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Newsletter

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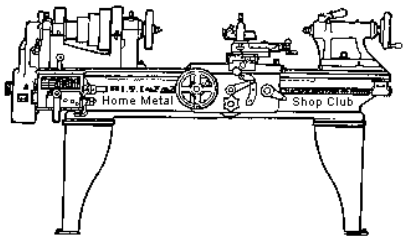

http://www.homemetalshopclub.org/

The Home Metal Shop Club has brought together metal workers from all over the Southeast Texas area since its founding by John Korman in 1996.

Our members' interests include Model Engineering, Casting, Blacksmithing, Gunsmithing, Sheet Metal Fabrication, Robotics, CNC, Welding, Metal Art, and others. Members enjoy getting together and talking about their craft and shops. Shops range from full machine shops to those limited to a bench vise and hacksaw.

If you like to make things, run metal working machines, or just talk about tools, this is your place. Meetings generally consist of ***general announcements***, an ***extended presentation*** with Q&A, a ***safety moment***, ***show and tell*** where attendees share their work and experiences, and ***problems and solutions*** where attendees can get answers to their questions or describe how they approached a problem. The meeting ends with ***free discussion*** and a ***novice group*** activity, where metal working techniques are demonstrated on a small lathe, grinders, and other metal shop equipment.

President	Vice President	Secretary	Treasurer	Librarian
Brian Alley	*Ray Thompson*	*Joe Sybille*	*Emmett Carstens*	*Ray Thompson*
Webmaster/Editor	Photographer	CNC SIG	Casting SIG	Novice SIG
Dick Kostelnicek	*Jan Rowland*	*Martin Kennedy*	*Tom Moore*	*John Cooper*

This newsletter is available as an electronic subscription from the front page of our website. We currently have over 1154 subscribers located all over the world.

About the Upcoming 10 March 2018 Meeting

The next general meeting will be held on 10 March at 12:00 P. M. (Noon) at the Spring Branch Memorial Library, 930 Corbindale Road, Houston, TX 77024 (Map). Tim Glanzman will give a presentation on "Beginning Clock Collecting".

Visit our website for up-to-the-minute details, date, location maps, and presentation topic for the next meeting.

General Announcements

Videos of recent meetings can be viewed on the HMSC website.

The HMSC has a large library of metal shop related books and videos available for members to check out at each meeting. These books can be quite costly and are not usually available at local public libraries. Access to the library is one of the many benefits of club membership. The club has funds to purchase new books for the library. If you have suggestions, contact the Librarian *Ray Thompson*.

We need more articles for the monthly newsletter! If you would like to write an article, or would like to discuss writing an article, please contact the Webmaster Dick Kostelnicek. Think about your last project. Was it a success, with perhaps a few 'uh ohs' along the way? If so, others would like to read about it. And, as a reward for providing an article, you'll receive a free year's membership the next renewal cycle!

Ideas for programs at our monthly meeting are always welcomed. If you have an idea for a meeting topic, or if you know someone that could make a presentation, please contact Vice-President Ray Thompson.

The club received recently a book donated by a viewer of our website. Here is our open letter of thanks.

Dear Norman Mandel:

Thank you for the book on Traditional Tool Making by Franklin D. Jones. We have added it to our library collection for the use of our members. Your generosity is appreciated, and we are delighted that you enjoy visiting the club's website.

Sincerely,
Home Metal Shop Club

Recap of the 10 February 2018 General Meeting

By *Joe Sybille*, with photos by *Jan Rowland*

Thirteen members, attended the 12:30 P.M. meeting at the South Houston Branch, Harris County Library, 607 Avenue A, South Houston, Texas 77587. There were no visitors in attendance. There are 32 members in good standing with the club.

President Brian Alley led the meeting.

Presentation

Club member *Richard Douglas* concluded his presentation on “Refractory Hard Metals” with a discussion on recycling tungsten and tungsten carbide. He began with a short review of part one. Please see January issue of newsletter.

In the U. S., tungsten carbide is recycled, about twenty thousand tons each year. Of the methods used to do so, three are common, namely; brute force, zinc reclamation, and re-refining. Brute force involves breaking the tungsten and tungsten carbide parts into progressively smaller ones until a fine powder is produced. Devices used to do so include jaw crushing, hammer mills, impact mills, and high energy vibratory mills, among others. Once the fine powder is achieved, steel in the mixture must be removed. This is done using an air separating table. Uses for the now extremely fine tungsten carbide powder include hardfacing a base metal for industrial service, such as the buckets on backhoes. Another use is the application of abrasives on tools, such as tool bits and ferrier tools. Pellets formed from the tungsten carbide powder are also used for hardfacing metal. Thermal spray powder is another use of recycled tungsten carbide powder.

