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What to Expect After an Accident

Going Turbo with an SR22

Arrive a half-hour earlier, while burning less than one extra gallon of fuel – Read How Inside



N267SR in
Tornado Alley
Turbo's hangar,
in Ada, Okla.

Tornado Alley's Turbo for the SR22

by Kelly Rudy

There is great news for current SR22 owners who want to upgrade to the performance of the Tornado Alley Turbo (TAT) turbo-normalizing system: "The-Turbo"™ is now available for aftermarket installation on SR22 serial numbers 820 and subsequent.

I recently upgraded to this system and wanted to answer some questions that I initially had for those of you who are considering the upgrade.

What is included?

"The-Turbo"™ is essentially the same STC kit supplied to Cirrus Design for installation on new SR22 aircraft, with a few minor changes and enhancements. It features new "half-stamp" Type 321 stainless steel exhaust manifolds and twin, high-efficiency (Garrett) turbochargers, dual wastegates and two tailpipes with supplemental cabin heat exchangers. A turbo-style starter drive adapter provides engine oil circulation through the turbochargers.

The new engine air intake and induction system is designed for optimal power performance and induction air cooling, even under the most challenging conditions. Improved baffling and the addition of louvers to the lower cowl assure optimal cooling for excellent cylinder head temperature control, even at high power, at altitudes as high as the new service ceiling of 25,000 feet MSL.

Several other features such as custom-tuned fuel injectors insure a balance of the fuel-to-air ratios for smooth, balanced power, whether running "rich-of-peak" or "lean-of-peak." Also added as part of the installation are pressurized magnetos, lifetime Teflon hoses, new automatic engine alternate air control, and new cockpit placards.

The included software interface to the Avidyne MFD provides for the addition of Turbine Inlet Temperature (TIT), annunciation of alternate air door opening, corrections to the calculated percent of power, and changes to the limits of manifold pressure and fuel flow.

The 15-pound aft ballast weight which is found on all G3 Turbos from the factory will be added to your aircraft, if it is not already installed, provided that a weight and balance review indicates a benefit.

What else might you need?

If you don't already have a built-in oxygen system, you will need one as this is an FAA-required item. If you have a factory-installed 77 cubic-foot bottle, no modification is necessary. If you don't have built-in oxygen, TAT offers their own four place, built-in oxygen system consisting of a 77-cubic-foot Kevlar® bottle mounted in the aft baggage area. This system has four overhead outlets with a front panel-mounted control switch with fill gauge.

You will most likely want the Hartzell composite propeller instead of your current metal propeller. The composite version significantly dampens engine vibrations resulting in a "turbine-like" smoothness that is superb. I've been told by two pilots that my airplane is the smoothest single-engine piston plane they've ever flown in! The composite propeller weighs 12 pounds less than the original, moving the Center of Gravity (CG) approximately 0.5 inches aft – a very useful benefit.

No upgrades are required for aircraft equipped with a Rev C A1615 DAU and Release 7 (or subsequent) of the Avidyne software. Aircraft with SIUs or earlier Avidyne software versions will require an upgrade at the time of installation. TAT can provide the necessary hardware and software upgrades based on your individual configuration.

How long does it take to install?

Installation of "The-Turbo"™ takes three to four weeks to complete and can be installed at the Tornado Alley Turbo facility in Ada, Okla., or at one of TAT's Authorized Installation Centers (AICs). During this time, TAT can add their newly-designed four place, built-in oxygen system, Hartzell composite propeller, and any hardware and/or software upgrades needed.

When I arrived in Ada to take delivery of my newly-modified bird, Director of Maintenance, David Landreth, and crew were proudly standing next to my airplane with the engine cowl removed so that I could see their work. You could tell they were excited and proud, and they had good reason to be! "The-Turbo"[™] is a truly remarkable system of the highest quality.

