EAA Mount Rainier Chapter 326 Newsletter

Thun Field – January 2010 133

Goals for 2010

Faster Airplanes… Younger Women… Older Whiskey… More Money

Meeting Notice

Tuesday, January 12th, 7 PM
CAP Building, Thun Field

Program: Kevin's New RV-9A Instrument Panel. We'll adjourn to Kevin's hangar after refreshments.

Refreshments: Sandy

Arlington Camping

Kevin still has some reserved spaces available. Don't forget to pay Kevin. $95 for campsite and one armband. Good for Wednesday thru Sunday, July 7 – 11.
http://www.arlingtonflyin.org/?menu=home

Claude Ryan (1898-1982)

The future looked overcast and dreary for T. Claude Ryan at the start of 1927. He and his partner, the glad-handing B. Franklin Mahoney, had launched the nation's first year-round regularly scheduled daily airline passenger service two years earlier on March 1. The San Diego-Los Angeles flights sold out at the beginning. Then, with the novelty gone, business dropped and bankruptcy loomed. So Mahoney bought out his partner's share of Ryan Airlines, Inc.

Ryan stayed on as manager. His preoccupation with financial problems left little time for overseeing production of the Ryan M-1, the first plane of his own design. Airmail flyers liked the trim little monoplane for its rugged dependability. Despite its appeal, the trickle of M-1 orders had all but dried up.

Early in 1927 a wire arrived from Robertson Aircraft in St. Louis: "Can you construct Whirlwind engine plane capable flying nonstop between New York and Paris? Stop. If so please state cost and delivery date." The wire came from Charles A. Lindbergh, former balloonist, wing walker and airmail pilot. He put up $2,000 of his own, obtained backing from St. Louis businessmen and convinced them a single-engine plane stood the best chance for the crossing. Other fliers vying for a $25,000 prize for the first non-stop Atlantic flight had opted for multi-engine planes, some of which could not rise off the ground when their oversized tanks were filled with gasoline.

Lindbergh visited Ryan Aviation's San Diego plant, which still exuded pungent reminders of its previous use as a cannery. He felt in his bones time was running out. His first choice, the Columbia aircraft, was unobtainable, so with his options nearly nil he signed papers with the Ryan company and practically moved in. Engineer Donald A. Hall designed just what Lindbergh wanted -a flying gasoline tank almost twenty-eight feet long and with a forty-six foot wing span.

One day a careless worker dropped a crescent wrench that broke off a thumbnail-size piece of the engine's number one cooling fin. Mechanic 0. L. Gray said, "We could smooth that out with a file and paint it, and never know the difference." Lindbergh said, "I'll always know the difference." After a pause he added, 'We want another engine in there."

Gray thought he was kidding. Someone asked, "Why so much perfection in this?" Lindbergh had his reasons: "One is I'm a poor swimmer." In this way the work crew learned of his plans and redoubled efforts in the race against time.

Enmeshed in the firm's economic plight, Ryan rarely became involved in the craft Lindbergh called "The Spirit of St. Louis." The two men shared much in common. Both grew up in small towns: Ryan in Parsons, Kansas, and Lindbergh in Little Falls, Minnesota. They developed affinities for motorcycles, cars and finally airplanes. In San Diego Ryan bought his first aircraft, a jenny trainer, in 1922 for four-hundred dollars. Lindbergh followed suit a year later, paying five-hundred for his Jenny. Both took flying lessons on their own, then benefited from military training schools. And both of them did stints at barnstorming, acquiring along the way know-how in matters such as forced landings, which in the early days of flying rated as routine.

Lindbergh's solo nonstop flight that began outside New York City May 20, 1927 ended thirty-three and a half hours later in Paris. Overnight he became a hero around the world. The flight also made Ryan Aviation famous. Orders for the M-1 came from all parts of the globe to a woefully unprepared company. Ryan, no longer an owner and far removed from the design or construction of "The Spirit of St. Louis," built a protective shell that shielded him from the onrush of news media inquiries about his role in the saga. He kept the shell up for years.

In 1928 Ryan formed The Ryan Aeronautical Company. His knack for anticipating the needs and desires of fliers helped the San Diego firm survive the lean depression years. The Ryan ST (for Sports Trainer) became the Model T of flying, except it looked much sportier. Adapted slightly, the ST served as the preeminent trainer through World War 11. In the years that followed, Ryan built the first jet-plus-propeller aircraft for the Navy and the first successful vertical takeoff and landing aircraft

-the Ryan X13 Vertijet. His company pioneered remotely piloted vehicles and jet drones, Doppler systems and lunar landing radar.

Like Lindbergh, Ryan ended up a wealthy and widely acclaimed man. Teledyne, Inc. acquired Ryan's company in 1969 for $128 million.

