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This month's contributors:

David Cyr

Newsletter, May 2017

Notice of Meeting:

Thursday, May 25, 2017 at 7:30 PM. Topics include ...

Drones: Here's where that whole mess is actually going – by Eric Edwards, Licensed pilot, Commercial UAV operator, Transport Canada Committee Co-Chair, Past Chairman of Unmanned Systems Canada, and Hard Realist.

ADSB-In - Leo Nikkinen and Nora Hague will present a talk on ADSB-In: Stratus vs. Stratux, and Sun 'n Fun 2017.

Location:

**Room 204, Penfield Building
John Abbott College
Ste. Anne de Bellevue**

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Dear Members,

This will be our last meeting for the 2016-2017 season. Thanks to all who attended and participated!

Our annual barbeque will be held on Saturday, July 8, 2017. The location has not yet been finalized, but it is hoped that it can be at East Hawkesbury airport (CPG5). Expect further announcements to follow.

The annual fly-in breakfast at St. Lazare will be held on Sunday, June 11, 2017. I have this message to pass on to you from Leo Nikkinen, Pres. ASLFC:

“ ...

The Aeroclub St-Lazare Flying Club / COPA Flight 43 will hold its Fly-In Breakfast at CST3 on Sunday June 11, 2017, from 07:30 to 11:30. This is the closest fly-in for those who live in the West Island area or surroundings.

For aircraft owners/operators and aviation enthusiasts, the attraction is obvious. Public interest in the fly-in has grown and each year we see many repeat visitors plus newcomers who have just heard about the event. Attendance is difficult to determine precisely, but we estimate that, with good weather, we have up to 2000 people throughout the course of a fly-in.

Safety is our primary concern and we need volunteers to keep planes, cars, motorcycles, bicycles and people safely separated and assist with a multitude of tasks. If you would like to help out, please feel free to get in touch with me (contact info below).

Key to the fly-in is the kitchen and breakfast area. If you would like to assist in the kitchen please contact Lucie Laforest at: lulaforest@gmail.com

It should be pointed out that the fly-in breakfast provides a unique opportunity for spouses, other family members and friends to take part in an aviation event. An early morning at a country-style airport, with diverse aircraft flying in, is an experience that few in the non-flying general public are privileged to experience.

I'll be at this month's Chapter meeting, so please feel free to speak with me if you wish to volunteer or would like more information.

Leo Nikkinen, President
Aeroclub St-Lazare Flying Club

Leo49@Videotron.ca

Home: 450-424-6355

...”

Best Regards to All,
Mike Lustig
President, EAA 266

I spent the last two weeks looking at straight bar bending tools. Naturally, Youtube was the main resource for this. Turns out it is not as hard as I thought as long as you have plenty of practice and scrap metal. As I recall, my past experience with bending metal was that before there was one good bent piece, there were many test pieces bend and discarded in the tuning process that established the “magic numbers”. Also my plans give the dimensions of the brackets but do not give any guidance as to what is the required sequence of operations. I think I will bend before drilling the mounting holes. Also, I do not know if I can use a cutoff wheel with the 4130 strips or will that heat them up and remove their temper? How hot does a machine saw make the steel when it cuts it? At this point I have more questions than answers. Onwards and upwards.

