BridgeWire MAKERSPACE

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FEBRUARY 2019

WORKSHOPS

EMBEDDED SYSTEMS GROUP . Two Tuesday nights a month starting February 19th, Bridgewire will be hosting the Embedded Systems Group. These exciting workshops will include basic and advanced soldering techniques as well as hands on design of DIY microprocessor projects. The ESG is a group of folks at Bridgewire from all walks of life who are interested in learning more about electronics and software engineering in the microcontroller/microcomputer space. We're building clocks, magic mirrors, open source google home hubs, home automation hubs, and more, using Raspberry Pi, Arduino, ESP8266 and just about anything else that can do math really fast.

We are a new group looking for more folks who are interested in learning more and perhaps doing some projects large and small together. The group will start meeting officially in February, kicking off the year with a basic soldering class. We will then expand on those basic soldering skills over the course of time to include building basic projects using everything from LEDs, LCDs, relays, buttons, motors and more!

Have a project you're working on that you'd like to share? Need some advice on how to approach building and prototyping an idea? Join us! You're in good hands with the folks in this group.

PARACORD CRAZY

What started a few years ago as a practical way for soldiers, firefighters, and outdoor adventurers to carry some extra 550 cord has mushroomed into a multi-million dollar business serving fashion-conscious urbanites and true wilderness aficionados alike as well as a fun and creative way to satisfy your gift giving needs. This month The Big Brothers and Big Sisters Event at Bridgewire will be Paracord weaving projects hosted, as always, by John T.

Paracord Weaving is also the subject of this month's competition.The entries can be paracord paracletes, dog leashes, bags, whips, keychain, lanyards, etc. It will have a $5 buy in with 100% of the entry fees going into the prize pool. There are paracord bracelet jigs available for use on a project table in the warehouse. They will be on the table until the 10th. Try out your skills in this fascinating craft and find out what a paraclete is . . .

All projects need to be started after February 1st.

Judging will be on Thursday night the 28th.

More details will be available the last week of January.

CANDLE MAKING COMPETITION

COMING UP IN JUNE

Keep your calendar open for the June Makers Competition. This year Bridgewire is hosting the first annual Bridgewire Candle Making Competition. John T. is in the process of gathering tools and equipment for

the event. Candle making is a fascinating hobby that is making a comeback with folks feeling a need to work with their hands and make something useful to create a peaceful ambience in their personal space. Bridgewire can supply the tools and workspace that's needed to make candlemaking a part of their life, eliminating the the mess and expense of this exciting practical hobby.

NEW SOFTWARE FOR THE MALYAN

Thanks to Omri for working on the 3d printer and writing this really great article about it.

One of the most common complaints with 3D printing (including my own) is that it is hardly turnkey, constantly needs tweaking and many of your prints don't come out right. I've been working over the past several weeks to try to alleviate that at Bridgewire's 3D printing lab. I've been focusing on our Malyan M180 3D printer until all the kinks are ironed out of our new DIY 3D printer. Mechanically our Malyan M180 is very sound but it's weakness is that it uses the proprietary x3g file format and not industry standard gcode. In order to use it you have to use an ancient version of MakerBot's MakerWare which is very constraining and allows you to customize next to nothing, until now!

Previewing the gcode slicing scheme in 3D in slic3r

Using a piece of software named gpx, some custom Windows PowerShell scripts I've created and a lot of online research, I've managed to get it working (and working quite nicely, might I add) with the latest version of slic3r, a highly customizable, non-proprietary 3D slicing tool. slic3r allows you to control everything from skirts, brims, rafts, scaffolds, perimeters, infills, cooling, speeds, temperatures and many other parameters of how your gcode is generated and how your 3D model is sliced.

I've created some slic3r profiles that take most of the guesswork out of your 3D prints that are good to use as is or as baselines to make your own parameter tweaks. I'm also in the process of tinkering in several other ways to improve the M180. First, I'm switching over to using PLA from ABS plastic which is a physically superior material in most respects. I'm working on creating a detailed tutorial on how to use this new setup. I'm also trying to figure out less "duct-tapish" solutions to working around the M180's

Malyan M180 hard at work and about halfway through, printing layer by layer

Part printed in gray PLA plastic with brim removed and popped off the print bed

preheating issues. I've done several 3D prints with it that are already in service and I'm hoping to make the whole 3D printing experience more enjoyable and less frustrating for other Bridgewire members.