He started out mowing lawns and delivering The Saturday Evening Post for spending money. During school vacations he drove a wagon for his father's Excelsior Steam Laundry in Parsons, where he was born January 3, 1898. His first regular job, a paper route, still left time to watch repairs being made on the town's first automobiles. Later, after the family moved to Orange, California, he invested his savings in a motorcycle, a seven-horsepower model.

After buying his Jenny in San Diego, he charged from two-and-a-half to five dollars a ride, using an improvised air field on the waterfront near the foot of Broadway. Next he shifted operations to Dutch Flats, which later would become the main Postal Service office site. Dutch Flats served as the terminal for the airline passenger service he and Mahoney operated.

"Claude Ryan's name will probably be longer remembered for associations with Lindbergh's plane than for many more significant contributions he made in the half century that followed," according to William Wagner, author of Ryan, the Aviator. T. Claude Ryan died in 1982 at the age of eighty-four while he sketched a rough design concept for a plane with simplified controls. It was a goal that characterized his career - making flying easier for more people to enjoy.

[biographical sketch from San Diego Originals by Theodore W. Fuller, published by California Profiles Publications, 1987]

Tool Tip

Have an old tape measure laying around? I did, I had a broken one. I cut that sucker up into many pieces. I have them all over the shop. 4 inch, 12 inch and 24 inch pieces. Always easy to find one when I need to measure something.

Cecil

Tach vs Hobbs

Modern instruments offer ways to record pseudo Hobbs time without using the traditional Hobbs meter / oil pressure switch device. For example, the Electronics International clock starts recording “hobbs” time whenever the alternator comes on line. Their RPM instrument records engine time whenever the RPM is above 1300 rpm. This time is stored in memory for life and does not require internal batteries to keep the memory alive.

Just so we don’t forget how mechanical tachs work, here is part of a discussion of the issue:

“The tachometer measures revolutions, not time. In my case my tachometer measures exactly one unit in one hour at 2566 rpm. This works out to 153960 rotations of the crank for one unit of time measured on the tach. So if I cruise at 2566 rpm for one hour, the hobbs and tach will both read the same…1 hour. If I cruise at 2700 rpm then my tach will measure 1.052 hours for each hobbs hour. At 2300 rpm cruise, my tach will report 0.896 hours for said hobbs hour.

“If I cruised all the time at 2300 rpm and finally tore down my engine at the recommended TBO of 2000 hours, my tach would say 2000 hours and my Hobbs would report 2232 hours.

“The above examples do not take into account taxi, climbout or anything but cruise, but I mostly cruise so it’s a moot point.

“I believe that the old tach is a better measurement of time for maintenance on the engine in that it is slaved to rpm and not time. In short, your engine wears out faster using Hobbs time. I've never seen an A&P use my Hobbs for engine time. It's always the tach time.”

Gary, no Hobbs, Zilik

Note: As defined in FAR Part 1 "Time in service", with respect to maintenance time records, means the time from the moment an aircraft leaves the surface of the earth until it touches it at the next point of landing.

Backfiring

How do you get rid of that popping sound when throttling back? Sounds like a backfire. This has been going on since day one. Here is what Airflow Performance says.

There's not much you can do about this situation. The cause is due to the scavenging effect of the exhaust. What's happening is that under low load the cylinder pressure is low plus the effect of the exhaust system draws the cylinder pressure lower, this causes the burning process to take longer. Since the timing is fixed, when you are driving the engine the flame front burns slower so you get the popping sound out the exhaust. You can try setting the idle mixture a little richer. This may tend to help since a lean mixture also burns a little slower. But the root cause would be to redesign the exhaust system or advance the ignition timing under those situations.

Don Rivera
Airflow Performance, Inc.

More HP from Carb than Fuel Injection?

Chatter on the Lycoming Group
The guru here is Mahlon Russell from Mattituck

I have been looking into the performance differences between Carb and FI with a view to installing the Silverhawk system on my O-320D1A for my RV.

The power performance graphs in the Lycoming Operator's Manual appear to show that for the same power settings under the same conditions and RPM the Injected engine requires approx. 0.5" additional manifold pressure than the carbureted engine over most of the useful power range.

The plots suggest this is the case for the two flavors of O-320 listed - the 'A' series versus the 'B' & 'D' series.

Can anyone explain this? I would have expected the opposite. Doug Gray

Because the fuel is introduced at the carburetor the cooling effect of the fuel vaporization has a better cooling effect on the induction air, as opposed to the fuel being introduced and vaporized at the intake valve where the induction air has less time to cool off and thus is warmer. Cooler induction air at the same power setting, on the same engine, will generate more power. Mahlon

This is enlightening. I've always thought a engine with fuel injection was more powerful but this looks like any given engine with a carburetor would have more power than the same engine with fuel injection. Is this correct? Gordon Reich

Yes that is correct. It is only a couple of HP but the carb'd engine is normally more powerful… apples to apples. Mahlon

Mahlon, I can't help it, I must differ.

