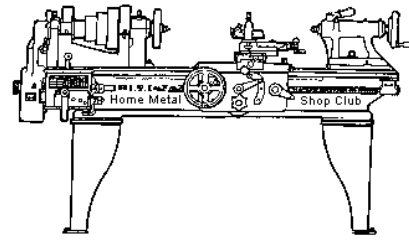


January 2012 Newsletter

Volume 17 - Number 1



<http://www.homemetalsclub.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 a presentation with Q&A, followed by **show and tell** where the members can share their work and experiences.

President <i>Vance Burns</i>	Vice President <i>John Hoff</i>	Secretary <i>Martin Kennedy</i>	Treasurer <i>Emmett Carstens</i>	Librarian <i>Dan Harper</i>
Webmaster/Editor <i>Dick Kostelnicek</i>	Photographer <i>Jan Rowland</i>	CNC SIG <i>Dennis Cranston</i>	Casting SIG <i>Tom Moore</i>	Novice SIG <i>Rich Pichler</i>

About the Upcoming February 11 Meeting

General meetings are usually held on the second Saturday of each month at 12:00 noon in the meeting rooms of the Parker Williams County Library, 10851 Scarsdale Boulevard, Houston, TX 77089. The meeting location and time has been confirmed through February. The next meeting will be held on February 11th. There will be two presentations – Martin Kennedy on Design, Fabrication and Use of a Digital Probe, and John Hoff on Radius Grinding plus a recap of the Recent Cabin Fever Expo.

Visit our [website](#) for up-to-the-minute details and for the meeting topic.

Recap of the January 14 General Meeting

By Martin Kennedy, with photos by Jan Rowland



Thirty members and one guest – Al Wignau - attended the 12:00 noon meeting at the Parker Williams County Library. President *Vance Burns* led the meeting.

The club has funds available to purchase new books for the library, and is looking for recommendations. Contact [Dan Harper](#).

Ideas for programs at our monthly meeting are always welcome. If you have an idea for a meeting topic, or if you know someone who could make a presentation, please contact [John Hoff](#).

The novice group needs a gurney-type transport to make it easier to bring the club's Atlas lathe to the meeting. Contact [Rich Pichler](#) if you can help in this effort.

George Carlson will be doing a presentation in the near future on his [RepRap Mendel](#) 3D printer.

Presentation

Richard Thomas spoke about his experiences in Iraq **purifying water**. Richard began his career in the refining and chemical industry, with training in process technology. He worked with the DOD and then for KBR after he and his family moved to Baghdad in October 2005.

KBR provided support functions to our troops in the military. Richard worked with the group that provided ice, mail services, power, oxygen generation, bus services, some rolling stock, laundry, billeting, maintenance, utilities, electrical, plumbing and cleaning.

Temperatures in Iraq reached as high as 142°F, and were generally over 100°F at night. Typically, temperatures were 120°F in the South. These high temperatures meant that there was a huge demand for water and ice.

Richard's main focus was potable water production. The process used to convert salty well water to potable water used reverse osmosis (RO). He managed 14 RO facilities in Iraq. The main facility made 3 mmgpd (million gallon per day), and an additional 1.5 mmgpd was made at outer sites. All the potable water was then delivered by truck to potable water tanks at various facilities. The tanks were tested twice a day.

Water production began with feedstock from a nearby lake. The water was 1200 parts-per-million of total dissolved solids, which is very hard water. Processing began using multimedia filtration through anthracite, sand and gravel to remove suspended solids. This removed impurities down to the 1-3 micron range.

This filtered water then ran through a RO unit. RO utilizes a semi-permeable membrane that removes all impurities, such as salt and bacteria. The membranes were made from polysulfide polymer coated fiber. In RO, about 70 percent of the water is turned into potable water, and about 30 percent is rejected. The rejected water had a high brine content, and was disposed.

Some of the potable water was made into nearly 200 tons of ice per day. The ice was important to keeping the troops battle ready, as they were wearing about 70 pounds of battle gear, and many remained inside hot armored Humvees.

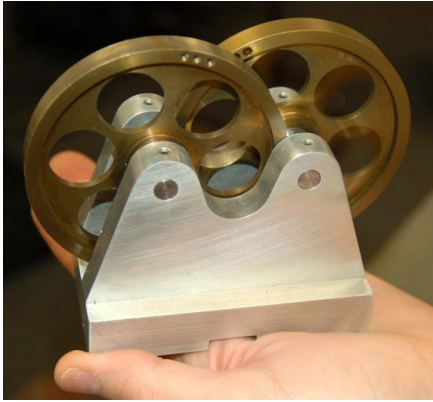
Richard gave some statistics on other support functions provided:

- Delivered 228k gal per day of fuel - jp8, df2 diesel and *mogas* gasoline
- Operated 8 - 30 ton per day incinerators
- Operated several wastewater treatment plants and support trucks
- Provided non-tactical vehicle maintenance on 2,600 vehicles
- Operated a shuttle bus services with 64 buses and up to 262,000 riders per month
- Ran an oxygen production plant and delivered 100 cylinders per day (both industrial and medical grade)
- Ran a nitrogen production plant

Show and Tell

Joe Williams – showed engravings he placed on clamps for a fixture he built, The engraving was about 0.05-inch deep. He did the engraving using a small, free CNC program called [StickFont](#). Joe recommended a book called [CNC Programming Reference](#) by Peter Smid. He used it to create

code to make ovals. He noted that there was an example in the book that used 30 lines of code to generate up to 100 million holes, which would take 17 years to machine!



