QUEENSLAND ULTRALIGHT ASSOCIATION
NOVEMBER 2006 NEWSLETTER

Watts Bridge Memorial Airfield, Silverleaves Road via Toogoolawah, Qld

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QUA CLUBHOUSE UPDATE

As was demonstrated at last months QUA meeting, the new management committee is enthusiastic to see the clubhouse at Watts Bridge Memorial Airfield proceed at the earliest date. Our Treasurer Roger Kelly contacted the building supplier, Chris Gratton Sheds for an updated quote on the building that was originally planned three years back. A deposit had been paid at that time to release the engineering drawings. Due to the lease difficulties at Watts Bridge the project had been put on hold until these issues were resolved.

At the previous meeting Roger brought us up to date on the current situation including informing us that Chris Gratton Sheds will honour the deposit already paid. Costs have increased but are still within the basic budget to complete the building to a lockup stage. Discussion centered about looking at alternatives and how much the QUA members can do themselves in the construction as we now have a network of new members from the building trades. The original plan was to have a low maintenance building erected that the QUA could fit out as time and further budgets allowed.More discussion is needed

STOP PRESS

Watts Bridge lease documents for the hangar and clubhouse site were received from the solicitors on Friday, 27th October 2006 for signing.

QUA CHRISTMAS PARTY

In lieu of a General Meeting on December 4th the party is planned at the SAAA Clubhouse. More later.

TECHNICAL QUESTIONS

ARE TWO OR THREE BLADE PROPELLERS MORE EFFICIENT ?

This question was asked at the last QUA meeting by Peter, our new president. Peter and CO. are rapidly nearing the completion of the airframe stage in the construction of their Zenair CH 701. Questions regarding the setting up of the firewall forward stage need to answered. Most obvious is, What propeller would be most suitable for the engine and airframe combination ? The engine being assembled is a converted Suzuki automotive engine with a reduction drive. Hundreds are in use world wide pulling experimental aircraft around the sky with great success. The following is a recap of the discussion with a bit more input to illustrate the topic, with thanks to the members involved.

The most efficient propeller would be a balanced single bladed one as the blade would be always moving through clean air. However we do not see this in practice except in model aircraft applications. I have yet to see this used in a full sized aircraft.

Aerodynamically the next most efficient is the two bladed propeller. From a construction and weight point of view this has many advantages for the lightweight aircraft we fly.

The fitting of propellers with three or more blades is often done due to considerations other than purely aerodynamic reasons. In our style of recreation aircraft it is most likely at the choice of the aircraft owner or builder to fit what propeller he prefers or in some cases wishes to experiment with to prove his ideas. Costs may also need to be considered.

In General Aviation until recently the rule of thumb seemed to be as follows. For aircraft with engines up to 160hp a fixed pitch two bladed propeller was always fitted. For the 180 to 260 hp range a constant speed two bladed propeller would be used. In the 300hp plus range a three bladed constant speed propeller was common with four blades used above 1,000hp and five blades used with 2,000hp plus engines.

If we look at some of the aircraft in the decade of 1935 to 1945 when increased research was done on propeller driven aircraft with the development of more efficient constant speed propellers as engine horsepower increased dramatically, coupled with lower drag airframes that resulted in significant increases in aircraft performance and flying range.

It is interesting to note how the American Harvard training aircraft always used a two bladed propeller, even with a 600hp engine where as the similar Australian built version, the CAC Wirraway was fitted with a three bladed one with a similar engine. The performance of both versions is also very close in the specifications.

If we look at the how the Spitfire evolved as more and more powerful engines were fitted to the same sized airframe. It is the propeller that is visually most prominent in this development. Early Spitfire Mk 1s with 1,000hp had a fixed pitch two blade prop. Very quickly this became an adjustable one, then a three blade adjustable then later a constant speed propeller. The Mark VI introduced a four bladed propeller with 1,415hp and the Mark XIV a five bladed one with a 2,050hp Griffon engine. In seven years of development the maximum speed increased from 355 to 460 miles per hour with a gross weight increase from 5,532 to 9,320 pounds for an airframe the size of a Cessna 210.

Since the Spitfire’s propeller diameter could not be increased, it was the number of blades fitted that was increased to absorb the tremendous increase in horsepower with the final versions also having contra-rotating propellers fitted to help the pilots on takeoff.

So the question is Where does this leave us when we consider our ultralight and recreational aircraft with engines in the 40 to 120 hp range ?

The answer would lie in our particular application and personal preferences. In the case of the CH701, a two blade propeller would be fine, so would a three bladed one and also a four bladed one like on John Gilpin's Savannah. Next we could ask is a timber propeller better than a plastic/carbon fibre one. Again it depends on ones preference and the proven performance of similar airframes. The question to ask is What do I wish to achieve ? Recently I started to fly a Gazelle with a timber two blade propeller to absorb the 80 ponies from the Rotax. Surprise, surprise it flies very well in a GA style of flight.
Our local propeller expert Richard Sweetapple developed a three bladed timber pusher propeller for the Sapphires which are restricted with the diameter space available. A similar adjustable carbon fibre propeller may also work just as well or better. No doubt the pilot can confirm this in operation and flight testing of the aircraft. A point in favor of the composite propellers is that they allow adjustment of the pitch to find the best setting.

The needs of matching a propeller to a slow, high drag airframe would be different to a slippery, high speed one, even when fitted with the same engine. The propeller designer and maker should be able to decide what is best from established data and preferences.
One observation is that recreation aircraft with direct drive four stroke engines tend to run timber , two blade propellers where as those with a reduction drive may have two or three or more propeller blades with timber or composite propellers. The nature of our aviation segment is for our recreation, education and experimentation as much as it is for boring holes in the sky as we transit from one place to another. The choice is ours to decide.

