

# The Seawind Flyer

Summer 2013

*"The evolution of an intelligent design."*™

Seawind LLC

P. O. Box 1041  
Kimberton, PA 19442-1041

Ph: 610-917-1120

Fax: 610-933-3335

www.seawind.net

Copyright Seawind LLC 2013



## **SEAWIND HAS TURNED THE CORNER**

There is nothing glamorous about paperwork. However, without it no one could certify an aircraft. We have turned the corner and have made more progress in the submission and acceptance of documents in the last four months than we had in the past two years. I won't bore you with the details, but the progress has been significant.

We still have much to do, but concentrating on VFR first we will be able to start production while we are completing documentation for IFR, autopilot and glass cockpit. Of course we are hoping a turbo diesel will come along. Continental Motors announced last year that they will have a diesel by the end of 2013. We will have to make a decision at the end of the year. If no diesels are available, then we may have to go ahead with the Turbo charged IO-550. The only thing that takes longer to certify than an aircraft is certifying an aircraft engine.

## **SEAWIND'S STALL PREVENTION SYSTEM REACHES A MAJOR MILESTONE**

Last spring we had achieved consistent operation with the Stall Prevention System (SPS) but needed final calibration. The SPS operated full stroke in less than two seconds, which was thought to be the maximum allowable time allowed. Subsequent flight testing revealed that it was too fast, so we had to slow it down 10%.

Flight testing also revealed that the Seawind elevator is so effective that the aircraft recovers in less than half the stroke and stall recovery was over in less than 1 second.

As we have published before, with a power-on stall the high thrust line drops the nose so

quickly that a spin is unlikely. The main purpose of the SPS is an engine out or at an idle power stall with full flaps.



Testing revealed that at 40% of power, we had to advance the pusher signal which required a throttle interlock. Again that was at full flaps and the SPS was too fast.

Next it was a matter of getting the sensors to activate the shaker at 5 or more knots above stall and the pusher to activate in one second before or after the stall. Then there is no time for a spin to develop. Well, we did it and the pusher calibration is done. To be absolutely certain that the system worked at all extremes of the envelope, we had to test "abused case stalls". These involve unusual altitudes such as steady heading side slips at maximum angle pulled into a stall and at the same time applying full rudder; no spin occurred. It also includes accelerated and turning stalls. All of the stalls were tested at:

Forward, mid, and aft c.g.

Lightweight, mid, or heavyweight

Flaps at every angle (i.e. -10, 0, +10, +20, +30)

Landing gear both up and down

Balance and unbalanced fuel

Idle and 75% of power

So far the pusher has activated each time at the aerodynamic stall or 1 knot prior to the stall. It is a much tighter response than we expected.

**Stop the presses! We did it!** We just completed all the critical abused stall flight tests required by Transport Canada. This is the second milestone. This is a really Major Milestone which marks the end of development and the end of stability and control testing. The Seawind will be the first General Aviation single engine aircraft to have a Stall Prevention System. It was a lot of work and a long time coming. It is here now!

Once again the Seawind has blazed a new trail; we hope that we don't have to blaze any more. When Transport Canada accepts the results we will be able to freeze the design and start ramping up production knowing that no changes to the structure of the aircraft will be required.

### **PERFORMANCE TESTING**

This is the testing we have been waiting for. It will give us all the actual performance figures that our customers want to see. We can't change them because they are what they are. All we can do is record them. You will know what runway length is needed to take off with 3,400 lbs. or 3,200 lbs. The same with landing distance on both land and water. We know the numbers will be good! We just don't know how good!

We already know that you can take off on a 90° F day with 115°F fuel and climb continuously to 20,000 feet without the engine overheating.

The performance testing should take 6 to 8 weeks or about 4 weeks of good flying. The Seawind is highly instrumented and will record all kinds of data (i.e. 23 channels for the power plant, 30 airframe channels, plus GPS and 3 cameras). Upon completion of performance testing we can publish the actual specifications and start to ramp up sales efforts.

### **PHASE 4 PRODUCTION & SALES**

We have reached a financial milestone as well. In the past two months, sales inquiries have increased dramatically. This milestone gives us the opportunity to go to more cautious investors who viewed the certification project too risky. Yes investment in aviation is risky. The current

investors joined with us on a rollercoaster ride and when things looked bad they stuck with us and dug even deeper to make it happen.

If you would like to join the adventure, we will be pleased to talk to you and provide you with full financial information. If we can get a third of what we need for Phase 4, we should be able to get bank financing for the rest if necessary. However, we prefer equity.

### **IS THERE A DIESEL ON THE HORIZON?**

We have been waiting for a diesel for a long, long, long time. A turbo charged diesel can not only cross the mountain but it could fuel up at a marina (or a truck stop?), and at an airport where there is Jet A.