At a given manifold pressure, measured at the intake valve, OK. But, the fuel injection offers less restriction (no venturi) in the intake path, so has higher manifold pressure under the same flight conditions. So, more power with F.I. than carb. Then, of course, add in the cold air intake plenum typically found with F.I., vs the warm air injection that is REQUIRED with a carb, due to the vertical orientation required for the carb, and the protection from carb ice that is not needed with F.I., and you have the fact that typically, F.I. produces quite a bit more power than a carb installation. John Huft

John,

RSA 5 Bendix/precision fuel injection servo's have a venturi. You are not comparing apples to apples. An O-360-A1A or the exact same engine, the same O-360-A1A with Bendix/Precision style fuel injection mounted (which is an IO-360-B1B), the carb'd version will make more power. I have done this several times with the same engine, switching from Carb to Fuel injection and back and forth in an engineering type test cell where I could control all the other variables to be a constant.

Yes, you are correct if you use a different intake manifold than what a carb'd engine uses, and that manifold heats the intake air less then the carb'd engine, the FI engine will naturally make more power. Cooler air = more power with everything else a constant. That is why the carb'd engine makes more power...with everything else a constant and when the only difference between the engines is one has a carb and one has Precision style fuel injection, the carb'd engine has cooler intake air then the FI engine. In that situation, the carb'd engine wins the HP race due to the cooler air entering the combustion chamber. Mahlon

Mahlon, it was interesting to see the point you are making, that the cooling of the charge by the evaporation of the fuel increases the density of the charge, and increases power.

However, the result you are presenting is misleading, because as usually configured, the fuel injected engine makes more power than the carbureted engine. It is possible, but seldom done, to bolt a Bendix servo onto the bottom of a vertical (warm air) sump. It is far more common for the fuel injected engine to employ a horizontal (cold air) intake plenum that does not route the intake air through the hot oil in the sump, and that configuration will produce more power, with everything else about the engine being the same.

This may not be exactly apples to apples as you say, but it is real world. My own engine started life as an O-360 A1A. For a while it did have the Bendix servo mounted to a 90 degree elbow which then went up through the warm air sump. It now has an ECI cold air plenum and sump, which saved 6 pounds off the previous setup, and calculating backward from the increased airspeed, added about 6 horsepower.

And then, there is always the whole lean-of-peak thing, which is another reason to favor fuel injection. John Huft

Interesting

The RV-12 has a mechanical fuel pump on the Rotax and an electrical fuel pump near the fuel tank. The electric fuel pump runs continuously whenever the master switch is on. There is no discrete switch for the electric fuel pump. The pre-flight check is to turn on the master switch and observe the fuel pressure to be sure the electric pump is working. Then start the engine and watch for an increase in fuel pressure to be sure that the mechanical fuel pump is also working. Yes, it wastes electricity and wears out the electric fuel pump. On the other hand, automotive fuel pumps operate continuously (without mechanical backup) and usually last the life of the vehicle. Airplanes are used a lot less then cars. I would not expect the electric fuel pump in the RV-12 to wear out soon.

The big advantage of wiring the electric fuel pump to run continuously is that it helps to prevent mismanagement of the fuel system, a major cause of accidents. The RV-12 fuel system does not have a fuel selector valve because there is only one fuel tank. There is no mixture control. The only thing for the pilot to mismanage is the emergency fuel shut-off valve handle that is located on the floor. The handle must be pulled up to shut off. The simpler the system is, the less chance for malfunction or error.

Joe somebody

“You know “that look” women get when they want sex?

Me neither.”
--Steve Martin

"A common mistake people make when trying to design something completely foolproof… is to underestimate the ingenuity of complete fools."
-- Douglas Adams

end

Chapter 326 Staff

President	**Kevin Behrent**	**253-906-6674**	
Vice President	**Marv Scott**	**253-691-5496**	
Secretary	**Andy Karmy**	**253-333-6695**	
Treasurer	**Norman Pauk**	**253-630-6396**	
Newsletter Editor	**John Brick**	**253-846-2617**	**jebrick@comcast.net**
Photographer	**Vacant**		
Webmaster	**Andy Karmy**	**253-333-6695**	

Young Eagles Coordinator	**David Fritzsche**	**253-848-1699**
Technical Counselor	**Harold Smith**	**253-752-5480**
Technical Counselor	**Charlie Cotton**	**360-893-6719**
Chapter Flight Advisor	**Terry O'Brien**	**206-244-3619**
Chapter Flight Advisor	**Jim Triggs**	**360-438-1482**
Chapter Flight Advisor	**Marv Scott**	**253-691-5496**
Program Coordinator	**John Brick**	**253-846-2617**
Biographer	**Vacant**	
Property Custodian	**Vacant**	

Chapter 326 Website http://www.eaa326.org

EAA Mount Rainier Chapter 326
C/O John Brick
8304 242nd St. E.
Graham, WA 98338