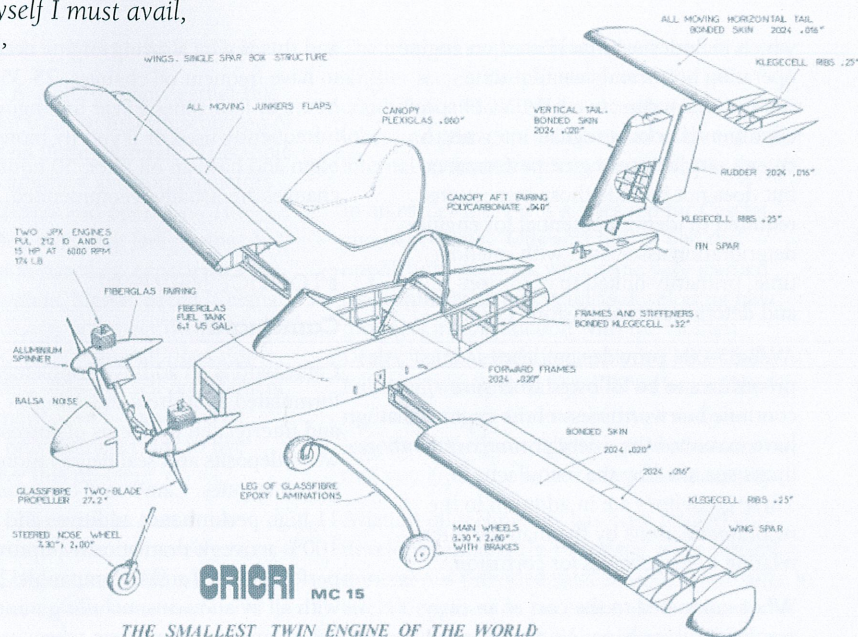


Once upon an eBay query, while I pondered bleak and bleary,
 Over many a quaint and curious airie offered by the score,
 While I nodded, nearly napping suddenly my fingers tapping,
 As something gently tugging, tugging, of this, myself I must avail,
 'Tis a tiny airie', I muttered 'a tiny twin for sale'
 Only this, ... ah ... but something more!

(With apologies to Mr EA Poe)



THE SMALLEST TWIN ENGINE OF THE WORLD

Colomban CriCri MC-15

by Dawie Botes

In a verse, that was how it started. We were looking for a project, something small, in metal and a little different. There were a number of candidates; Teenie Too, BD-5, Hummel Bird and some of John Monnett's earlier designs.

It was while trawling the internet for one of these that we stumbled across a CriCri on offer on eBay. That particular sale did not eventuate but with curiosity piqued we started asking around the club and ... lo! ... Fred Long put us in touch with John Raey and he kindly sold us his CriCri project.

History of the CriCri

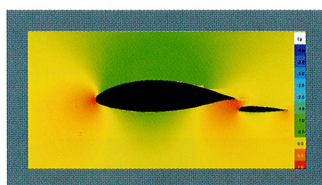
The story of CriCri began in 1971. Aircraft designer Michel Colomban started work on this tiny aircraft. His goal was to build a very small and economical airplane. Initially the aircraft was intended to have a single engine. When no suitable engine could be found, he adapted the design to use two engines and et voilà the world's smallest twin engine airplane was born! The aircraft is even designed to be capable of flying basic aerobatic maneuvers.

The airplane became reality in 1973 and was named after Michel Colomban's daughter, whom he often

called 'CriCri' (Cricket in French).

With test pilot Robert Buisson at the controls, the first CriCri's maiden flight was successfully performed at Guyancourt Airport on 19th July 1973.

Description of the CriCri



The CriCri is designed around a thick Wortmann (21.7%) laminar flow airfoil wing. The wing consists of an optimized 2024-T4 Aluminum I-Beam spar with foam ribs glued to an Alclad skin with epoxy. This provides a very accurate and smooth profile. The wing cord is only 480 mm, this yields a exceptionally low Reynolds Number which further enhances the laminar flow.