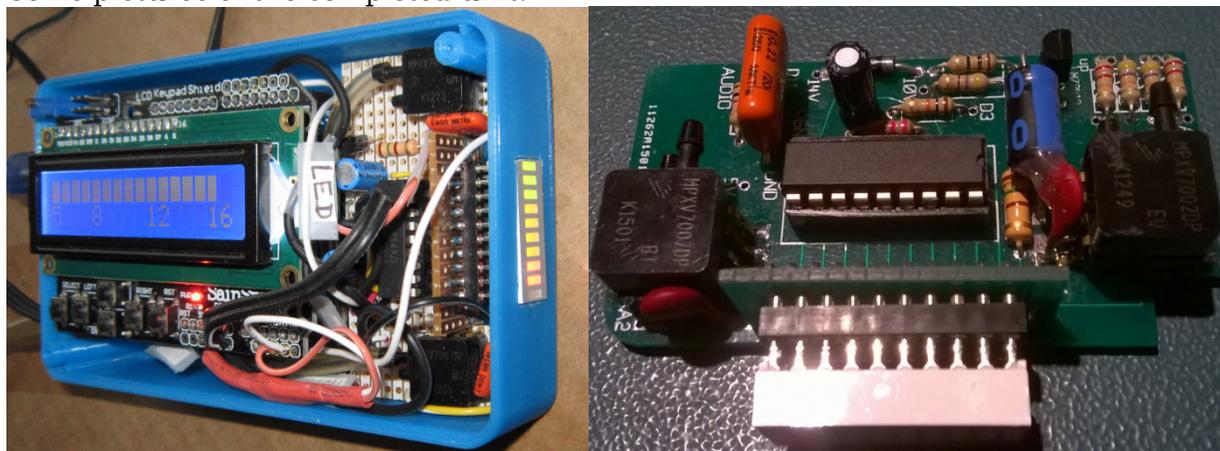
Angle of Attack Sensor, Part V

by David Cyr

We present the fifth and final part of a five part series on a novel AOA Sensor that was presented at the October 2016 EAA 266 meeting. This month we cover:

Some more technical details of the AOA sensor.

Some pictures of the completed unit:



A brief review of Part I:

This Angle of Attack indicator was designed for use on a Lancair 360 that has a Dynon heated Pitot probe. The probe also has an angle of attack port to allow display of AoA; but only with a Dynon EFIS. The Grand Rapids EFIS on the Lancair panel does not support this Pitot/AoA probe, so a standalone indicator was designed using the Dynon probe. However, it will function with any other similar Pitot/AoA probe.

A brief review of Part II:

The AoA indicator needs to be calibrated to properly respond to an approaching stall as well as show the current angle of attack on the LED display. In order to make it configurable for any aircraft personality, it requires setting some data points on the ground and some in flight. If you have flaps, you need to make some assumptions of your typical landing configuration, and if you do not have flaps, the calibration is very straightforward. It should be noted that the display and LED will not show meaningful results until the flight and stall characteristics have been properly entered into the AoA indicator.

A brief review of Part III:

The AoA Indicator will show random and meaningless results on the LED until calibration is performed. The LED will indicate errors. While stationary on the ground, the LED will show a default 10 degree AoA. This indicates the unit is ON, but no meaningful information is available for display. The permanent memory (EEPROM) on the Arduino microcontroller is used to store the flight characteristics of your aircraft. The airspeed indicator gives you quantitative information about angle of attack (except near the stall).

A brief review of Part IV:

Some technical details of the AOA sensor unit were discussed: Details of connections to the printed circuit board, wire sizes and colours, Gerber file extensions and conventions were discussed. Case modifications and alternate pressure sensors were listed.

Some more technical details of the AOA sensor unit:

Alternate pressure sensors include the NXP MP3V5004G series piezoresistive transducers that are temperature Compensated from 10°C to 60°C. This sensor provides an accurate, high level analog output signal that is proportional to the applied pressure. Pressure range is 0 to 3.92 kPa (0 to 400 mm water) with 0.6 to 3.0 V output. The data sheet may be found here:

<http://www.nxp.com/assets/documents/data/en/data-sheets/MP3V5004G.pdf> . Another alternate pressure sensor is the MPX5010, 0 to 10 kPa (0 to 1.45 psi) (0 to 1019.78 mm water) with 0.2 to 4.7 V Output. The data sheet may be found here:

<http://www.nxp.com/assets/documents/data/en/data-sheets/MPX5010.pdf>

Cubic spline interpolation:

Many flavours of these are available in the open source community. Find one created for embedded applications in C or C++ or write it yourself if you wish.

A whole lot of upcoming stuff!

