SCHSM

Southern California Home Shop Machinists July 7, 2018

OFFICERS

President	Charlie Angelis
Vice President	Michael Vulpillat
Secretary	Fred Bertsche

COMING EVENTS

Aug Meeting
Sat, Aug 4, 2018, 2:00 p.m.
El Camino College

September Meeting
Sat,September 1, 2018, 2:00 p.m.
El Camino College

Auction
Saturday, Aug 4, 2018

Preface - The July meeting of the Southern California Home Shop Machinists was called to order at 2:00 p.m. on Saturday, July 7, 2018. We met in classroom AJ115 on the first floor of the Industry and Technology Building at El Camino College in Torrance, California. There were 25 members in attendance which was pretty close to the all-time low number of 21 attendees.

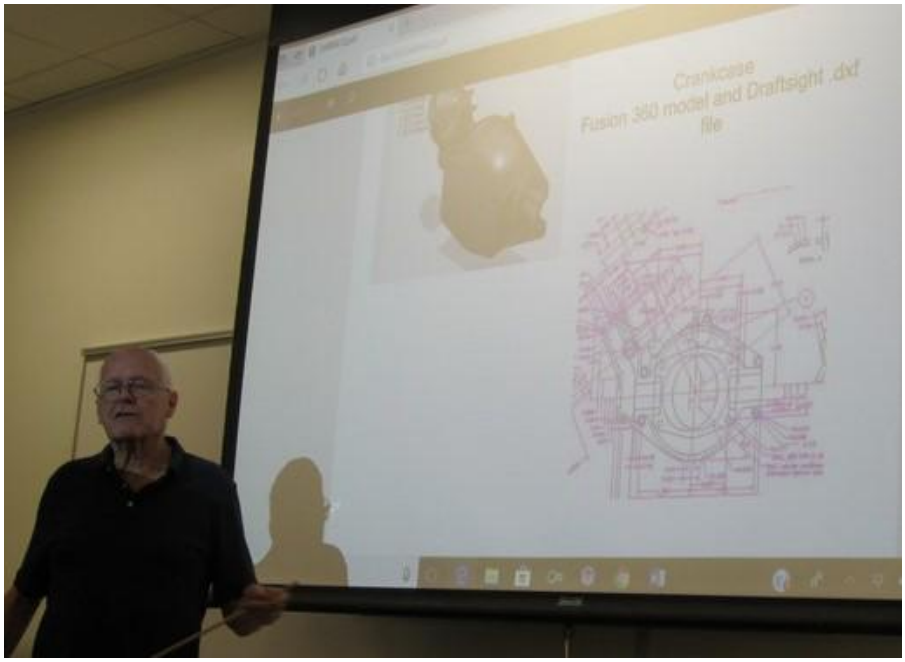
Club Business

Club Auction – Charlie announced that the auction will held at the August meeting.

Jim Endsley – Jim provided good news that the picnic came in under budget.

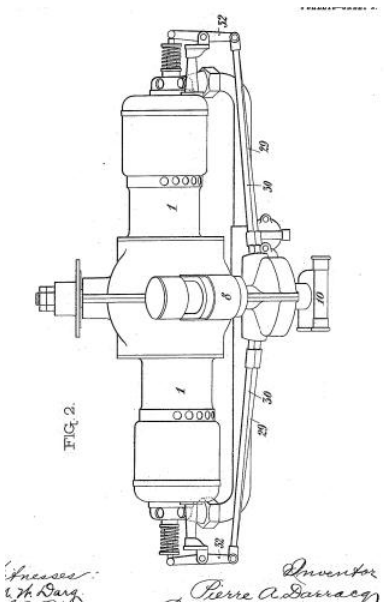
Ed Hoffman – Ed informed the group that this meeting marked the 18th anniversary of the club and that 4 original members were present. These members were Don Huseman, Pat Dobbins, Norm Wells and himself Ed Hoffman.

Presentations: Building the Darracq Engine Crankcase



Building the Darracq Engine Crankcase

Ken Rector – Ken made a presentation on an impressive modeling and milling operation he performed to create the complex crankcase for a ¼ scale model of a 1909 Pierre Alexandre Darracq aviation engine. It was not clear what drove Ken's interest in this obscure engine but once it was identified, Ken when on a hunt for information, much of which was written in French. Assistance in translation came from fellow club member and former club president, Michael Vulpollat.