Roll control is via two full span suspended Junkers style ailerons which double as flaps. They are actuated symmetrically for flap function and differentially to provide the aileron function.

All the remaining flying surfaces use

the Wortmann (12%) laminar flow airfoil. The tail consists of a swept back vertical fin and an all flying stabilator in a classic T tail configuration.

The canopy has been described as 'panoramic'. It is a Plexiglas dome supported by an aluminum tube frame which simply hinges open and is secured with two latches.

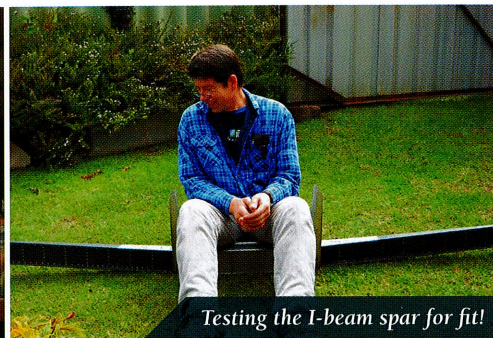
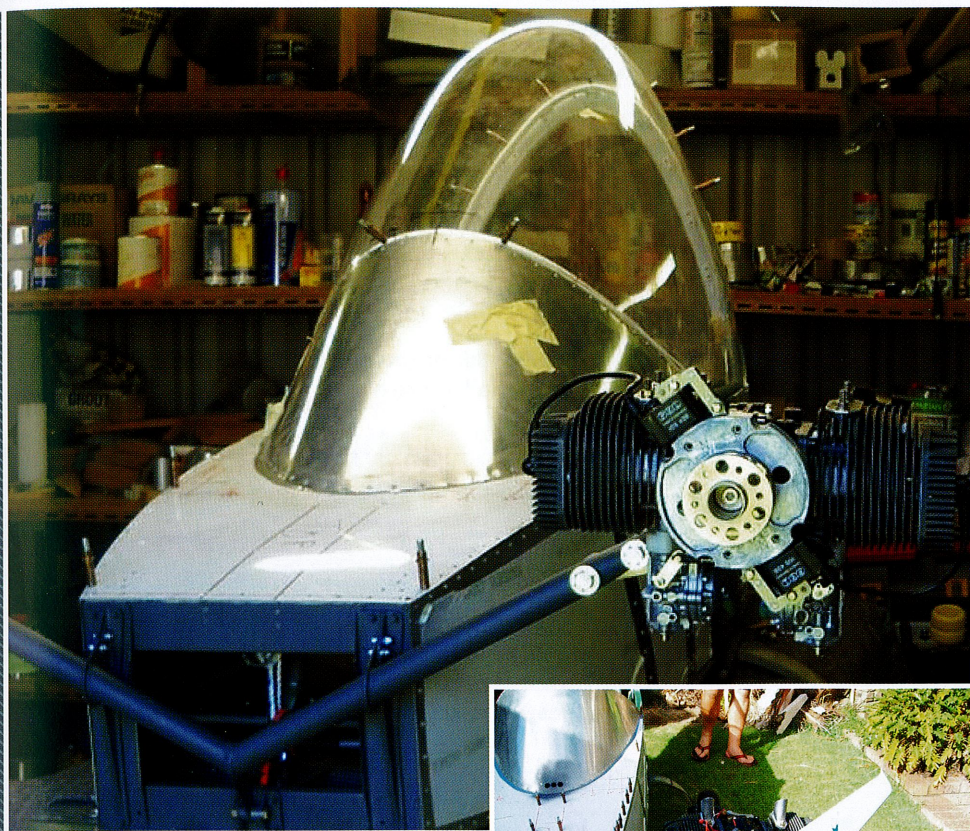
We have chosen two Limbach L275E engines with Prince Propellers as power plants. The Limbach Engines are proven aero engines equipped with integral magnetos and carburetors. These engines are also commonly used on self launching gliders and some of the bigger UAV drones.