MAY 27 - 28, HALIBURTON STANHOPE ON (CND4): 10:00 – 14:00 All aviators, aircraft, and public are welcome to stop by for a hearty Aviation annual pancake breakfast hosted by the Haliburton Stanhope Airport Committee. For more information contact Cam Loucks at 705-754-2611 or cloucks@algonquinhighlands.ca

JUNE 4, SMITHS FALLS, ON (CYSH): COPA Flight 100 Fly-in Breakfast. 07:30 – 11:30. Go to www.smithfallsflyingclub.com or call 613-283-1148

JUNE 8-11, LONDON, ON: Canadian Aviation Historical Society 54th Annual Convention and General Meeting. Join authors, historians, pilots, engineers and enthusiasts for speakers on civilian, industrial, and military topics, tours of local aviation attractions, and a banquet. The conference theme will be "Celebrating Canada's Aviation Heritage." Most convention activities will be held at the Best Western Stoneridge Inn and Conference Centre. For more information, go to www.cahs.ca; cahsconvention@gmail.com; or 204 293-5402.

JUNE 11, ST-LAZARE, QC (CST3): COPA Flight 43/St-Lazare Flying-Club will hold its traditional Fly-In breakfast, 07:30-11:30, rain or shine. Info: Leo 450-424-6355, Michel 514-694-2129.

17-18 JUIN, SHERBROOKE, QC (CYSC): Les Faucheurs de Marguerites, COPA Flight 37 est fier d'inviter tous les membres de COPA et toute la communauté d'aviation sportive du Canada et des USA à son 23ième rendez-vous Aérien annuel tenu à l'aéroport de Sherbrooke. Au menu : beaucoup d'aéronefs de toutes sortes, marche aux puces, avions en démonstration statique, ateliers de construction (composite, métal, poids et centrage), conférences et séminaires, concours de construction/restauration d'aéronefs, comptoirs commerciaux, manufacturiers d'avions, clubs d'aviation, super-party du samedi soir, restaurant sur place. Tours d'avions et hélicoptères disponibles. Camping gratuit sur place. www.lesfaucheurs.com; envoyez-nous un courriel à lesfaucheurs@hotmail.com; ou appelez Real Paquette au 819-878-3998.

JUNE 18, PICTON, ON (CNT7): COPA Flight 53 our famous Father's Day Breakfast Fly-in returns. Served from 08:00 to 11:00 am, \$8 for our wonderful breakfast. PPR not required for his event. Contact: Dave Main. 613-661-3278. Prince-Edward-Flying-Club.com

JUNE 18, CORNWALL, ON (CYCC): COPA Flight 59 invites you to their annual Father's day Fly-In breakfast at the Cornwall Regional Airport, 19403 Airport Road, Summerstown ON. Breakfast served from 09:00AM. cost \$7. Pilot's line for those who fly-in. For more information please contact Claude at claudesaintmartin@sympatico.ca or (450) 269 3473.

JUNE 24, LINDSAY, ON (CNF4): Join COPA Flight 101 for a COPA For Kids event. Contact Bob at bobburns@i-zoom.net . www.klfc.ca

JUNE 23-24, HALIBURTON STANHOPE, ON(CND4): This will be the 23rd consecutive year that an E.A.A. Young Eagles sanctioned event will be held at the Haliburton Stanhope airfield. Friday 1600 - 2000. Saturday 0900 - 1400. For more information contact Cam Loucks at 705-754-2611 or cloucks@algonquinhighlands.ca.

JULY 9, BANCROFT, ON (CNW3): COPA Flight 119, Annual Fly-in Pancake Breakfast from 08:00 until 12:00. Gary Gaudreau gary@bancroftflyingclub.ca

JULY 15, SAINT-ANDRÉ-AVELLIN, QC (CAA2): The corporation of pilots of Saint-Andre-Avellin invites you to their 5th Annual Summer Fly-in. Breakfast will be served inside the aerodrome's main hangar from 8:30 hr to 12:00 hr. Welcome also to under-the-wing campers. 819-983-8454, paulam@live.ca or CFS-CAA2.

JULY 16, IROQUOIS, ON (CNP7): The Iroquois Flying Club's Special 51st Annual FlyIn Breakfast beside the beautiful St. Lawrence 8:00 a.m. to 11:30 a.m. Seaplane dock near the airport. Information: 613 657-1646.