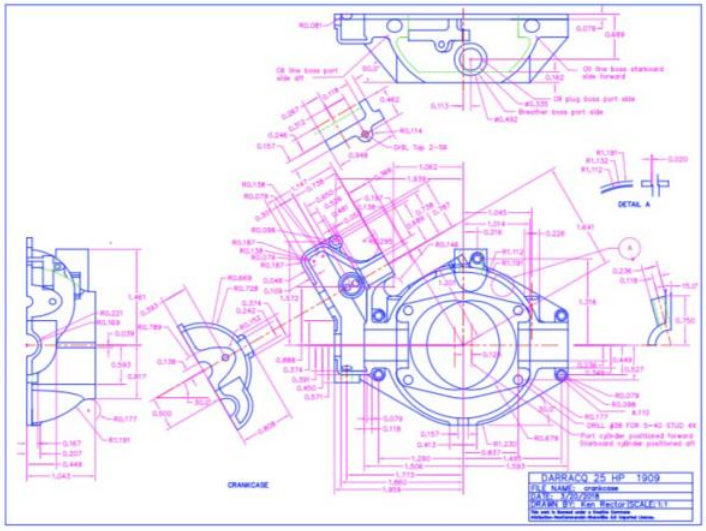


This is a top view of the engine as depicted in the US Patent application. Note the two opposed cylinders facing up and down and the crankshaft oriented horizontally. At the time this engine was developed, Darracq was already producing about 10% of the car engines in France. It was not clear how many of these engines were produced but it was speculated that the number must have been in the hundreds. Considering the quantities, some form of mold based casting was no doubt used to produce these quantities. The mold creators could simply build up the 1:1 sized mold out of various pieces of wood that were formed on lathes and other power/hand tools of the time. Ken chose to take an alternate route to produce the case. Rather than creating a mold and casting the case he chose to mill the case from a solid chunk of aluminum. Looking at the finished case reveals the complexity of this process.

Finished Crankcase

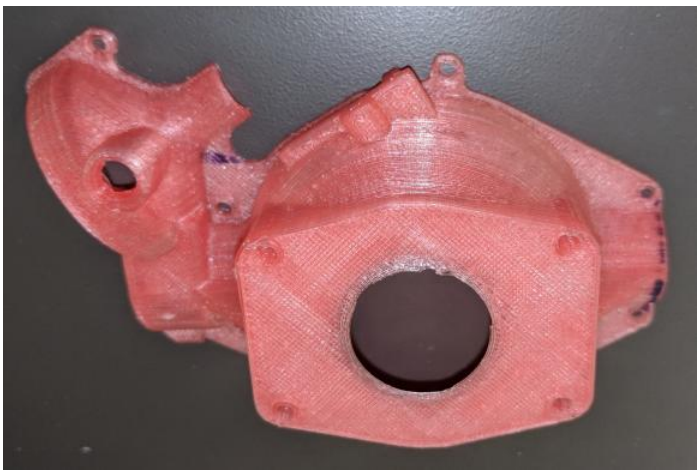
Milling such an item required detailed drawings and models. Information was scarce. He found photos of just three engines worldwide. These were located in museums in Toronto Canada, Oslo Norway and Budapest Hungary. These facilities were contacted for further information but unfortunately non of them responded. The photos helped but he needed drawings. A set of drawings were found in two French books. A search of French patents turned up nothing but a US patent, #US961938, was found. This patent contained the same drawings as the two French books so apparently the designer was sharing these same drawings for numerous applications.

With the drawings in hand he was able first draw the



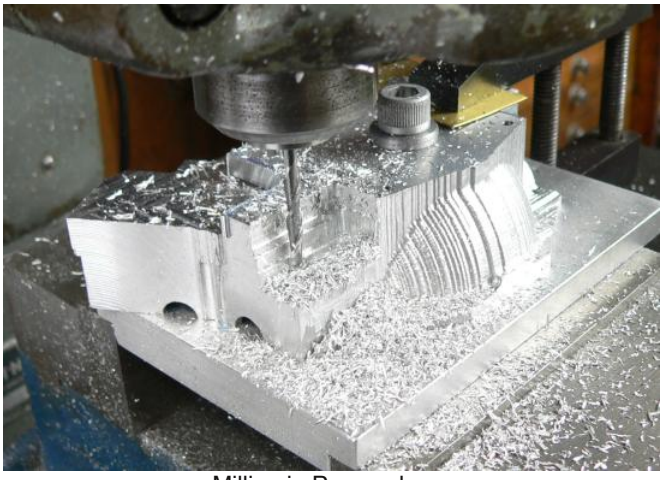
case from several views using Draftsight which is a 2D AutoCad clone. He then created a 3D model using Fusion 360. He generated these drawings/models using metric dimensions but used inches when creating dimensioned drawings.