THE BOARD DECISIONS

Marketing Activity – At the January meeting the board assembled a marketing committee to move forward with the marketing plans. Now that the new year is in full swing the newsletter will be published on a monthly basis, a more robust website is being implemented with an interactive calendar and an increased focus on social media. A new energy in Bridgewire's event schedule is planned for 2019.

Robotics Team - The board of directors reviewed and approved the proposal for Hug High Schools FIRST Robotics Team. The team will use the facility to build their robot they will compete with in the FIRST Robotics Competition in Sacramento. Say hello to the mentors and these young makers.

Facilities- It was decided that any inoperable and unrepairable machinery should be removed from the shop to make room for more viable project areas. Dust collection continues to be worked and should be completed soon. The CNC Plasma cutter and VHF Spectrum Analyzer has of ficially been donated to Bridgewire.

Finances- A brokerage account has been opened with Fidelity Investments in order to receive stocks and bonds as donations.

Officers meeting- Starting in February a separate officer's meeting will take place for the officers to handle logistical issues and leave the board meeting to more important management decisions.

ARTICLES NEEDED!

The Newsletter- In an effort to be more informative and more relevant to the interests of Bridgewire members, The Bridgewire Newsletter is very interested in what our members have to say and share with the Bridgewire community. We welcome any input from our readers, from a complete article of particular interest or an idea for something we can pursue and share with the members. Please email your entries to Marketing at officers@bridgewire.org

EDUCATION HAPPENINGS

Education Officer: John T. is hosting another Big Brothers and Big Sisters Event on Jan 30th. This months activity will be Paracord Weaving, bigs and littles will learn the popular patterns and get to

make their own cool Paracord projects. If you have any questions that could help, please relay them to John at officers@bridgewire.org

Regular Monthly Classes and equipment Safety Training:

- **1st Thurs – Welding Shop:** Safety Demo + knowledgeable user check off
- **2nd Thurs - Laser Cutting:** Safety Demo + User Training.- by Eric Bradford
- **3rd Thurs - Wood Shop:** Safety Demo + knowledgeable user check off - by Roman Hruska.
- **4th Thurs - 3D Printing:** Safety Demo + User Training.- by Ralph Santos

Reoccurring Education classes and events*:*

- **CAD Class:** Learn 3D CAD modeling so you can make items to 3D print or machine on the CNC Wood router.
- **FIX-IT Workshop:** Bring in that broken item and the instructor will guide you in fixing your item.
- **CNC Wood/Plastic Router Classes (Intro):** Learn the basic principles of CNC wood routing on the Shapeoko 2 router. This class will introduce you to the basic process steps so you can machine small items This class is free to members and has a $20 fee for non-members.
- **CNC Wood/Plastic Router Classes (Adv):** Apply the principles of CNC wood routing on the Greenbull Router. This class introduces you to a powerful 3 Horsepower router spindle for cutting large and thick materials. The **(Intro)** class is a prerequisite to this class. You must be a member to take this class and has a $30 fee.

Groups meeting at Bridgewire

- Big Brothers & Big Sisters (activity monthly)

Your group can meet here also. The only requirements are that at least one member of the group must also be a Bridgewire member and that the group obey the rules of our Policy Manual. Schedule your event per the calendar instructions below.

FACILITY HAPPENINGS

Facilities Officer: We are still in need of a new facilities officer. Someone who understands how to

maintain and improve our tools and equipment. Other areas of responsibility include improving the signage, aesthetics of the facility, and general upgrading of the equipment and tools as opportunity arises. And of course, addressing safety concerns as they become apparent. If you would like to help, please contact the Board of Directors at officers@bridgewire.org.

There have been a few shop changes and improvements since our last newsletter.