AVGAS 100LL is expensive and hard to get at most places. Even in North America, people are interested in diesel. Diesel fuel contains 55% more energy (140,000 BTU vs. 90,000 BTU) than gasoline. The Seawind would have a 1,950 statute miles or 1700 n.m. range.

Like everything else in aviation, for anything you gain you lose something else. In this case you lose 180 to 200 lbs. of useful load and the fuel weight is 7 lbs. per gallon, instead of 6 lbs. per gallon for AV Gas.

### **A recent article from Seawind Europe**

*“Continental Motors announced today that it has bought the bankrupt assets of Thielert Aircraft Engines for an undisclosed sum. The deal has been in the works for several months and overnight makes Continental the volume leader in aircraft diesel manufacture. Continental and its parent, the China-based AVIC International, said that the management of Thielert would be integrated into its Mobile, Ala., headquarters, but that diesel manufacturing will remain in Lichtenstein, where Thielert has been headquartered since it launched in 2002. Continental will drop the Thielert name, but retain Centurion as the model nameplate for its line of diesels. In addition to Thielert assets, Continental is ramping up production to build its own in-house diesel, the 230-hp TD300, the basic technology base it bought from the French company SMA in 2009. That engine was certified in 2012 and Continental will pursue both OEM and STC conversion markets.*

*It has a production engine installed in a Cessna 182 and is continuing development on improved turbocharging.*

*Following the Thielert acquisition, Continental Motors will be divided into five operating units including Continental Motors Inc., AVIC Continental Motors China, Mattituck Services, its Fairhope, Ala., engine services shop, and Technify Motors GmbH, the new operating name for the Thielert assets.*

*The Thielert purchase gives Continental four engines across of a spectrum of horsepower. At the low end are the Centurion 135-hp 2.0 and 155-hp 2.0S, the mid-range 230-hp TD300 and the 350-hp Centurion 4.0, which was certified by Thielert but never fielded.*

*European STC's exist for installations of the Centurion 4.0 in the Cirrus SR22 and the Cessna 206.*

*Continental CEO Rhett Ross told AVweb that once the purchase is complete, the company's major emphasis will be to integrate - and improve - customer service and support and increase gearbox inspection intervals and engine TBR's or time between replacement on the Centurion core engines.*

*Thielert originally promised that the engines would reach a 2400-hour TBR by 2006, but the best the company ever managed was 1500 hours for the Centurion 2.0. Moreover, both of the four-cylinder Centurions were hobbled by 300-hour gearbox inspections that many owners considered to be an expensive nuisance.*

*Ross said Continental's due diligence of the company revealed sufficient data to support longer TBR's and Thielert had already developed but never fielded a 600-hour gearbox. Although the Centurions ran into significant maintenance issues by 2007, what forced Thielert into bankruptcy was overboard warranty protection that the company simply couldn't sustain.*

*"When we looked at their data from their current experience and their life experience, it's not bad. For what it is as a product and where it is in its cycle, it doesn't scare me as a business leader," Ross said of the Centurion line of engines. But he conceded Thielert had a deservedly poor reputation for customer service and customers have complained to*

*AVweb that Thielert never built the service centers it promised. Continental will address this, said Ross, by bringing support for all of its engines into a common entity, so when a customer calls for support on any engine, the process will be transparent. Ross said that Continental once had its own customer service problems but invested time and money to improve. It intends to apply the same formula to its diesel line.*

*"We're opening a company in China to provide service, sales and support. We've got people in training to start that right now," Ross said. Continental is clearly bullish on the market potential for diesel engines. Jonny Doo, Continental's VP for business development, thinks that in five years, diesels will represent about 25 percent of the entire light aircraft market, and much of that demand may come from China. "That market may not be tomorrow, but it may not be far away," Doo said. Because it believes time to market is critical, Continental bought mature diesel technology from other companies rather than developing its own clean sheet designs, said Doo. AVweb will have more coverage on the Thielert purchase later this week."*

We at Seawind are hoping that there will be a lot of improvements with the Centurion engine. It is a Mercedes eight cylinder block and it had one belt that drove every accessory. At first sight it was obvious that the belt would be problematic. It had six or eight idler pulleys as it drove the fuel injector pump the alternator, fuel system and other pumps. If the belt was to break, everything would be lost. We are certain they will cure that. For the Seawind, the Centurion will require a number of design changes, and testing of the vertical tail, vibration and flutter testing. The certified



Seawind currently has the 310 HP Continental AVGas engine (i.e. the IO-550-N). We will be cheering for the new 350HP diesel engine.

## **OSHKOSH**

Sadly, we could not attend Oshkosh this summer. The one week event would have cost us a minimum of three weeks by the time we returned. We also would have needed to remove some test equipment and special devices on the aircraft. To present the Seawind in a production configuration would take a month or more.

Cold weather comes early in Canada and we have water work and noise testing to do. These are simple flights to perform and we already know we will easily pass these tests. Even during a heat wave we have to think about ice and snow.

Dick Silva

