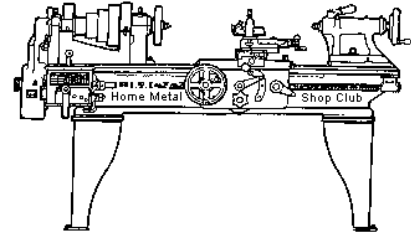




August 2017
Newsletter

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

This newsletter is available as an electronic subscription from the front page of our [website](#). We currently have over 1027 subscribers located all over the world.

About the Upcoming 09 September 2017 Meeting

The next general meeting will be held on 09 September at 12:00 P. M. (Noon) in meeting room 'D' of the Parker Williams, Harris County Library, 10851 Scarsdale Boulevard, Houston, Texas 77089. Club member, Norm Berls, will give a presentation on 'An Investigation into DIY Clocks'.

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](#).

Recap of the 12 August 2017 General Meeting

By Joe Sybille, with photos by Jan Rowland



meeting (right photo).

Fourteen members attended the 12:00 P.M. (Noon) meeting at Fort Bend County Library, University Branch, 14010 University Blvd., Sugar Land, Texas 77479. One visitor, Robert Ratliff, attended the meeting. There are thirty-four members in good standing with the club.

Vice-President Ray Thompson led the



Presentation



Club member, Richard Douglas, gave a presentation on 'Introduction to Thermal Spray'. He began by showing a short video on the thermal spray process. Thermal Spray is a process whereby a material is heated and propelled in a gas stream onto a substrate forming splats. The splats build up to create a coating.

There are several types of thermal spraying processes, including flame spraying, arc spraying, plasma spraying, high velocity oxy fuel spraying (HVOF), high velocity air fuel spraying (HVOF), and detonation gun spraying. All processes use a feedstock and typical properties of the feedstock are bond strength, surface finish, (whether polished, ground, or machined), inclusions, and porosity.

Thermal spraying is used in several industries such as aerospace, medical, petrochemical, oil and gas, agricultural, and automotive, among others. In the petrochemical industry, the involutes of pumps are coated by thermal spraying. Medical implants receive a coating by thermal spraying. As for the automotive industry, piston rings, cylinder liners, and combustion ports are a few of the parts that are coated using the thermal spraying process.

The thermal spraying process has been around since its development by Max Ulrich Schoop in the early 1900's. Over the years, there have been several improvements to the initial process and wide acceptance in many commercial markets for surface coatings.

Feedstock plays a significant role in the type of thermal spray process used. There is wire feedstock used in flame spray, two wire arc spray, and single wire plasma spray. Ceramic rod is used in plasma spray. Powder feedstocks of different consumables are used in HVOF, HVOF, plasma, and detonation spraying. Wire composition may be pure metals or metal alloys. Examples include aluminum, zinc, Babbitt, and copper, among others. Powder composition may be carbides, ceramics, pure metals and alloys, plastics, and blends of these stocks.

Consideration must be given to the physical characteristics of powder feedstock. Size of powder feedstock is important, for it affects the coating. Several methods are used to determine particle size. One method is the use of a sieve or a sifter. Another is the use of laser diffraction to determine particle size, but a drawback of this method is the assumption that all particle shapes are round.

Of the different types of thermal spray processes wire flame spraying is the oldest. It uses a single wire and oxy acetylene as the combustion medium. HVOF and HVOF along with plasma spraying have been significant advances in the thermal spraying processes. HVOF uses oxygen and gas or liquid fuel under high pressure, up to 200 psig, to produce very dense coatings. The HVOF process offers higher deposition rates for coatings. Plasma spraying enables the coating of materials subject to oxidation. Also, certain plasma processes allow the use of spray powders that do not flow well.

Advances in thermal spraying processes continue to provide wear and corrosion protection in industrial settings and at home.

The presentation video may be [viewed at this link](#).

Safety Moment

Vice-President Ray Thompson showed a video that emphasized the philosophy that one is responsible for one's safety whether at work or at home.

Show and Tell

Martin Kennedy showed a set of three [Reuleaux triangle](#) bearings that he made. Unique about the bearings is that despite their triangular shape, the bearings permit flat items to move freely as though the bearings were perfectly round. (right photo).



Mike Winkler exhibited a pair of pliers made by the German company KNIPEX. (left photo).



Problems and Solutions

A member asked for the best method to determine the maximum torque on hold down bolts required to fix his mill vise to the mill table. Several suggestions were offered.

Another member asked for information on the use of Meehanite in cast iron castings for machinery tools.

A visitor wanted to know if there is any interest among the membership to help demonstrate to school children the use of machinery tools on a trailer. The trailer would serve as a traveling exhibit of machinery tools with the goal of encouraging youth to learn how to build things out of metal.

Articles

Ferrous Sheet Separation

By Dick Kostelnicek



Ferrous metal sheets, stacked one upon another, are often difficult to separate. There is the atmospheric pressure holding them together, namely 15 pounds per square inch, along with the tackiness of any residual oil on their surface (left photo).

A clever technique to force them apart is the use of a magnet

applied to the side or edge of the sheet stack (right photo). The edges of all sheets in proximity to a magnet's pole become magnetized with the same but opposite polarity as the pole itself. Hence the like magnetized sheets separate from one another as similar magnetic polarities repel one another.



The magnet should not be placed in direct contact with the sheet stack, as then, it would be difficult to pull the sheets away from the magnet itself. Place an intermediate barrier of non magnetic material between the sheet stack and the magnet in order to weaken its pull toward the sheets. In the above right photo I used a ¼ - inch aluminum plate for this purpose. When separated, the top sheet may be grabbed with a 'duck billed' vice grip (left photo), pliers, or even a suction cup for easy removal from the stack.