Various model Spitfires above with different propellers fitted

Similar recreational aircraft with different propellers

QUEENSLAND ULTRALIGHT ASSOCIATION

MINUTES OF OCTOBER 2006 GENERAL MEETING

MEETING OPENED	08.00 pm
APOLOGIES	Tanys McCarron, Gavin McGrath, Danny Fowler
VISITORS	Robin Salisbury
MINUTES OF PREVIOUS MEETING	MOVED Lloyd Salisbury SECONDED Mike Smith CARRIED
PRESIDENT'S REPORT	New president is building a CH701 with Danny, Ian and David. Expects the CH701 to be completed early in 2007. The Lockyer Valley Flying Club has been given a twelve month extension on their departure from Gatton College. The Gatton Shire Council to sue the QLD Univ to recover the costs involved to relocate the hangars to another airfield. The council is backing the club with this
TREASURERS REPORT	Bank account $ 8,450.00 Investment account $15,813.00
SECRETARIES REPORT	.One advertisement.
BUSINESS ARISING FROM MINUTES	None
WATTS BRIDGE REPORT	Extension of sewerage to clubhouse sites. Power to the pump and clubhouse sites still to be done.
GENERAL BUSINESS / SOCIAL	Recap on clubhouse project at Watts Bridge. Updated quote from Chris Gratton Sheds received. Roger asked about a QUA name change. Answer NO. Thanks to Roger for the slideshow. Glenda suggested some ideas to stimulate membership-- Adopt a flying club (i.e. Lockyer Valley Flying Club) to encourage their members to relocate to Watts if no alternative airfield is found for them or their aircraft. Ideas to encourage new younger pilots to join QUA. Question Do we need the weight increase to 750 kg ? Invite RAAus Reps Beven Dryden / Nick Sigley to a meeting to discuss the issue and future RAAus planning
TECHNICAL QUESTIONS	Are two or three blade propellers more efficient ?
SPECIAL THANKS	to Robin for preparing the supper.
MEETING CLOSED	08.53 pm

AIRCRAFT FOR SALE

ALL METAL ULTRALIGHT

The above R.A.Aus registered 95.10 all metal fun machine is powered by Fuji Robin 440 cc dual ignition engine with a 2.55/1 belt reduction drive. Instruments fitted – Digital Tacho, CHT, EGT. Skid/Slip Indicator, ASI, VSI, Compass, Sensitive Altimeter. Optional UHF & VHF radios. Complete spare engine and propeller. Includes a Panel Rib covered trailer for transport to the airfield and storage. Floats included .Fly at 45 knots @ 5 litres p/h or 60 knots @ 10 litres p/h. Very docile machine to fly. Offers invited. Contact Richard on 07 3245 2579 or via email on rsweetapple@optusnet.com.au.

TEAM HIMAX

Timber and fabric 95.10 ultralight
Powered by Rotax 447 – 42 hp, B Gearbox, with timber propellor and pull starter.
Instruments include ASI, Alt, Slip/Skid, Compass and GPS.
An open trailer is included for transport.
Engine and airframe is in excellent condition with low hours flown. Current owner is unable to continue flying so is keen to find a new owner for this great little 95.10 aircraft.
Price is very reasonable at $6,000.
Contact Les on (07) 55377743 if interested

TYRO MK2

A single seat, open, taildragger (on left). Fitted with a Rotax 377 engine, Sweetapple propeller, 40L wing tanks, usual array of instruments . Always been hangared at Watts Bridge since completion four years back. Flies very well with great visibility for sightseeing at an easy 45 knots cruise. Easy to land with 150 hours total time. Flown regularly. Owner has some new projects that need completing. Some spare parts and logbook included. Contact Mal McKenzie on 0414723049 or 07 33415348 or via email mmc80789@bigpond.net.au Asking price is $5,500 for a classic airworthy 95.10 ultralight.

SOCIAL CALENDAR

November 6	QUA General Meeting at the SAAA Clubroom at Archerfield Airfield. Starting from 07.30 pm with supper provided after the meeting.
October 28 – 29	QVAG October Club Weekend and Sunday Morning Breakfast Fly-in Contact Craig Justo on 07 33496006 or 0407740734
December 4	QUA Christmas Party at the SAAA Clubrooms at Archerfield Airfield. All members and partners, friends are welcome.Details discussed Nov 6

QUA member Gordon Clarke is interested to speak to any members interested in establishing an aircraft owners syndicate to purchase and operate a suitable enclosed one or two seat aircraft to be based at Caboolture Airfield. Gordon estimates that for a syndicate of three or four people, the initial costs to be $7,000 to $9,000 to cover the aircraft purchase with ongoing costs to cover hangarage , insurance and maintenance. A minimum 'wet' hourly rate for flying operations would be determined to suit the aircraft purchased. Interested persons can contact Gordon Clarke on 0437878375 or 07 34252551(h) or via email gordon@adf-serials.com to discuss further details.

Robert Cousins has offered to take people for a night flight from Archerfield over the city after the QUA meeting in a Cessna 172. Costs involved are on a share basis of $40.00 for a thirty minute flight. This a good opportunity to see the sights and lights from a different angle. Contact Robert on 07-38901133.

NEXT QUA MEETING

MONDAY 6th , NOVEMBER 2006

Starting from 07.30 pm at the SAAA clubroom near the main airfield gate on Beatty Road , Archerfield. Same time , Same place. Some good discussion.

Everyone is welcome to make it a great night and share the supper.

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