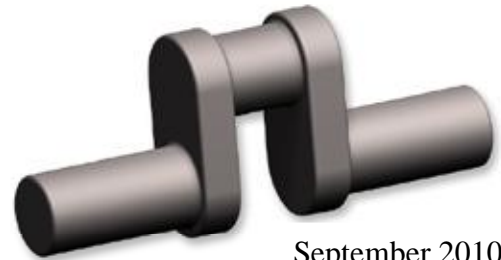


The Crank Calls



September 2010

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MEMBERSHIP

\$25.00 US

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NEXT MEETING

September 18, 2010 at
Chabot College, **building 1500**
25555 Hesperian Blvd, Hayward 94545
Doors open at 9:00 AM
Meeting starts at 10:00 AM

Upcoming Events

September Tech Topic: Bob Hettinger will talk about cams. and the design and building of his cam grinder.

MEETING NOTES

Bob Kradjian
August 21, 2010

First of all, our thanks to Carl Wilson for his long and excellent duty as club secretary. He will continue to record the Tech Topics as before.

President Don Jones called the meeting to order at 10:00.

We welcomed five visitors: Joel Cohen who is building steam engines in his small back yard shop. He is working on an engine that he started forty years ago. See his very unusual rotary engine on You Tube under: "rotary motor". Drop down to the tenth listing. It is an ingenious two-lobed engine, not three as in a Wankel.

Alan Morse is also working on a steam engine, this time on one his father started. The pieces were all in a box.

Steve Bromley is a tool and die worker who deals with automation as well. He has made small jet engines and wants to start on internal combustion.

Owen Gehlert is an electrical engineer who wants to develop ignition systems for miniature engines.

More information from Owen will follow in this report.

Ray Fontaine and Ron Ward also visited. Welcome to all.



Mike Rehmus gave us an update on Randy Cox's latest effort. It's a Briggs and Stratton-based "Harley" vee-twin. It seems that Randy heard of five dollar cast-iron cylinders on e-bay and grabbed a couple; grafting them onto a "Hoglet" style crankcase of his own creation. He put the whole deal into a well-used Harley Hummer frame with a

model A Ford set of gears and a chain-driven magneto. It runs, and he can ride it!

Folks going to GEARS will likely be treated to a close look.



First pops:

John Gilmore asked “if a first hiss will do for a first pop”. It seems he’s injected compressed air into his new locomotive, and it hisses and runs just fine.

Upcoming Meets:

Most will be history when you get this letter. The Good Guys West Coast Nationals was scheduled for August 25-28 in Pleasanton. EDGE & TA was planned for September 12 in San Jose at the History Park. The Hillsborough Concours is on the same day at a new spot, the Silverado Golf Course at Hwy. 92 and Black Mountain Road. The last scheduled show of the year is GEARS: in Portland, Oregon on September 25 and 26.

For details see: www.oregongears.org

More on WEME 2010

A big part of the success of the WEME show is the efforts of people behind the scenes:

A big thank you to the following people who volunteered their precious time to help with the front desk at the WEME show: Leona Gravatt, Dian Aldrich, Angela Mecchi, Ruby Haagensen, Irene Lile, Myra Meyers, Barbara Beck, Sara Giles, Cheryl Hurst, and Carolyn O'Connor. Their help made the entrance and admission area run smoothly and quickly for our guests who came to see the show.

Yours,
Carolyn O'Connor

Steve Hazelton has DVDs of the WEME show for sale to the members. Steve also does a great job as the announcer for the midget auto races at Petaluma.

Pat O'Connor gave a detailed account of our WEME club finances for all four years. We had the small loss of \$649.00 this year. Thanks to Pat and his wife for collating a good deal of information. Next year the WEME show is planned for the third weekend in July. Gary Moore would appreciate any additions to, or corrections of, the show manual.



Mike Rehmus announced that a Richard Remington Library has been established at the Sherline Museum

in Vista, California. This is to house the extensive collection of Model Engineer, Live Steam, Model Tech, and Strictly Internal Combustion magazines kindly donated by his wife.

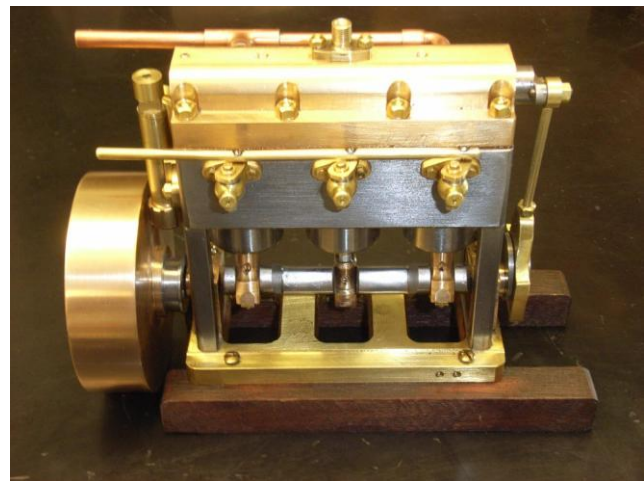


Visitor Owen Gehlert told us of his desire to build ignition systems for miniature engines. He wants feedback from members regarding their needs. Items to be decided upon include:

- The voltage source (6 versus 12 volts)
- electronic advance (yes or no)
- Hall effect versus breaker points
- CDI versus transistor systems
- Optical versus magnetic pick up for same
- What type of coil? (Slightly different for CDI or transistor)

A spirited discussion followed. Owen would appreciate suggestions at: owen@gdautomation.com or (408) 644-0757.

