft 1 in	
Cabin volume	137 cu ft	
Empty weight	2,250 lb	
Empty weight, as test	ed2,347 lb	
Max gross weight		
Useful load		
Useful load, as tested	1,053 lb	
Payload w/full fuel		
Payload w/full fuel, as	tested549 lb	
Fuel capacity, std84	4 gal (81 gal usable)	
504 lb (486 lb usable)		
Oil capacity	8 qt	
Baggage capacity	130 lb, 32 cu ft	

#### Performance

Takeoff distance, ground roll	1,020 ft
Takeoff distance over 50-ft obst	tacle1,575 ft
Max demonstrated crosswind	component
	20 kt
Rate of climb, sea level	1,398 fpm
Cruise speed/endurance w/4	5-min rsv, std
fuel (fuel consumption)	

@ 75% power, best power, 8,000 ft ...... (106.8 pph/17.8 gph) @ 65% power, best power, 10,000 ft .. (92.4 pph/15.4 gph) @ 55% power, best economy, 10,000 ft.. (67.8 pph/11.3 gph) Max operating altitude.....17,000 ft Landing distance over 50-ft obstacle .....2,325 ft Landing distance, ground roll ......1,140 ft Limiting and Recommended Airspeeds V\_ (rotation) TO KIAS

V <sub>x</sub> (best angle of climb)	78	KIAS
Vy (best rate of climb)	.101	KIAS
VA (design maneuvering)	.133	KIAS
V <sub>FF</sub> (max flap extended)	.119	KIAS
VNO (max structural cruising)	.178	KIAS
V <sub>NF</sub> (never exceed)	.201	KIAS
V <sub>S1</sub> (stall, clean)	70	KIAS
V <sub>SO</sub> (stall, in landing configuration)	61	KIAS
VPD (parachute deployment)	.133	KIAS

For more information, contact Cirrus Design, 4515 Taylor Circle, Duluth, Minnesota 55811; telephone 218/727-2737; fax 218/727-2148; or visit the Web site (www.cirrusdesign.com).

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.

ed in the SR22 pilot's operating handbook (POH)—resulting in less power at the prop.

During the second leg, from Rock Springs to Duluth, we flew into a band of lumpy air, experiencing light to occasional moderate turbulence from Rock Springs to the RULER Intersection abeam Mount Rushmore in South Dakota. We climbed to 13,500 feet msl to get out of the bad air, but it didn't help. The relatively high wing loading (23.5 lb/sq ft) made the 240 nm of turbulent air more tolerable. East of the turbulence we descended over the plains of the Midwest. We landed in a rain shower four hours and 18 minutes after takeoff from Rock Springs.

The SR22's 49-inch-wide cabin, good visibility, plentiful ventilation, and supportive and comfortable seats had provided us with an enjoyable and memorable cruise across the western half of our great country. The twin 10.4-inch-diagonal bright and colorful liquid-crystal display of the Avidyne FlightMax

Entegra gave us instantaneous access to wind speed and direction, Jeppesen VFR and IFR charts, terrain, traffic, and lightning strike information. They also permitted us to monitor engine temperatures and power settings, and allowed us to modify or update our flight plan throughout the trip. Instead of the usual elbow-poking in the cockpit as we folded and unfolded cabin-filling charts and the riffling through 200 pages of paper POHs to determine engine power settings and fuel flows, we simply leaned forward, pushed the appropriate menu button on the PFD or MFD, and changed a setting or opened up a storehouse of flight data or other information that we desired.

The side-stick control, although new and different, was no problem. It was comfortable to use and provided unlimited visibility of the instrument displays.

Things were missing—there was no propeller rpm control nor was there a manual trim control. The prop governor linkage is connected to the throttle through a cam-type gizmo located in the center console. Push the power lever (throttle) full forward and the propeller rpm is advanced to 2,700, pull back a little and the rpm is reduced to the standard cruise setting of 2,500. The propeller rpm control cam maintains this rpm during cruise at various manifold pressures. As power is pulled back further, the power lever contacts the end of the prop cam control and rpm is reduced with power.

Electrically actuated pitch-and-roll trim is standard (rudder trim is an option) and is controlled by a button on top of the side-stick grip.

Ron Stein, who bought an SR22 to replace his Cessna 210 that was totaled says, "There's no workload in this airplane. I don't have to work the landing gear or cowl flaps or prop control." Reducing pilot workload is just one piece of the Cirrus approach to flying and airplane safety.

Cirrus Design founders the Klapmeier brothers (Dale is the quiet one; Alan likes to speak out) felt that there was a need to widen the market for *personal aviation* airplanes—this term is one of many ideas Alan actively promotes—and they had a hunch that safety would draw new people into the smallairplane world.

### Safety sells

The Cirrus Airframe Parachute System, or CAPS, is an important part of selling Cirrus airplanes. "We have people asking for demo rides who tell us that the parachute is the reason they're looking at a Cirrus," says Berthold.

Lessing Stern took a Cirrus demo ride while he was in the process of selling his Beechcraft King Air. He bought a Centennial SR22 and couldn't be happier. The CAPS and the other safety features caused him to evaluate and change one of his long-held personal rules.

"Before I bought my SR22, I had established a rule of never flying a singleengine airplane at night. I've amended that rule because of the safety features of my Cirrus," says Stern.

