



Composite Construction & Finishing Techniques

Winnipeg Area Chapter of RAA Canada

November 2010

Executive

President: Jim Oke – 344-5396
Past President: Ben Toenders – 895-8779
Memberships: Steven Sadler – 736-3138
Secretary: still looking for a volunteer
Treasurer: Don Hutchison – 895-1005

Directors

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CALENDAR OF EVENTS

Nov. 18, 2010 General Meeting – Custom Helicopter Tour
Dec 4, 2010 Christmas potluck
February 3, 2011 Rust Remover

Regular meeting – Thursday November 26

We have arranged a tour of Custom Helicopter at St. Andrew's Airport on Thursday 18 November at 7:30 pm. Custom Helicopter is located at 401 Helicopter Drive St. Andrew's Airport. Custom Helicopter has its head office located at St. Andrew's Airport and maintains fulltime bases with hanger and maintenance facilities at Thompson, Gillam, Island Lake, and Churchill Manitoba, Rankin Inlet in the Northwest Territories, as well as field operations located throughout Canada. Custom Helicopter operates a versatile fleet of twenty helicopters which include Bell 206B JetRangers, Bell 206 LongRangers, Bell 205 A1s and Hughes 300C units. This tour should be a very interesting evening.

Annual Pot Luck dinner

Please join us at the Lyncrest Flight Centre for the eighth annual potluck dinner Saturday December 4th. Doors open at 5pm and dinner will be at 6:00 pm. You are welcome to bring guests, all we ask is that each couple bring one dish. You could bring an appetizer, main course or dessert and some home made wine if you have some. Please come and enjoy dinner with other aviation enthusiasts.

Workshops and Courses

The RAA is interested in planning courses and workshops over the winter. The Executive is interested in suggestions for tools or equipment you believe we should purchase for the RAA Final Assembly Building. If you have any suggestion on course, workshops, tools or equipment, please let a member of the executive know and we'll try to organize the course, workshop or purchase tools and equipment you believe are necessary.

Arro Award Winner - 2010

Congratulation to Harry Hill, this year's winner of the Arro Award. Harry was one of the founding members of our chapter, often holding chapter meetings in his home for the fledging organization. Harry served as chapter president for several years. Harry started his aviation career in with the Canadian Air Force then after leaving the military completed a Engineering Degree at university then joined Pratt and Whitney Aircraft. Harry then worked for the Transportation Safety Board as an Aviation Safety Investigator. Harry is always willing shares his knowledge, numerous contacts and continues to contribute to the aviation community in general and our chapter in particular. Harry is definitely a deserving recipient of this year's Arro Award. Congratulations Harry.

I apologize that I do not have a photo of Jim Oke presenting Harry with the Arro Award. I haven't been able to figure out how to download photos from my cell phone to my computer. This will teach me to remember to take my camera.

First Flight Awards

Congratulations to Rick Riewe, Jill Oakes and Vic Prefontaine on the completion and First Flight of Rick's Land Africa. Their first flight took place on June 2, 2010.

Congratulation to Ken Podaima on the completion and first flight of his Zenith CH 701.

I apologize that I do not have a photo of Jim Oke presenting Rick, Jill, Vic and Ken with their First flight Award. The reason is the same as above.

Upcoming Events

Rust Remover

RAA Manitoba, COPA Flight 35, CASARA Manitoba and MAC annual Rust Remover will be held at the ANAF Veteran's Hall, 3584 Portage Av in Winnipeg Thursday February 3, 2011 at 7PM. Presentations will be by Nav Canada and Transport Canada with names and topics to follow.

Igloo Days

Saturday January 29th at 10AM. Igloo days survival training at Lyncrest Airport. Hot dogs and hot chocolate will be served. You are welcome to stay overnight in the igloo or kinzee that you help to build. For more info contact: Jill Oakes at 261-1007.

Hands on Composite Course November 20, 2010

Steve Sadler will be giving a composite construction course on Saturday, November 20th in the RAA hanger. Steven's hands-on presentation will begin at 9:00am and will end at approximately 15:00. He will be covering mould construction including hot wire cutting, use of different types of cloth including carbon fibre, Kevlar and fibreglass. Also a brief review of various types of resins will be covered and their use.