The basic case was broken down into a sphere with a variety of extensions and bosses. The main sphere was then broken down into a series of concentric circles of various radii. He had the 3D model printed



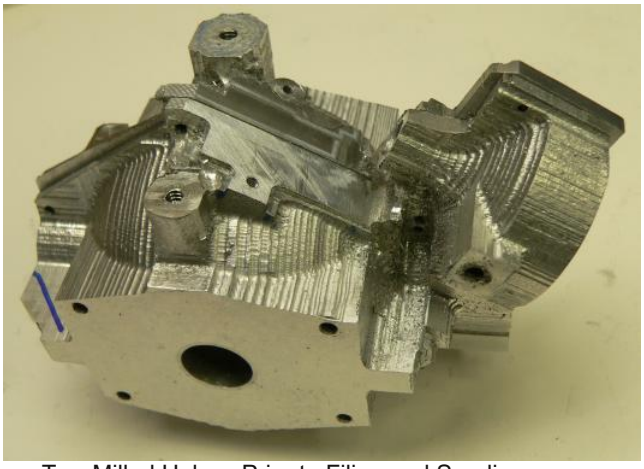
3D Printed Half

to verify his model and get a better feel for how to proceed.
Once the 3D model was verified he had to convert the model into something he could crank into his manual milling machine knobs. He used the Bresenham Line- Drawing Algorithm to convert these various circles and partial circles into X and Y coordinates which he tabulated and printed to a hard copy. By meticulously following some 7000 steps of unique X and Y table settings, sort of a human operated CNC machine, on his Clausing



Milling in Processl

mill, he was able to create the following roughed out shape. This was done for both the inside and out side surfaces. The inside surfaces were done with a standard 1/8" end mill because he was not too concerned about the overall end appearance but the outside was milled with an 1/8" ball end mill to produce a smoother surface that would require less manual finishing steps to get the desired look.

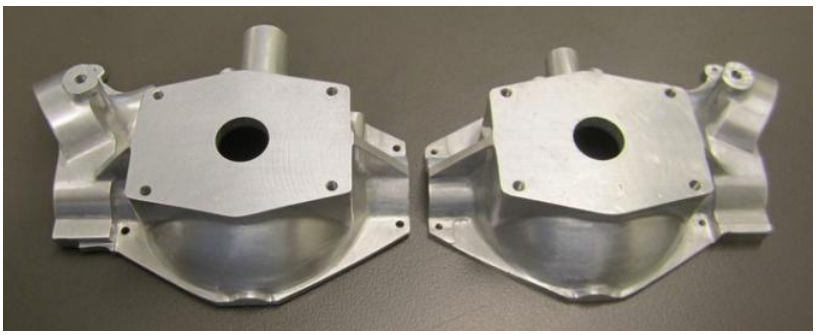


Two Milled Halves Prior to Filing and Sanding

The next step was to manually finish the inside and outside surfaces with hand files, both flat and riffler, as well as a Dremel motor with grinding stones and burrs.
Once the contours of the two halves of the crankcase were completed it was time to mate them together and drill the crankshaft bore which was parallel with the split between the two crankcase halves. For this, Ken made a piloted D bit which worked great for the first hole but proved to be a problem when the bit was extended through the case and into the far side point. The initial milling of the case had included a nice pilot hole for this bit to follow. Why the far side hole was difficult to mill was never really discovered.

D Bits.

He has a lot more to do to complete the engine but the progress he has made so far was impressive. We look forward to future installments on this engine build.



Finished Case, Outside View

Finished Case, Inside Viewl

Show and Tell

Don Huseman – Don posed some questions regarding the proper technique for sharpening the point of a scribe on a grinding wheel. Several opinions were expressed.

Bob DeVoe – Presented a variety of vintage brochures from some of the companies at which he had worked over the years. One interesting story he passed on was about a giant drier used to dry corn flakes.

Matt Rulla – Matt brought in a couple of Starrett wall charts with the intent of giving them away but the enthusiasm for these items prompted a quick auction with the money going towards the club.

Frank Schettini - Frank brought in a box of Craftsman belt sander parts that was complete except for the motor. His intent was to give it away but multiple members showed interest, so it was handled with a quick auction.

Willy Jordan – Willy brought in a box of used end mills that were free for the taking .

****

SCHSM welcomes presentations by members or guest speakers on any subject related to metal working activities. If you have some knowledge or experience you feel may be of interest to our members, or if you know someone that may have something interesting to relate, please consider making a presentation at a meeting. Presentations may be a little longer and more detailed than a show and tell, and may be accompanied by slides, video, or physical displays. Probably every member has some experience they can share, and this is the purpose of SCHSM. Please contact President Charlie Angelis to make arrangements to give a presentation.

SCHSM meets in Classroom AJ115 on the first floor of the Industry and Technology building of El Camino College, 16007 Crenshaw Blvd. Torrance, California, at 2:00 p.m. on the first Saturday of every month. The building is near Parking Lot B. Enter the campus from Manhattan Beach Blvd.

If you would like to contribute an article to this newsletter, or make a comment, contact the editor, Fred Bertsche. He can be reached via the SCHSM Yahoo Group, or at fbschsm@yahoo.com.

Find us on the web at www.schsm.org.