

Fly Low, Fly Safe

NEWSLETTER FOR THE AERIAL APPLICATOR ■ VOLUME 4, ISSUE 1 2012



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How to Gauge Success

Longtime industry pro Jeff Reabe finds a way to build a better hopper quantity gauge to make applicators' jobs easier.

By Alison Hunter

As if flying low isn't challenge enough, some ag professionals view their jobs through the prism of a question: how can we do it better? For Jeff Reabe, vice president of Reabe Spraying Service and Reabe Aircraft Improvement in central Wisconsin, that question led to a journey of innovation, tinkering, more innovation, more tinkering, production and, finally, certification by the FAA for a new product that will make aerial applicators' jobs easier.

Reabe's True Quantity hopper quantity gauge was just awarded a supplemental type certificate from the FAA in December, capping a long journey to develop a better gauge.

Reabe had been thinking about improving a hopper gauge almost as long as they were operating Air Tractors—since 1979, although the Reabe family has been in the aerial applications business since 1945. The mechanical pointer hopper quantity gauge originally installed on Air Tractors was reliable but was not always accurate. So the search for an accurate hopper quantity gauge began.

"Other electrical systems seemed promising initially, but problems with reliability and accuracy with these gauges led us to design our own system," Reabe said.

Innovation is nothing new to Jeff Reabe. He developed the Clear View Canopy, made of ¼-inch molded Plexiglass, to improve turning sight lines for Air Tractors, in 1997, and also created the Aztec Ski Rack, which allows pilots to store gear up to six feet long in Piper Aztecs.

Development of a digital quantity gauge started after Troy Reabe, Jeff's son, suggested a technology he was using in his career as a

senior design engineer. Applying the same technology that allows high-end industrial milling machines to be accurate to within a thousandth of an inch, the Reabes created a prototype probe stick hopper gauge, which would become known as the True Quantity hopper quantity gauge.

Testing began with two Air Tractors from Reabe's fleet, with outstanding results.

"We were impressed with its accuracy—to the gallon—and its reliability. It never failed," Jeff said. The new hopper quantity gauge could detect an amount to the gallon in an Air Tractor's 500-gallon hopper, he explained.



In a video on his website at <http://reabeair.com/Gauge.html>, Jeff Reabe, vice president of Reabe Spraying Service, demonstrates the True Quantity Gauge.

The following year the technology was installed on six aircraft with no found failures. Confident they were onto something, the Reabes brought their prototype to Air Tractor, whose encouragement and suggestions meant a return to the workshop by Troy.

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Let Us Look Before You Leap With Contracts

Contract review can save you from trouble later

By John Worthing

Nobody likes to read the fine print in contracts, but what you sign without reading can come back to haunt you. Many aerial operators are discovering that contracts they signed with airports, co-ops, and seed and chemical companies contain unpleasant surprises.

We urge our clients to take advantage of NationAir's complimentary contract review service to protect themselves. At no cost to you, NationAir will help negotiate problems out of that contract. Our contracts expert, Gary Stewart of Ascot Aviation Consulting, will dissect your contracts no matter what the size to make sure your interests are protected. We also can review the contract with underwriters to ensure they agree with the language and would pay in case of a claim.

When ag companies assign work to you as an independent contractor, the contracts they give you have been written by them, fully loaded in their favor, not yours. Too frequently, aerial operators discover unfavorable terms after the fact.

For example, leases for hangar space and even tie-downs increasingly require environmental liability insurance. An operator may not notice until after a spill occurs, and he's not only liable for the cleanup but in trouble because he's
(Continued on page 3)

Gauge Success (cont'd.)

"With input and guidance from Air Tractor, we began incorporating features and construction methods that required Troy to design and build his own display," Jeff said.

That led to the third year of development and testing, when the Reabes installed the digital hopper quantity gauge on every aircraft in the Reabe Spraying Service fleet: Air Tractors, Piper Pawnees and Bell helicopters. Again, it performed flawlessly.

Another year, another round of expanded testing: in Year Four, Jeff Reabe convinced 20 operators to use the gauge during their application season, to expand testing and get feedback from other users.

"That year the quantity system worked as predicted, but we learned the spray boom sees very large pressure spikes due to water hammer," he recounted.

The team went back and refined the gauge even further. "Now we can offer a well tested and refined hopper quantity and boom pressure system that is accurate and reliable," he said.

"This is a product that was developed by an operator for an operator."

