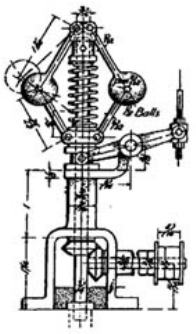


The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No. 175 Nov. 2010

Gazette Staff

Editor	Frank Hills
Publisher	Bob Neidorff
Events Editor	Bill Brackett
Meeting Notes	Todd Cahill

NEMES officers

President	TBD
Vice Pres.	Jeff Del Papa
Treasurer	Richard Koolish
Secretary	Todd Cahill
Director	Mike Boucher

NEMES web site

http://www.neme-s.org

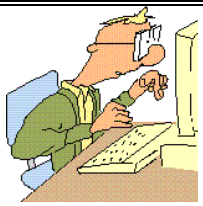
Contact Addresses

Frank Hills, Editor
464 Old Billerica Rd.
Bedford, Ma. 01730
hills@aerodyne.com

Richard Koolish, Treasurer
212 Park Ave.
Arlington, MA 02476-5941
koolish@dickkoolish.com

Bob Neidorff, Publisher
39 Stowell Road
Bedford, NH 03110
Neidorff@ti.com

Bill Brackett, Event Editor
29 East Main St
Northborough MA 01532
thebracketts@verizon.net



Editor's Desk

Frank Hills

Ceramics

When someone mentions ceramics, what do you think of? For a long time it was getting my hands dirty in grade school trying to make a pot for my mother. Until about 25 years ago, you didn't hear the words machining and ceramics used in the same sentence. Ceramics had to be custom formed in a press, sprayed on a mold, or shaped by some other black magic procedure. Then they had to be cooked at temperatures that would melt most metals. That's not true anymore. Though many ceramic materials still require specialized processing, it is no longer a hands-off substance for the machine shop.

Ceramics come in many different flavors, and like metals, have characteristics all their own. Though commonly regarded as high temperature materials, some ceramics handle the heat better than others. Some handle impact, vibration, or mechanical stress and others won't. There are ceramics specifically formulated to be machinable, in this case meaning using drills, end mills and the like. Others can only be shaped with diamond grinding wheels.

–Continued on page 2

Next Meeting

Thursday, Nov, 4 2010

7:00 PM. Meetings held at:
Charles River Museum of Industry
154 Moody Street
Waltham, Massachusetts

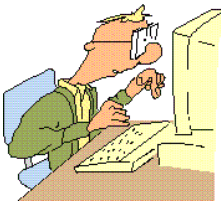
Membership Info

New members welcome! Annual dues are $25 (mail applications and/or dues checks, made payable to "NEMES", to our Treasurer Richard Koolish, see right) Annual dues are for the calendar year and are due by December 31st of the prior year (or with application).

Missing a Gazette? Send mail or email to our publisher.

Addresses are in the left column.

Contents



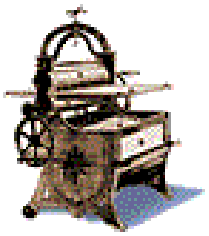
Editor's Desk

-continued from page 1

The latest variety is the potable ceramic. Make a mold in plastic, metal, or some other material, mix in a hardener and cast your part. The problem is no longer if you can use ceramics without going to a specialty manufacturer, but which ceramics to use and for what purpose.

Almost all ceramics have a high level of electrical and/or thermal insulating value, and so, work well for spacers, standoffs, isolators and parts requiring high dimensional stability. But all ceramics have their limits. Their temperature limit may be in the hundreds of centigrade, and exposure to that temperature must be slow or, just like glass, it will crack. High temperature ceramics don't suffer these problems as severely, but can be very brittle in thin sections. Structural ceramics frequently show very high thermal resistance, are very dense (comparatively), are extremely hard and very tough (they can take a reasonable impact). Machinable ceramics have a lower density (again, comparatively), are softer (though carbide or cobalt cutting tools must still be used), and don't take impact well. Potable ceramics are easy to use. Common applications are custom electronics isolators, sensor mounts and for sealing feed-through ports in high vacuum applications. Ceramics aren't a "use anywhere" material, but sometimes there is no substitute. Don't be afraid to consider using a ceramic next time your project calls for one.

Next month, "Float your Boat. The Shape of Ships Hulls".