During the class we will make a mould, do a lay-up, and practice finishing techniques.

Please give Steve a call at 736-3138 or e-mail him at steven244sadler@gmail.com if you are planning to attend.

Bring a lunch and work clothes. All other supplies will be provided.

Part 5: Composite Construction, Finishing Techniques

Part 4 talked about the basics of finishing. Final finishing is more of the same with a few extra tools and tricks.

The Composite Finishers Arsenal (Part 2)

The Surform and random orbital sander discussed in part 4 will take care of most smoothing operation. However, where there are long sloping curves or straight sections an automotive body



Figure 1: Modified Body Sander

sander is useful to maintain a consistent contour. With a random orbital sander it is very easy to develop "waves" in the finished surface. In the picture below, a body sander has the standard base replaced with a 36 inch length of slightly curved spruce. A 1 inch sandpaper strip glued to the wood makes a useful long contour sander.

Use whatever tools are most appropriate for the area and contour required. For example, wood rasps, metal files, utility knives, and sandpaper glued to appropriately shaped wood blocks can all be used to help final shaping.

Final Finishing Techniques

The final finishing steps are somewhat tedious and repetitive. Mentally, this is work to go into with the mindset that "it will take as long as it takes", as opposed to "this will get finished today".

I have developed a few rules for the final finishing work:

1. Check the contours often. Lay the flexible strip across your work piece and check. It is very easy to get too aggressive and start sanding into the valleys. If you sand into low spots, it just means more filling later.
2. Watch the areas where the fabric starts to show through. It doesn't take too much sanding to cut right through fibreglass, so if you find yourself sanding away the base layer of cloth, it is probably time to stop sanding and reshape the contour with filler.

3. Keep the sander moving. Holding it one spot results in uneven contours and low spots.
4. Be patient. During the final finishing stage, I like to have two projects going on at the same time. I sand, check and apply filler to my composite piece, then go away and do something else until the resin has fully cured, then come back and repeat, the sand, check, and fill steps.
5. As you get closer to the final finish, check contours with the flexible strip, then use your fingertips to feel for irregularities.
6. Get in close to the surface and look for small pinholes. Force filler into the holes with a tongue depressor or putty knife.
7. The final product will have a surface similar to figure 2. The finished area has a mottled appearance with the occasional area sanded down to the cloth layer.
8. Once you are finished, make sure to paint or at least prime the finished piece. Many resins, especially epoxies will decay rapidly in the presence of sunlight so it needs to be protected.



Figure 2: Finished Composite Surface (Almost) Ready for Painting

Well that concludes the beginner tutorial on composite techniques. If you are interested in giving this a try, there will be a hands on composite construction course at the RAA Hangar November 20th. Give me a call or an email if you would like to attend. We intend to have everyone go home with a project they built themselves.

Steven Sadler

2011 Membership Form

Winnipeg Area Chapter RAA

Trial (\$25)

Student(\$25)

Full (\$50)

Required Information

Name		OFFICE USE ONLY
Mailing Address		Renewal Date
Phone(s)		Chq. Cash Other
E-mail		Initials
Are you an RAA national member? ⁽¹⁾	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Do you give permission for your information to be made available to other Winnipeg RAA members?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Optional Information

Do you own an aircraft?	<input type="checkbox"/> Yes <input type="checkbox"/> No Make/model: Registration:	Are you a member of other aviation groups?	EAA: <input type="checkbox"/> COPA: <input type="checkbox"/> Others:
Are you building or restoring an aircraft?	<input type="checkbox"/> Yes <input type="checkbox"/> No Make and model of project(s):	What Pilots licences and ratings do you hold?	

Please make cheques payable to: RAA - Winnipeg Chapter
Mailing Address: RAA c/o Steven Sadler PO Box 703 LaSalle Mb. R0G 1B0

Notes:

- 1) RAA Winnipeg contributes \$15 per member towards the insurance program maintained by RAA national. This program provides liability insurance to cover local chapter events. The \$15 does not provide membership in RAAC.