The zinc reclamation method is the most popular. This method uses molten zinc to breakdown the cobalt bond structure to produce friable tungsten carbide, the residue of which is crushed. This process produces the cleanest recycled base product, relatively speaking. Ultimate uses of the end product are as described earlier.

Re-refining of tungsten and tungsten carbide involves recovery of fine powder lost on the floors, walls and other equipment during different manufacturing processes. Once contaminants are removed, uses are as previously described. A sample of recycled tungsten is shown in the photo at right. Holding the small container, one can appreciate the density of the recycled tungsten, for the seemingly small amount is surprisingly heavy.

Presentation slides may be found at this link.

Safety Moment

President Brian Alley showed a safety video describing the difference between a hazard and a risk. Both pertain to one’s safety and, according to one author, are sometimes used interchangeably. For example, a hazard is the possibility of causing harm. A risk is the probability of harm occurring. Take for instance a hammer on a workbench. As long as the hammer is on the workbench there is a possibility of causing harm. A risk becomes inevitable when one uses the hammer to do something with it. Now, the probability of harm occurring is present because improper use of the hammer could likely cause harm.

Show and Tell

Richard Douglas showed an attachment he made to reduce the speed of his Walker Turner drill press. (See photos at left and right.)

John Cooper exhibited a collet chuck with a number 2 taper. Also, he showed an unknown device and requested the membership to identify it. Unfortunately, no one could do so. (See photos at below-left.)

Emmett Carstens displayed a tool set used to lap or dress valve seats on old engines. The tool set belonged to his late grandfather. (See photo at right.)

Brian Alley showed a flashlight the batteries of which are charged by a cell phone charger. (See photo below.)

Problems and Solutions

A member expressed concern over wood drill bits purchased recently. The bits have a full thread tip which is designed to self-feed into the wood. In use, the self-feed feature causes one to have less control over the depth of the hole being drilled. Among the solutions offered included one to chuck the drill bit in a lathe and remove the threads from the tip.

Articles

Monitoring Load on a Mill with an Inexpensive Wattmeter

By Martin Kennedy

Industrial machines have meters that show the spindle load on a 0-100% scale. I'm running Mach3 on my mill and LinuxCNC on my lathe and do not have this capability. I've always wanted it so I can quantify how aggressive I'm being while machining.

I have used two methods to measure this in the past. The first is with an RPM sensor. In Mach3, this shows me the set versus the actual spindle RPM. When the load increases, actual RPM will drop. When it drops to about 90% of the set RPM, I consider that loaded. This is only a rough measurement, though.

Another thing that I tried is an ammeter. My mill is powered with 240vac split-phase. The motor is 3-phase 240, which is made with a variable frequency drive (VFD). I have an ammeter on one of the legs of the split-phase. This is a more quantifiable indication of load, but because of the location of the meter (on the wall outlet behind the mill), it was a bit hard to use. Also, the ammeter does not show the effects of the power factor, which changes as the mill is loaded.

I saw a meter for sale on eBay, delivered in packet mail from China. It indicates voltage, current, watts, and watt-hours. It still won't show percent load, but I can observe the loaded vs unloaded watts, and I should eventually get an idea what's a reasonable load. It was hard to tell from what documentation I could find, but it looked like it would work with the split-phase. I watched some tear-downs and modifications of the meter on Youtube that seemed to confirm this. I thought that for the approximately $10 price that it would be worth a shot.

Here's the link to the one I purchased:

The meter is made by Peacefair. Twelve similar models are available, but I considered two:

- PZEM-021, which has an internal shunt to measure current up to 20A
- PZEM-061, which uses an external CT to measure current up to 100A

The maximum current that I expected for my 2 HP motor was about 6 amps. The nameplate on the motor said 5.5 amps, but I planned to measure the split-phase voltage upstream of the VFD, and I was not sure how going through the VFD would affect this. I had observed about 6 amps on the ammeter I had, so I was fairly confident that a 20 amp range on the PZEM-021 would be adequate.

I received the meter in about 4 weeks and hooked it up. It's easy to connect. The two split-phase 240 wires connect to the two center connectors, and the outer two wires go to the VFD. I printed a custom enclosure for the meter that mounted on the front of my mill.

I can report that it works perfectly! The 20 amp maximum seems to be fine. In the photo, the mill is running unloaded at 3,000 RPM, which is the maximum speed. I'll have to use it for a while to see if it works better for indicating load than what I was using. The only problem I've had is that with the backlight on, I have to look at the display from below to get good contrast. There's not a "focus" adjustment as some liquid crystal displays have. However, turning off the backlight makes it readable.