JULY 22-23 HALIBURTON STANHOPE, ON (CND4): Ultralight And Homebuilt Aircraft FlyIn / Drive In Breakfast 10:00- 14:00. Breakfast hosted by the Haliburton Stanhope Airport Committee. For more information contact Cam Loucks at 705-754-2611 or cloucks@algonquinhighlands.ca .

JULY 24-30, OSHKOSH, WI: Join COPA July 25th for the great Canadian Cook-out, thanks to Magnes and AIG, where all Canadian pilots are invited to gather under the tent. There will be many door prizes, food and drinks for everyone to enjoy.

AUGUST 1-25: GOVERNOR'S CUP CROSS CANADA AIR RALLY: Celebrate Canada's 150th Anniversary with a group of International Flyers! 10 provinces! 1 Territory! Join us for 1 day, 2 days, one section or the entire Air Rally. This event will help finance the Aeronautical Training program in 2 Canadian schools. www.airrally.com or info@airrally.com 450-969-2247

AUGUST 12, NOTAWISSI LAKE, QC: Bernie's 8th Seaplane Splash-In. Seaplanes and helicopters welcome on the Notawissi Lake (North 47-06-30, West 75-27-40). 110 nm north of the Ottawa airport (CYOW). 11:00 to 15:00
<https://notawissi.com/en/index.php> Bernie: 819-465-2069, bernieavion2007@hotmail.com or Andre 819-568-2359, info@pontiacairpark.com
(August 13 rain date)

AUGUST 13, SAINT-JEAN-SUR-RICHELIEU, QC (CYJN): COPA Flight 160 Fly-In St-Jean 2017, International Balloon Festival site. In case of bad weather, this event will be cancelled. For further information, please visit our new website <http://apphyjn.com/> or contact Richard / Nicole Legault legault.nr@videotron.ca (450-466-8613 Quebec).

AUGUST 13, HAWKESBURY EAST, ON (CPG5): COPA Flight 131 / Hawkesbury Flying Club annual BBQ and Corn Roast from 11:00 AM to 1:00 PM, rain or shine! Hotdogs, corn on the cob, soft drinks and more. Fly-In or drive in, everyone welcome! We are located at a General Aviation and Ultralight friendly airport 3435 County Road 17, Hawkesbury, Ontario. For more information call Steve Farnworth 613 632-3185, email: HawkesburyFlyingClub@gmail.com or see our website www.HawkesburyFlyingClub.ca

The EAA 266 library contains a collection of books and DVDs that cover aircraft in general, homebuilding construction techniques, local events, history and Technical Manuals.

**To order books - Call Ed Hannaford
613-347-1201 e-mail Skyranch33@gmail.com
Cost to borrow these items is \$2.00 for a one month period**

The Unclassified Classified**Free Ads for Paid-Up Members**

For Sale: Lycoming O235-C1 with logs 2160 SMO, 1427 STO (PenYann) with starter and generator. Suitable for certified aircraft. \$3900.00 John 514-428-1233

Seeking: Looking for partner (or partners) to purchase a small (2-4 place) airplane. Would consider factory or home-built, tricycle or tail wheel. Robert Hope, roberthope530@gmail.com

For Sale: Hangar doors (sliding) complete with rails for 40-foot hangar. Door height is 11'5½" all metal. As removed from hangar at Cornwall. \$1200.00. Ed Hannaford.

skyranch33@sympatico.ca

For Sale: 1 ea. H-Type shoulder harness 2 inch, black with metal to metal fittings. New never used, from Aircraft Spruce, no lap belts, \$100.00. skyranch33@sympatico.ca

For donation: Vari-Viggen Rutan, designed by Burt Rutan inspired by the SAAB 37 Viggen. It is 60% complete with almost everything you need to complete except the engine and the propeller. Located at the airport of Louiseville, QC CSJ4. Gaston Girard (438) 495-5253

Seeking: Active aircraft builder looking for old projects or materials. Specialized in old wood aircraft and restoration. Ron Gosselin (514) 808-1808 - ronny@total.net

For Sale: Landing lights, 50W, 24V, 20\$ each, Frank Grayer (613) 874-2837.



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