In addition to the CAPS, every Cirrus airplane is equipped with seats capable of absorbing 26 Gs of force, the occupants are surrounded by a tough carbon-fiber reinforced shell, and the wing incorporates spin-resistant features that comply with the most modern Part 23 mandates.

SR22 buyers do have to learn new systems. The latest SR22s have dual alternators (the second alternator is

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an option on the SRV and SR20) and no vacuum pump. There's a battery for each alternator. The electrical distribution system is sophisticated. Features such as a primary bus, an essential bus, a nonessential bus, dual batteries, and diode-isolated bus interconnects make the airplane's electrical system look more like something out of a turboprop twin than a typical singleengine airplane. When either alternator fails, the system automatically continues to supply power to essential communication and navigation radios and instrument lights. There have been some teething problems with the SR22. Early airplanes were hard to start, some SR22 owners have reported nose-gear shimmy problems that have caused cracked and broken nose-gear wheelpants, and cracks have been found in the single-pipe exhaust system. Maintenance procedures, service information, and parts changes and upgrades have been developed to address these problems, although some owners have expressed surprise when they learned that the full cost of a number of these fixes isn't covered under the two-year airplane warranty.

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## Performance made simple

Cirrus Design founder Alan Klapmeier says he can't remember a time when he didn't pay attention to airplanes. "The family story is that mom used to take me and my brother Dale to the airport to watch airplanes take off and land when were little so we would give her some quiet time and she could read a book for a few minutes."

By the time he was 3 years old, Alan Klapmeier knew he wanted to fly. By the time he was in high school, he had earned his private pilot certificate and was talking about a career in aviation. By the time he was a senior in college, he and Dale had quietly begun working on their first airplane design.

That same year the brothers announced their plans to start an aircraft company. Their parents were supportive but skeptical. "I remember them teasing us that it was better to go broke when you're young," Klapmeier says.

And at times it looked like they might do just that. "I often tell people that what it takes to do a project like this is to be dumb enough to start and smart enough to finish," Klapmeier says. "You have to be

#### Selling the package

In August 2001 the Klapmeier brothers turned to outside investors to take Cirrus Design into the future. The resulting infusion of capital has been used to upgrade the production process and to hire the people to move the Cirrus Design dream into the twenty-first century.

The economic doldrums that swept the country in 2001 prompted Cirrus to trim excess fat off its existing production procedures. Just-in-time (JIT) and point-of-use (POU) parts and component delivery systems have reduced the need for warehousing. Eighty percent of company personnel are involved in production, and the company tries to put employees in their "best fit" positions. A production-tooling expert has created design fixtures that have resulted in the ability to fabricate and assemble parts to tolerances as tight as 0.005 inch. These changes have cut the number of parts and equipment vendors per airplane in half (to 140) and cut the total production hours per aircraft from 3,793 to 1,878.

Customer service has committed to making the buying experience easy and dignified. To this end, Cirrus has teamed with a financier to offer buyers a financing plan to fit their needs.

Just after the completion of a new delivery center in November 2002, Cirrus cranked up its reach-out program by willing to dive in and learn as you go because if you knew how hard it would be you just wouldn't try, and because of how hard it is, it's no wonder that so many people don't make it."



rus aircraft are, in many ways, marvels of modern technology from their composite airframes to their big-screen avionics, Klapmeier has never thought of technology as an end in itself. "Technology is very much a series of forks in the road," he says. "Either it simplifies the process and adds value or it makes the process more complex. It may add more performance but the tradeoff is less value because of greater complexity." And finding that perfect balance between performance and simplicity is Klapmeier's personal and professional quest.

-Elizabeth A. Tennyson

adding more than 20 members to a national sales staff and setting up a program to make sure that every flight instructor in the country gets at least one introductory ride in a Cirrus. Any flight instructor who hasn't had a ride can contact the factory online (www. cirrusdesign.com).

From April 2001 through early 2003 there were six fatal crashes in Cirrus airplanes. Accident investigation teams cleared the airplane of any inherent fault, but the accidents raised some insurance underwriters' eyebrows. (See "Safety Pilot: Cirrus Safety," page 48.) Cirrus put forth a dedicated effort to explore the cause of the accidents, and then prompted individual underwriters to visit the factory to learn about the safety features of Cirrus airplanes. As a result, the number of underwriters willing to write competitive policies for Cirrus buyers has grown, and one company has started writing commercial insurance for Cirrus airplanes.

Partly prompted by the crashes, Cirrus and other government-industry team members upgraded and modernized flight-training standards to incorporate technically advanced airplanes (TAAs) such as the Cirrus airplanes into the training fleet.

As a result, each buyer trains for two days with a Cirrus-endorsed instructor from the University of North Dakota Aerospace program. This training is included as part of the purchase. Eighty percent of buyers spend at least one additional day at the delivery center for extra training.

### The rest of the story

The real story here is that Alan and Dale Klapmeier started with a dream and, within a remarkably short time, they not only designed and certified two state-ofthe-art airplanes, but they also had the business acumen to attract some of the industry's best and brightest professionals to bring twenty-first-century manuLinks to additional information about Cirrus Design may be found on AOPA Online (www. aopa.org/pilot/ links.shtml), Keyword search: Cirrus. facturing techniques to their company. The result is safe, fast, and reliable airplanes, backed by an organization that is succeeding in its goal of showing a new generation of airplane owners the

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