NEMES Gazette Editorial Schedule

Issue	closing date for contributions
Dec. 2010	November 19, 2010
Jan. 2011	December 24, 2010
Feb. 2011	January 21, 2011
Mar. 2011	February 18, 2011
Apr. 2011	March 25, 2011
May 2011	April 22, 2011

2011 NEMES MEMBERSHIP DUES ARE DUE!!

Please fill out the form below and mail it with a check for $25.00 made out to NEMES to:

Richard Koolish
212 Park Ave.
Arlington MA 02476

Name _____

Street _____

City _____

State _____ ZIP _____

Home Phone _____

Work Phone _____

Please Print Neatly!

President's Corner

Dick Boucher

The Meeting

Our speaker this month will again be one of our members. James (Jim) Johnston started his career at Sharon Steel and then his own company making titanium wire. However, he spent most of his career in the US Government in computers and nameless stuff. He just had to do some metallurgy, so, Jim (metallurgy, BS Stanford, MS & ADM MIT) built a research forge with the intent of measuring variables. As a member of Rehoboth Historical Commission, he undertook a detailed study of a local forge operating in the early 1700s. His findings are that the combustion of air and charcoal is extremely hot, and that southeastern Massachusetts people had no idea of the difference between wrought iron and "wrought" iron and cast iron. He has attempted to enlighten members of the Society for Industrial Archeology (SIA), spoke about it with the Franconia Blast Furnace group, and repeated his views at a conference at the Worcester Armory, whose people, together with leftovers from an SIA visit to the Forge, understood and took him down a peg or two. His paper, "New Palmer River Iron Works" is published locally.

Jim does intend to make a "sales pitch" after his talk about iron, hoping to ensnare someone into taking all of his equipment and setting up to make wrought iron from local ores.

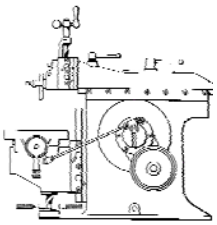
Miscellaneous Ramblings

Please allow me to express a big thanks to all that attended the October meeting and elected me to be the Societies president for another year. Your confidence in me is greatly appreciated. I also wish to thank those who have stepped up to help me from Norm Jones' speaker's committee, Rich Baker helping me with the motel reservations for the Cabin Fever Trip, Steve Cushman for volunteering to set up the sound system at the meetings and to Jeff DelPapa for volunteering to take down the sound system at the close of the meeting. This help is very much appreciated.

Yes, it is time to start taking reservations for the annual Cabin Fever Trip so Norm and I will be calling those who have traveled with us in the past as soon as we have all the particulars worked out. Of course, if you haven't gone to cabin fever with us there is always room on the bus for more riders. We will be doing things a bit different this year and will collect the room money with the bus money and send one check to the Motel 6. The manager there has promised this will enable them to register the bus load quickly. We will give them one more chance. Rich has done a considerable amount of investigation on motels in the York area and Motel 6 has the best price by far and it is the only reasonably priced near the "Round-the-Clock Diner" which many of us find very convenient for a late night snack and morning breakfast.

So far there hasn't been much on rambling but I did enjoy a number of railroading events since I last wrote but Bob needs my copy early and I am running late so I will save my stories until a later date.

Dick



Metal Shapers

By Kay Fisher

R. G. Sparber's Gingery Shaper - Part 8

Attaching the Bottom Plate to the Ram

Today I started to attach the CRS plate to the bottom of the ram casting. Gingery calls for ¼" thick plate but I have chosen $^{3}/_{8}$" for added rigidity.

I must position the plate so it is square with the casting and have the casting's non-crank side offset ½" from the plate's edge.

The first step was to put the casting on two 0.500" parallels on my surface plate.

Ram on Parallels Photo by R. G. Sparber

The CRS plate was inspected for burrs and cleaned up as needed with a file. I placed it down on the surface plate to verify it was dead flat. It was then placed on edge on the surface plate and clamped. The front edge of the plate is about $^{1}/_{16}$" back from the front of the casting. This offset permits the down feed assembly to contact only the casting.

Ram & Plate Photo by R. G. Sparber

I then moved the assembly to the mill table. That big C-clamp made set up difficult.

Ram & Plate Try 2 Photo by R. G. Sparber

I went back to the surface plate and moved one of the smaller clamps. I was still not happy because I have no simple reference surface facing the mill table.

Ram & Plate Try 3 Photo by R. G. Sparber

I finally saw the simple answer – remove the cap to expose a top side reference surface.

Ram & Plate on Mill Photo by R. G. Sparber

The casting can now easily be set up on the mill table. On the right end you see one of two parallels that support the cap pocket's reference surface. I clamped this end down first and then placed jacks on the other end of the casting so they are snug. The plate with casting was set parallel to the X-axis by mounting a spud into the drill chuck and sighting its point along the edge. I am drilling bolt holes here so being with 0.010" is acceptable.