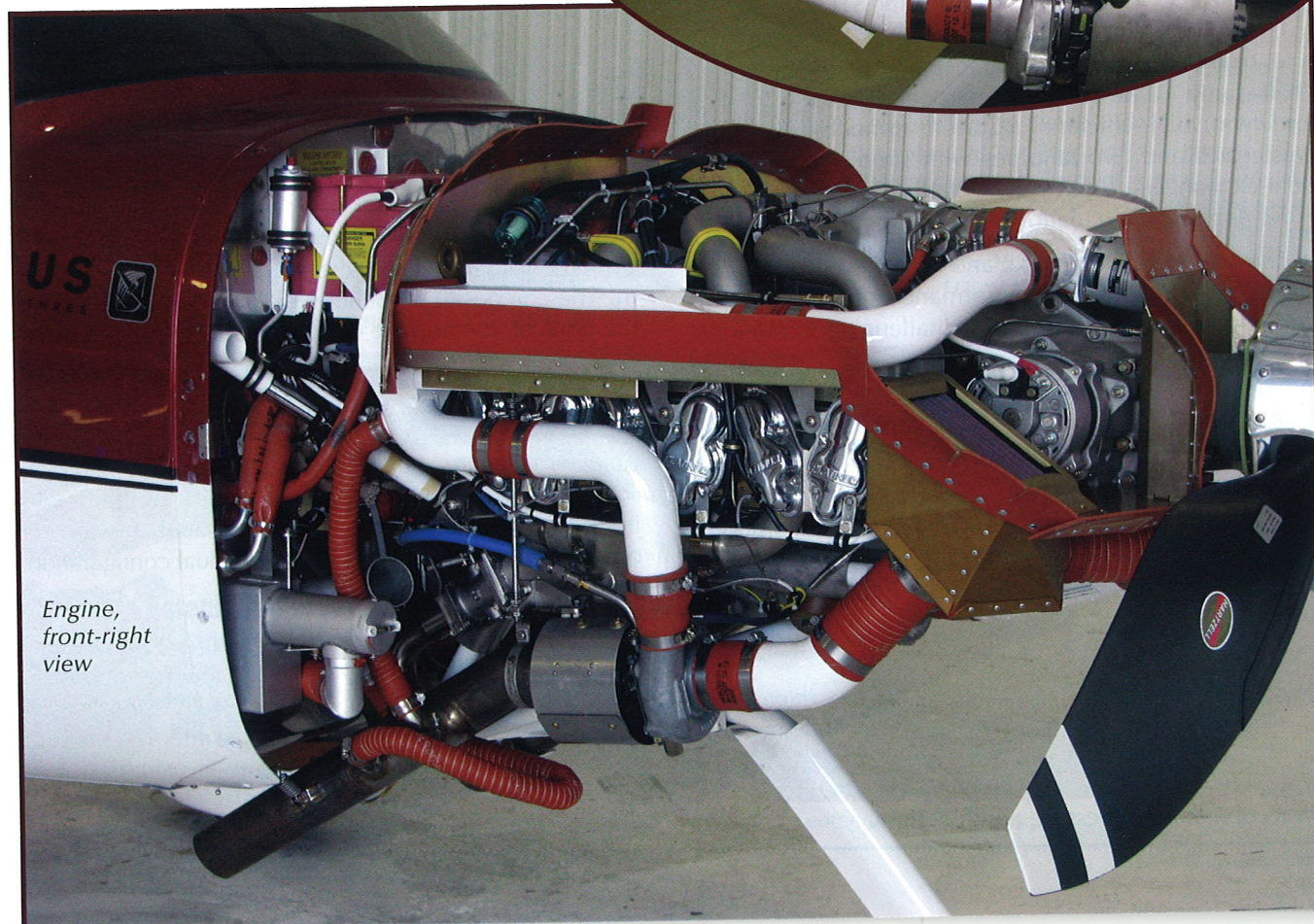
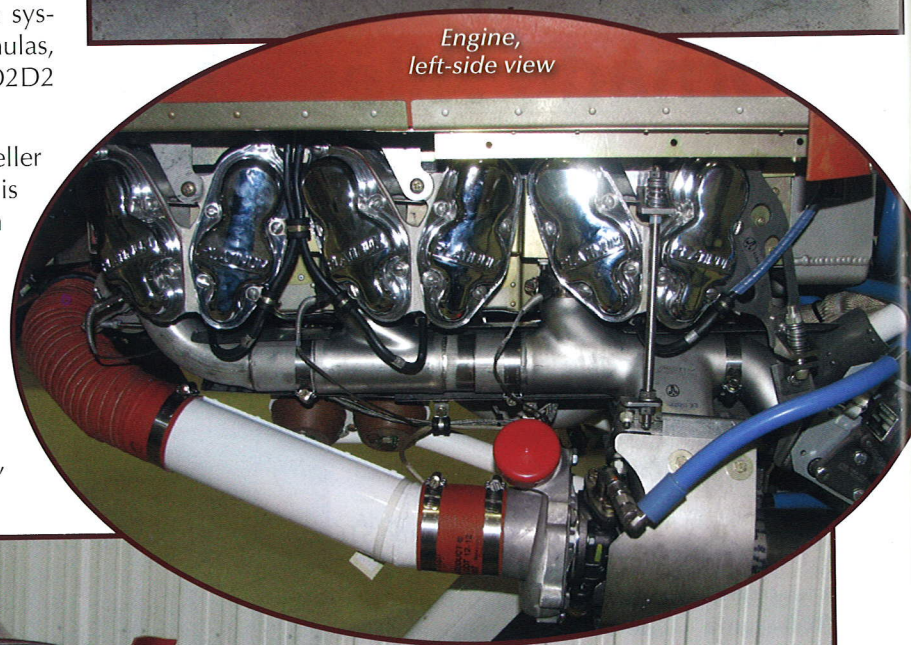
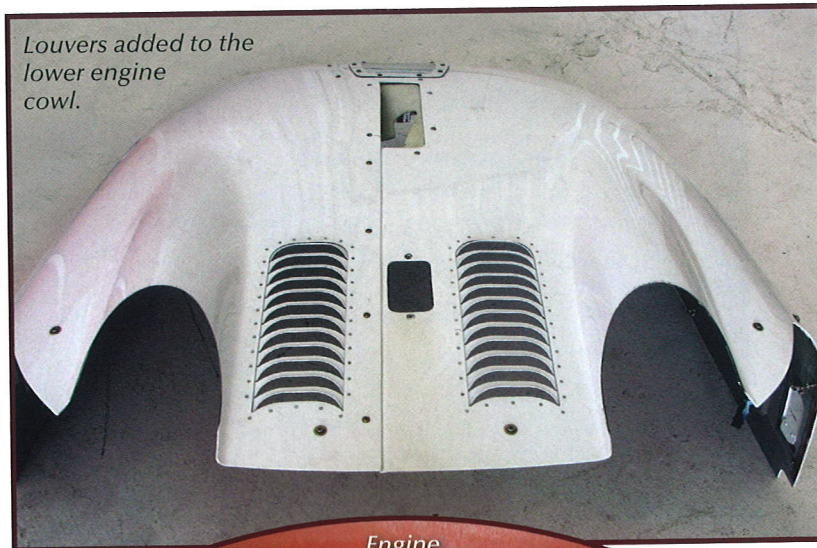
How much does it cost?