Dick Kostelnicek - balanced a motor shaft using a fixture he built that used very small ball bearings. He said that it was important to use dynamic balancing instead of just static balancing, which can do more damage to a long-wide device than doing nothing at all.

Martin Kennedy – passed around a hollow mill that he recently acquired. He had to build new replacement carbide tool bits, plus an adapter to use it with his tailstock. He said that when he bought it, it looked a lot smaller in the picture! Martin also brought in two boxes of computer parts and cables to give away.



John McMillan – made a large accurate level out of some surplus bubble levels

Joe Scott – had been cleaning his shop, and came across a lot of articles that he collected over the years. He said that he'd like to make a book of tips from the articles. *Ed. Refer to the three tips articles at the end of this newsletter.*

Tom Moore – gave away a speed handle for a mill.

Problems and Solutions

A member requested help in rebuilding the power feed on a Bridgeport mill he recently acquired. He was told to talk to Doug Blodgett, who has rebuilt one and has a wiring diagram from Bridgeport Co.

A member wanted to reproduce a 22 gauge stamped sheet metal train car roof. He had tried using an English wheel without luck. It was suggested that he make a male die, using either hard maple or epoxy steel.

A member was using a 4000 grit ceramic whetstone to make a fine finish on a steel bar. He wanted a way to hold the whetstone to make a level finish in a lathe. It was suggested that it might be better to use a toolpost grinder or a belt sander.

A member recently acquired a *Rong Fu mill drill*. He didn't know how to use it, and wanted to watch someone milling so he could learn. Joe Scott volunteered to help him after the meeting.

A member has a 24-inch Cincinnati shaper with a 7 HP 3-phase motor. He wanted to replace it with a single phase 5-HP motor and wondered if that would be OK. The advice was that it was unlikely that he would need 7.5-HP for home work, and that a 5-HP would be OK with some electrical rewiring for single phase.

Novice SIG Activities

Rich Pichler and the novice group viewed a variety of lathe finishes with a stereo microscope and an electronic projection microscope.



Articles

This month we're presenting three short articles on *Metal Working Tips*. We encourage you to send your tips along with a photo, if applicable, to the [webmaster](#) for publication.

Torx Security Fastener

By Keith Mitchell



From time to time, we encounter security fasteners; e.g., the Torx or star shaped socket head screw with a protrusion in the center that precludes using a conventional solid key wrench. I've tried the special Torx wrenches with the hole in the center that fit over the protrusion and have had limited success.



Frequently, the protrusion is too wide to fit the hole in the special wrenches that I

have. I've found the best solution is to use a dental burr in a Dremel tool to carefully cut out the protrusion. That probably takes me less time than would be required to find the correct wrench and it eliminates the obstacle for the future

Epoxy Tube Caps

By Dick Kostelnicek



Two-part epoxy comes in squeeze tubes that make it convenient to use a small amount at a time. That is, till you place the wrong cap on a tube and subsequently discover that it is impossible to reopen it. I try to do most things in a well ordered sequence; e.g. open, squeeze-out, and then recap each tube in turn. However, there have been occasions where I placed the hardener cap on the resin tube or vice versa when both tubes were simultaneously open. To prevent such a disaster, I now color coordinate one of the tubes with its cap by placing either colored vinyl tape or felt tip marker on the tube. This warns me to replace the correct cap on



its tube (left photo). However, even this is not always foolproof!

Also, I find it convenient to use leftover miniature disposable communion wine cups, used in some churches, to mix small amounts of 2-part epoxy (right photo).

Shop Roll Dispenser

By Dick Kostelnicek



An abrasive shop roll is difficult to keep tightly wrapped around its spool when placed loose on a shelf or in a drawer. Here's a simple wood fixture that keeps these rolls in one location and ready for immediate use. It uses a spring-loaded toilet paper roller and



spacers cut from 1-inch PVC pipe (left photo).

The right photo shows three abrasive shop rolls held by the fixture that is attached to the underside of an eye level wall shelf. Rubber bands secure the rolls that are less frequently used in order to prevent their contents from unreeling when a strip is pulled from an adjacent roll.

Also, note the [toilet paper roll](#) located next to the shop roll dispenser. Often, it is economical to use a small amount of absorbent toilet paper rather than a cloth shop rag or a whole sheet of paper toweling.