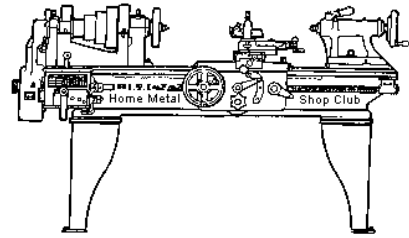




December 2018
Newsletter

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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 12 January 2019 Meeting

The next general meeting will be held on 12 January at 12:00 P. M. at the [Galena Park Library](#), 1500 Keene St., Galena Park, TX 77547. The recent club member survey will be discussed.

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 yearly tailgate sale took place immediately after the December meeting.

Recap of the 08 December 2018 General Meeting

By Joe Sybille, with photos by Jan Rowland



Twenty members attended the 12:00 P.M. meeting at EuroWorld Motorsports, 1298 N. Post Oak Road, Houston, Texas 77055. There was one guest in attendance, Mrs Jan Roland. There are 29 members in good standing with the club.

President Brian Alley (with cap) led the meeting (right photo).



Presentation



Instead of a formal presentation, club member Brian Alley gave a tour of EuroWorld Motorsports of Houston. EuroWorld Motorsports is an automotive repair shop catering to owners of high-end sports cars such as Porsche, Lamborghini, Ferrari, and Mercedes Benz, among others. Members were treated to a visual display of several of the aforementioned cars. While touring the shop, Brian showed and explained the use of state of the art wheel alignment and wheel balancing machines. He showed a chassis dynamometer to measure the output power of an automotive engine driving either two or four wheels.

Later, he showed a turbo-charger undergoing rebuilding and explained the steps necessary to complete the task. A disassembled Porsche engine on a nearby workbench served as the focal point for describing how racecar engines must be rebuilt after only what appears to the average consumer a short usage period, typically less than 100 hours.

Afterwards, Brian gave a demonstration on the use of a vintage metal shaper he recently acquired. The shaper was manufactured during WW2 and works well. See photo at right.

The club extends its sincere thanks to the owners of EuroWorld Motorsports and to Brian Alley for hosting the monthly meeting of the Home Metal Shop Club.

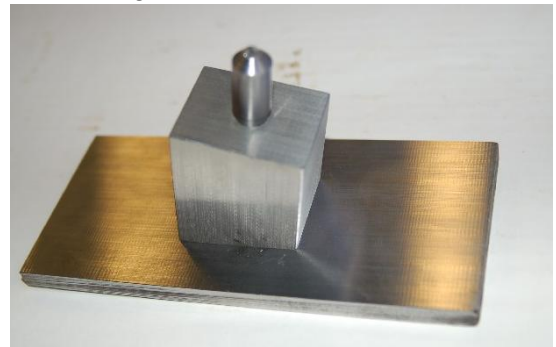


Show and Tell

John Cooper shared a few comments on his experience attending the FABTECH convention in Atlanta, Georgia. There were over 1600 exhibitors demonstrating metal working machines. Shown at left is a



sheet metal box formed on one machine with the push of one button. He showed a sample of a welding heat shield manufactured by Steiner Industries.



Also, John showed a grinding wheel dresser tool he made for truing a grinding wheel. See photo at right.

Lastly, John mentioned an associate of his used an x-ray fluorescence testing machine to determine the composition of a piece of metal of unknown origin. The metal must contain known elements in order for the testing machine to identify its composition.



Richard Douglas exhibited a 3 watt LED clamp on light fixture sold by IKEA. The light has a flexible gooseneck, and Richard uses it to illuminate work pieces. See photo at left.

Brian Alley showed a controller display panel for a rotary table. The controller uses an Arduino microprocessor, and Brian 3D printed the panel

enclosure. See right photo.



Problems and Solutions

A member cautioned others to avoid a certain machinist app for smartphones. The app did a poor job of making conversions.

Another member wanted to know the best way to resolve an issue with the drill chuck arbor failing to seat properly in his tailstock. Several suggestions were offered.

Articles

Welding Cables

By Dick Kostelnicek



When you rout two electrical cables that carry a lot of current, say in the neighborhood of 300 or more amperes, you need to be careful about their placement with respect to one another. Otherwise, the operation of the device connected to them, such as a welding machine, could be comprised. Specifically, I'm talking about arc and spot welding cables.

Problem 1 - Whenever two current carrying wires are placed next to one another, there is a force between them. It is called the Lorentz force, which tends to separate the wires when the currents are in opposite directions, but pull them together for similar flowing currents. Specifically, the force is due to the interaction of the current in one wire producing a surrounding magnetic field that interacts with the current flowing in the other wire. This force also occurs in electric motors and is the source of the ensuing rotation. In arc welding, the currents run in opposite directions for supply and return cables, hence forcing them apart. I first became aware of this when I connected some large cables to a high current spot welder. It is prudent to lash the supply and return cables together with plastic ties so that they don't push apart when large welding current start to flow.

Problem 2 – The current may be limited in AC arc and especially spot welding when the supply and return cables are not intimately lashed together. The welding current is limited by the supply voltage and resistance of the plasma arc, for arc welding, or fusion joint in spot welding. An additional current limitation is the inductance formed by the cabling. Yes, I'm talking about that one turn inductive coil made up of the supply and return cables. The inductance of a single turn coil is proportional to the area

enclosed by the cables. That's why the cables should be lashed together in order to minimize the enclosed area. For long separated cables, the cabling inductance might well be the limiting cause of amperage delivered to the arc or fusion joint.

A related and interesting phenomenon occurs in arc welding, stick or wire feed. The current flowing along opposite sides of the rod or wire are obviously both in the same direction. Those currents tend to pull opposite sides of the rod or wire toward one another. This same current forms the hot plasma arc which thereby compresses or necks down the softened heated wire causing a piece of it to drop off into the molten welding puddle. This process repeats thirty or so times per second. That is, heating, necking, pinch-off and dropping into the puddle. That's why you hear the frying egg or buzzing sound from both wire feed and stick welding as the process proceeds.