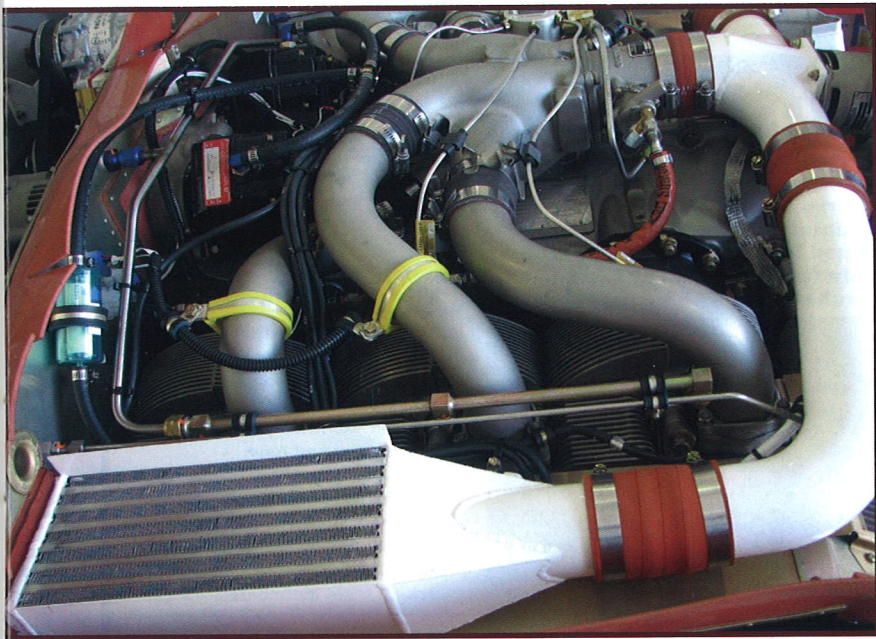
Installation of "The-Turbo"[™] includes a thorough system ops check, precision tuning of the turboGAMjectors[®] and flight instruction in the airplane to familiarize you with the easy operation of the system. Installed pricing is \$48,000.

Pricing for the four place, built-in oxygen system is \$9,995, which includes four nasal cannulas, one mask and one Mountain High oxygen O2D2 pulsed delivery unit.