Zeroing Z Axis Photo by R. G. Sparber

Above you can clearly see the support of the cap pocket with two parallels and a clamp.

I must do a series of drilling operations next and want a simple way to set the various drills. I sketched out the finished hole and then measured the lip to point distance for each drill. I then measured the thickness of my steel ruler. It was then a simple matter to chuck up the proper drill, lower it onto the ruler, set Z=0, and drill to the proper depth.

My first operation is to move to the proper location of the hole. Having a DRO is very helpful but I verify this with layout lines. It is too easy to drill a hole exactly 1.000" off.

The center drill is used next and followed by my clearance drill, size F. I set Z=0 with the steel ruler. Note that I start with the largest diameter and the point of this drill provides the centering for the next smallest drill. I drill down through the $^{3}/_{8}$" steel plate with the drill's point going into the casting. I then insert my #7 drill, set Z=0 with my steel ruler, and go in a depth that puts the point of the drill about 0.1" from breaking through the other side of the casting. My final step is to use my ½" drill as a countersink. I know, I know, isn't this the largest drill? Yes, but this big drill cuts better with the F size hole showing it the way.

Drill Setup Photo by R. G. Sparber

I do not want to confuse the different drills. It is best to call out "clearance" and "pilot" in my procedures. Then I place the proper drill in marked pockets. I have the pilot drill chucked so you see the reminder tag. There is a limit to what I can focus on at any one time. Anything that makes work more fool proof is a help.

As per Gingery's instructions, I drilled and tapped two holes ¼-20 to secure the plate. Then the Kant-Twist clamps are removed and the remaining holes drilled. I was going to use my tapping head on these blind holes but found it easy to run in a hand tap for the few threads needed. The clearance hole guide the tap very well.

Ram Done Side Photo by R. G. Sparber

The ram is finally done. I'll let the pictures do the talking.

Ram Done Bottom Photo by R. G. Sparber

Ram Done Rear Photo by R. G. Sparber

Stay Tuned for part 9 from R. G. Sparber next month.

Keep sending me email with questions and interesting shaper stories.

My email address is:

KayPatFisher@gmail.com

Kay

NEMES Shop Apron

Look your best in the shop! The NEMES shop apron keeps clothes clean while holding essential measuring tools in the front pockets. The custom strap design keeps weight off your neck and easily ties at the side. The apron is washable blue denim with an embroidered NEMES logo on top pocket.

Contact Rollie Gaucher 508-885-2277

NEMES Tee Shirts

NEMES tee shirts and sweat shirts are available in sizes from S to XXXL. The tee shirts are gray, short sleeve shirt, Hanes 50-50. You won't shrink this shirt! The sweat shirts are the same color, but long sleeve and a crew neck. Also 50-50, but these are by Lee. The sweat shirts are very comfortable!

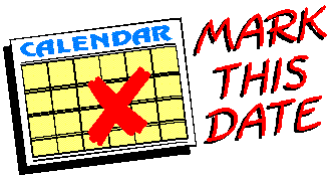
Artwork by Richard Sabol, printed on front and back:

Prices:

	Tee Shirts	Sweat Shirts
S - L	$12.00	$22.00
XXL	$14.00	$24.00
XXXL	$15.00	$25.00

Add $5 shipping and handling for the first tee shirt, $1 for each additional shirt shipped to the same address. Sweat shirts are $7 for shipping the first, and $1.50 for each additional sweat shirt. Profits go to the club treasury.

Mike Boucher
10 May's Field Rd
Lunenburg, MA 01462-1263
mdbouch@hotmail.com



Upcoming Events

Bill Brackett

To add an event, please send a brief description, time, place and a contact person to call for further information to Bill Brackett at thebracketts@verizon.net or (508) 393-6290.

Bill

October 30th 9-5 American Precision Museum
10th annual Model Engineering Show,.
Windsor Community Center, Windsor VT
www.americanprecision.org 802-674-5781

Oct 30 th-31th The Great Fall Auction
Owls Head Transportation Museum Owls ME
http://www.ohtm.org/

Nov 4th Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry
Waltham, MA 781-893-5410
http://www.neme-s.org

Nov 5-7th World Championship Punkin Chunkin
East of Bridgeville, Delaware
http://www.worldchampionshippunkinchunkin.com/

Dec 2nd Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry
Waltham, MA 781-893-5410
http://www.neme-s.org