Specifications:

Data from CriCri MC-15 - M. Colomban

General characteristics

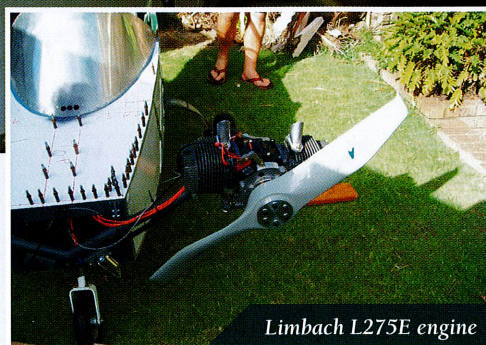
Crew:	one, pilot
Length:	3.9 m
Wingspan:	4.9 m
Wing area:	3.1 m ²
Airfoil:	Wortmann 21.7
Empty weight:	78 kg
Max takeoff weight:	170 kg
Powerplant:	2 x L275E 15kW ea



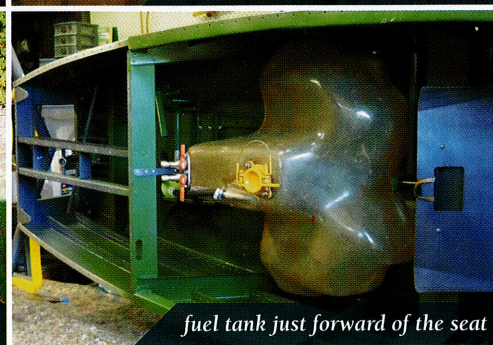
Testing the I-beam spar for fit!



Foam ribs bonded to the spar



Limbach L275E engine



Fuel tank just forward of the seat

Performance

Maximum speed:	120 kt
Cruise speed:	100 kt
Range:	250 nm
Service ceiling:	12,000 ft
Rate of climb:	1,300 ft/min
Wing loading:	55 kg/m ²

Building and Construction

The CriCri is designed at the outset to be very economical, both to build and to operate. To this end, the plans and builder manuals and documentation are truly exceptional. No detail has been spared or omitted. There are even detailed instructions for manufacturing your own tools like a band saw, rivet cutters and the like. A reasonably equipped workshop does, however make the job a lot easier!

The construction plans consist of a series of hand drawn blueprint drawings and accompanying construction manuals. English is clearly not Michael Colomban's native tongue and the manuals reflect this. Personally I find the occasional 'English' delightful. It lends a 'real' and personal touch to the whole endeavour and in no way detracts from the excellent engineering in the CriCri.

The method of construction is quite unique. The wing and tail ribs are cut from KLEGECELL 100 and shaped with a sander. (Note - KLEGECELL is no longer commercially available and the equivalent Divinycell product was substituted where required). The ribs are glued to the spar with epoxy and covered by a skin of Alclad. The result is wing surfaces

smooth and free of rivets rivaling the best composite fiber lay-up construction.

The fuselage is of more conventional construction. It consists of a box-type structure fabricated from four extruded 2024-T3 Aluminum angles riveted to Alclad skins. The skins are further stiffened by custom made KLEGECELL stringers and Aluminum bulkheads. The fore and aft sections of the fuselage are constructed independently and permanently mated once each is complete. The resultant structure is very rigid and very light, typically less than 10kg.

It is quite clear that keeping weight under control was an absolute design criterion. Virtually every component, part and assembly of this aircraft reflect this. It is also here where the attention to detail given to this design becomes most apparent. From trimming bolts to exact lengths to manufacturing your own custom Clevis rod-ends ... every gram counts!

With an empty weight of 78kg and a max takeoff weight of 170kg, the CriCri is part of a fairly exclusive family of airplanes capable of lifting more than its own empty weight.

Flying the CriCri? To be continued...

This article originally appeared in the SABC club newsletter:



Test running the left engine



To be continued...