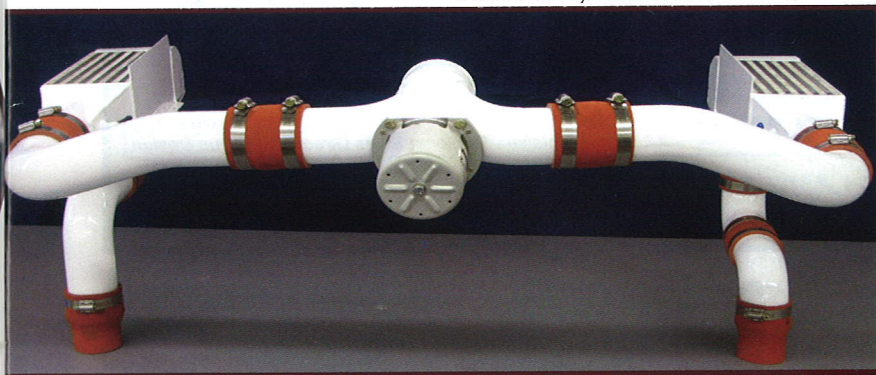
Assuming you have an existing metal propeller for exchange, the Hartzell composite one is available as an additional option for between \$10,000-\$13,000 – depending on the age and condition of your existing propeller.

For aircraft equipped with older hardware and/or software, upgrade costs are variable and range from \$1,995 to \$6,390. TAT can give you an exact cost based on your configuration (i.e. SIU versus DAU, Avidyne software version, etc.).





Intercooler installed, above.



Induction system (stand alone), below.

What is the effect on Weight and Balance?

I will use the actual values of my airplane (N267SR) as an example. Since my airplane was factory-equipped with the oxygen system and composite propeller, I “backed-out” these values for the purpose of a realistic comparison.

With a 2007 NA Cirrus SR22 G-3 GTS with A/C, metal prop, no oxygen system, and adding a Hartzell composite prop, an oxygen system (in this case, the Precise Flight system was added), and the “The-Turbo”™ and tail ballast, the total (theoretical) weight gain from all modifications to my airplane was 87.3 pounds and the CG moved 0.90 inches aft. Since my plane already had the composite prop and oxygen system installed, its actual weight gain was 82.3 pounds and the CG moved forward 0.46 inches.

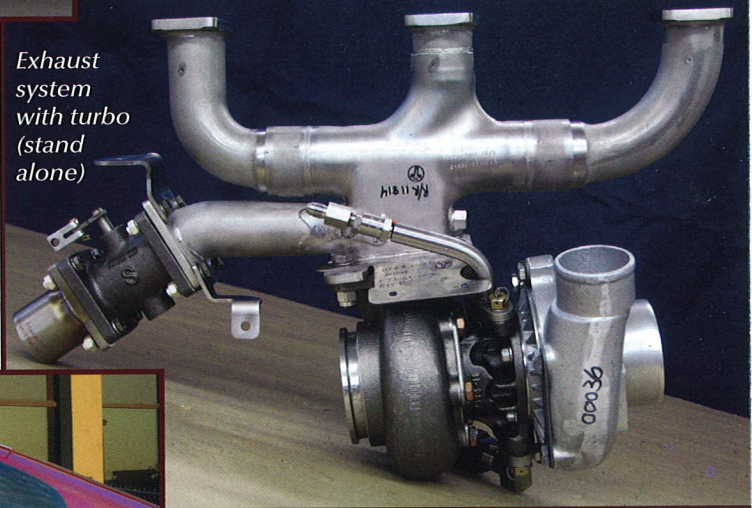
Pitch authority is more than adequate with “The-Turbo”™ since the CG is comparable with normally-aspirated SR22s. I noticed very little, if any, change in handling during landing after modification.

The most-often asked question I get is, “Would you do it again?” The answer is easy – an unconditional, “YES!” I’m absolutely thrilled with the performance and capability, and equally thrilled with Tornado Alley Turbo’s precision craftsmanship and service.

Anyone interested in “The-Turbo”™ should contact Tim Roehl at (580) 332-3510. [COPA](#)

CONFIGURATION	EMPTY WEIGHT	CENTER OF GRAVITY
2007 NA Cirrus w/ AC and metal propeller	2,353.0 lbs.	138.24 inches
With composite vs. Metal prop	2,341.0 lbs.	138.67 inches
Including Precise Flight O2 system	2,358.0 lbs.	139.60 inches
The-Turbo and ballast	2,440.3 lbs.	139.14 inches

Exhaust system with turbo (stand alone)



Kelly Rudy (left), owner of N267SR and George Braly (right) of Tornado Alley Turbo.

About the author: Kelly Rudy is a long-time COPA member and two-time SR22 owner, with CFII, CSIP, ATC and A&P licenses/credentials. While he frequently states his status as “unemployed” in front of pilot groups, we know that he is actually an FAA air traffic control specialist who oversees the controller training program at the FAA Academy in Oklahoma City. Kelly has been a pilot for 27 years and an air traffic controller for the past 21 years.