Bits and Pieces

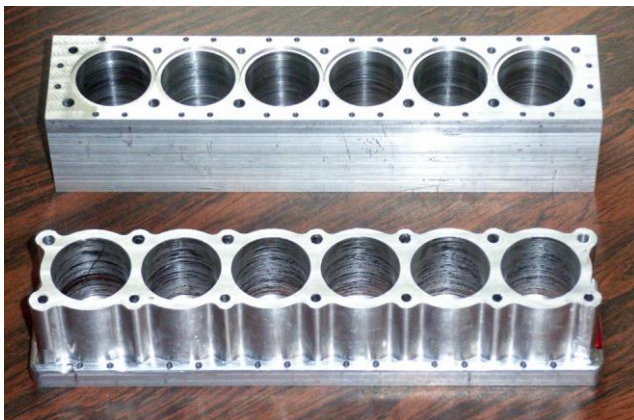


Jim Bove showed us a very lovely small engine that he based on an Edgar Westbury design of 1948. It is a steam engine that he runs on compressed air. It has a high-pressure cylinder that bleeds into a low-pressure cylinder. It uses model airplane engine cylinders and a rotary valve.

Jim Piazza has now developed an aluminum housing for his Roots-type blower rotors. He estimates a two-pound boost.



Jim also showed a nice center hole finder that couples a dial indicator mounted onto a six-inch digital slide caliper. The device mounts into a collet or chuck.



Peter Lawrence showed us two examples of blocks for his V-12. The first was made on a Prazi without digital read out. It was slow going, and the result not very accurate. The second is in progress on a Bridgeport using a DRO. Things are going faster and better.

Tech Topics:

Carl Wilson

There he stood radiating confidence and craftsmanship: our very own Dwight Giles. OK, maybe that's reaching a bit too far for a word play, but Dwight has developed a superb technique for making radiators for automotive type engines. This one is for his one-half Black Widow – a four cylinder in-line engine.



Let's start with the finished radiator at the bottom left in the photo above. Top, bottom tanks and the core are visible and at the right you can see the row of screws mounting the radiator in its frame. To the right of the complete radiator is a section of a radiator core from a Toyota. Dwight tried several ways of cutting the core into suitable sized pieces and discovered that running the band saw blade down through the center of a tube worked best for the "vertical" cuts but that the "horizontal" cuts just had to be done and then deburred. The next step requires you to visualize the construction of a radiator: think of a parallel array of long flat tubes with a zigzag strip of aluminum between each tube. Those fins have to cut away between the ends of the tubes so that the top and bottom tank header can be installed. This was done with on the band saw and finished with a Dremel tool. The inside of the tubes was deburred with a 6" rule.

A header –that is, the bottom of a tank - is just above the finished radiator. The slotted holes are milled at the pitch of the tubes using a 1/8" carbide end mill. The header just fits down over the ends of the tubes leaving about 1/8" protruding. A radiator with the header plates is at the top left of the photo.

There is no copper or brass in this radiator, only aluminum. That means no soft or hard solder so

Dwight used Loctite E-120HP, a high performance industrial grade adhesive suitable for bonding aluminum used in a high temperature vibrating application. This stuff and its mixer/applicator is not cheap, but it's worth the price. Before bonding the aluminum pieces must be cleaned to water-break cleanliness, that is, if dipped into water the film runs clean across the aluminum without beading. Dwight also used a chemical etch from Aircraft Spruce for a final cleaning operation.

The core was pressure tested for leaks, then cleaned in an ultrasonic cleaner before etching. This dulled the finish on the core and after assembly Dwight painted the core with chrome paint. Also the flanges of the headers were polished before assembly as they are visible when the radiator is finished.

Now to assemble the core and headers: the header fits down over the ends of the tubes and Dwight made a tool that fit over the end of the tube to press the header down against the fins. Another tool was made that fit inside the tubes to sort of swage the tubes in place – Dwight simply wiggled the tool back and forth to slightly deform the end of the tubes. The header is now mechanically fastened in place and is ready for the epoxy glue.

This glue and its applicator is the “cat’s meow” for this job. The epoxy is dispensed in the correct amounts by a device sort of like a caulking gun and mixed in plastic tube. The stuff just flows out, makes a perfect fillet, and then stays in the joint. Two more pieces, the mounting plates are then glued to the side of the core. Dwight made a tool to reform any damaged fins and now the core is finished.

On to the top and bottom tanks, of course part of the tanks is already assembled to the core – the headers. Dwight made a pattern from cereal box pasteboard, scribed the pattern onto 0.050” 5052 aluminum. This alloy is recommended for this application because it will bend without fracturing: 6061 is not suitable. The tanks are polished before bending and covered with black vinyl electrical tape to prevent marking while bending. Both the header plates and the tanks were bent most of the way on a sheet metal brake and then finished by hammering down onto an aluminum former block. This insures that the tank fits inside the flanges of the header. The tank former block is also used as a heat sink while TIG welding the seams. Some grinding and polishing the welds

and the tanks are ready to be glued to their headers. One more detail, the filler and drain necks are also glued into the tanks.



Now, for the picture above, I have to borrow an expression from Scott Overstreet. The formed coolant hoses are the *coup de gras* on this project! They are simply over the top.

Dwight made the formers from 5/16” tube bent to the desired shape, oiled the surface and slid the tubing over the former. The hose material is Santoprene Thermoplastic Elastomer Tubing from MSC supply, stock number 74204470. The tubing is baked in the oven at 375° F for 20-25 minutes. Probably doesn’t smell like chocolate chip cookies, so consult with the domestic authority before undertaking this in the kitchen oven.

Thanks Dwight for an excellent Tech Topic.

In Memoriam

Bill Nickels, long time member of BAEM and for some time editor and publisher of the Crank Calls passed away on August 27. On behalf of Bay Area Engine Modelers I extend our sympathy to his wife and family.