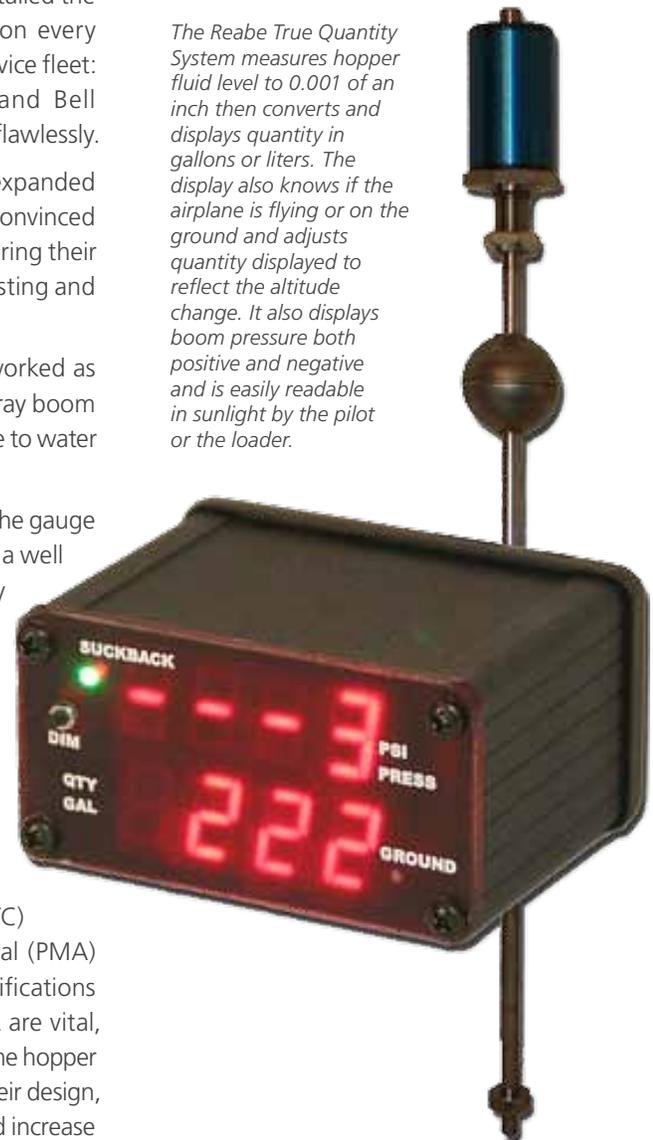
As field testing continued, the Reabes waded through the extensive process of obtaining a supplemental type certificate (STC) and Parts Manufacturer Approval (PMA) from the FAA, earning the certifications in December. The STC and PMA are vital, enabling Reabe to mass-produce the hopper gauge, increase recognition for their design, certify it for use on any aircraft and increase the salability of planes with the gauge.

The STC gave the Reabes cause for celebration, but instead of resting on their laurels, Jeff and Troy continued to improve the gauge.

The True Quantity Hopper Gauge now includes these features:

- One-gallon precision from full to empty in a 500-gallon system
- The display knows if the airplane is flying or on the ground and adjusts quantity displayed to reflect the altitude change

The Reabe True Quantity System measures hopper fluid level to 0.001 of an inch then converts and displays quantity in gallons or liters. The display also knows if the airplane is flying or on the ground and adjusts quantity displayed to reflect the altitude change. It also displays boom pressure both positive and negative and is easily readable in sunlight by the pilot or the loader.



- Boom pressure and vacuum gauge with suck back light
- Automatic three point to level-flight mode selecting
- Mode indicator light informs pilot if Hobbs meter is running

Continued from page 2

- ½-inch cockpit display digits for clear daylight readability for pilots—no reading glasses required
- Adjustable dimming capability
- Works as a retrofit for the current Air Tractor display
- 1-inch external display digits that loaders can read from 50 feet away
- DIP switch settings allow displays to work in any model aircraft

Additional information on the True Quantity can be found at www.reabeair.com, including a video demonstration. True Quantity is available for purchase by contacting Jeff Reabe at Reabe Aircraft Improvement, Inc.

(715) 335-6810
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ReabeAir.com



On the Horizon

- Oct. 12 – 14, 2012—**NAAA, NAAREF, WNAAB Fall Board meetings**, TBD
- Oct. 16 – 17, 2012—**Michigan AAA Educational Conference and PAASS Program**, University Quality Inn & Conference Center, East Lansing, MI
- Dec. 3 – 6, 2012—**NAAA Annual Convention & Conference**, Savannah, GA

Ascot Aviation Consulting



NationAir's preferred partner for complimentary contract review services for ag aviation professionals

As an aerial applicator, you'd rather spend your time in the cockpit than scrutinizing business contracts. At no additional cost, Gary Stewart of Ascot Aviation Consulting reviews contracts

for NationAir clients. Contract review is Ascot's only business. Former director of contracts for the world's largest FBO chain, Gary helps NationAir clients get the most from their contracts. He can slice through confusing or complex language to address core issues. His sole focus is your best interest. Mr. Stewart makes sure your contracts reflect your needs, transfer risk to limit your liability, and protect your assets.

Contracts (cont'd.)

violating his lease terms. While environmental liability deductibles can be as high as \$20,000, cleanup costs can run into the hundreds of thousands of dollars.

In another common situation, operators sign the dotted line with seed companies and chemical operators without realizing that contract releases those companies from responsibility for product or performance liability. If the seed you spread or the RoundUp you spray doesn't work the way it's supposed to, it's not their problem any more—it's yours. Is it worth the time and cost to fight if a claim occurs?

We do our best to try and fix problems after they happen, but your best defense is preventing these contract issues from occurring in the first place. Don't feel rushed to sign anything immediately. Most organizations expect that the contract is going to be reviewed, so it's not unreasonable to say, "I have to have my insurance broker look at this." Even if you've already signed a contract, we can still review it and then obtain the additional coverage it may require, including environmental liability policies.

Clients with contract troubles tell us that they didn't think it was important enough or anything we needed to see. But no contract is too small or too innocuous for our review. Let us do our job for you. It just takes one phone call to your broker to start the process and protect yourself—and it doesn't cost a thing.

Contact your broker for more information about NationAir's complimentary contract review services.

About NationAir

One of the nation's oldest and largest aviation insurance brokers, NationAir has been committed to the agricultural aviation industry since its founding in 1978. A specialized field like agricultural aviation requires specialized insurance knowledge. Liability insurance against claims alleging bodily injury, or property damage arising from normal operations, represents just the beginning of the spectrum of coverage that a successful agricultural aviation business requires.

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Fortunately, NationAir has been committed to serving the agricultural aviation community for decades, and understands its needs. With offices across the country, NationAir maintains a keen understanding of regional issues, and our professionals hold extensive aviation experience. Our expertise in agricultural aviation enables us to serve as tireless advocates with insurance underwriters on your behalf. We'll help you find the right coverage at the best rates possible and review your coverage regularly to make sure it keeps pace with your changing business needs.



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