Here is a highlights list:

Bridgeport Mill and Clausing Lathe are operational – Dan has just rewired these tools to make them operational but there's still work to be done. Training sessions are in the works and safety rules are at the top of the list. Tony and John have discussed a series of training sessions in the coming months and will be using these sessions to create appropriate safety guidelines for these powerful machines.

One More Bathroom to go - A group of dedicated members have made a huge aesthetic improvement to one of the bathrooms. It is very blue and very clean. There's one more bathroom to go. If you are inclined to participate in the Bathroom 2 Project please email officers@bridgewire.org so we can organize a project.

BROKEN TOOLS AND EQUIPMENT

It's a drag to get all ready to use one of Bridgewire's many excellent tools and find it's inoperable for some reason or another. If you find a tool that's broken or if one of the tools breaks while you are using it, Please place it into our Broken Tool Bin. It's not just a bummer, but often more dangerous if Equipment is broken or malfunctioning. If you find Equipment is malfunctioning please write a note (something more than just "Broken") on a full 8.5 x 11 sheet of paper and tape to the machine indicating what appears to be the problem. The Facilities or another officer will then take steps to start resolving the issue.Attaching a quick note about what happened will help Bridgewire make better decisions about tools and training in the future.

DUST COLLECTION SYSTEM

Last month the Board approved spending a few hundred dollars to complete a dust collection system in our wood shop. The system uses a central vacuum dust collector with premium ducting (which was donated) going to 4 work centers. Each center has a gate to cut off vacuum. The system requires that all gates be closed except for the one you are using and occasionally a second gate. The dust collection work centers are Sanding, Large CNC Router, Table Saw, and Miter/Band Saws. The Table saw has a Thien Collector at the table which needs to be checked and emptied often. We believe this system will significantly reduce the dust and dirt in the entire shop.

The free standing equipment like the router table and drum sander still require shop-vacs to collect their wood dust and chips.

MEMBER CABINET LABELS

Our membership has grown, but we are still limited to the number of cabinets we have available.

That is why recently the Board had to make the decision to only provide ½ cabinets to any new or renewing members going forward. The old members are grandfathered in and will keep their full cabinet unless their membership lapses. All cabinets are being relabeled with 2 blue-tape labels. One for the top of the cabinet and one for the bottom. In the future, blank labels will indicate an unoccupied cabinet.

PAINT BOOTH FILTERS

Last month the Board approved a few hundred dollars to purchase new charcoal filters, MERV 11 filters, and paint collector screens for the paint booth. This was needed as the old filters had stopped working.

JANITORIAL SERVICE

We have started to use a janitorial service for the first time. F.A.A.D. Janitorial will be cleaning the bathrooms, kitchen and main room every other Thursday. This will be paid for with money from what is affectionately called the Blake Fund. This is money raised from the sale of packaged foods and drinks in our kitchen area. That is what these signs in the kitchen are all about.

WOOD LATHE

The wood lathe in the wood shop is functional but has been missing centers for some time. We now have a 5/8 drive and tailstock center for turning wood. Hopefully, our resident turning expert will hold a class sometime in the near future. Look to our calendar for upcoming classes.

WE USE AMAZON SMILE

When you make a purchase through Amazon, THEY will donate to our non-profit Bridgewire, if you setup your account to do so. All you have to do is login to your Amazon account through smile.amazon.com before you make your purchase. Specify “Bridgewire” as your charitable organization. Many of us have installed Amazon Assistant (quick link) to easily return to AmazonSmile when you login to Amazon. Each donation is small, But if we all participate this could add up

FINAL NOTES

Welcome new member Tanya Charbury,

Bridgewire has a new officer secretary: Tanya Charbury. She will be performing the typical duties of an Officer Secretary such as recording the minutes during Officers’ meetings. However, she has also

offered to donate some additional time to the intended benefit of Bridgewire, in her professional capacity as a business process improvement specialist in the context of the custom business software company she founded and manages: Precision Quality Software, Inc., whose client list includes, directly or indirectly, Microsoft, Hewlett-Packard, Emerson Electric, Gloria Vanderbilt, Philips, Lumileds, Agilent Technologies and the Naval Strike and Air Warfare Center of the US Navy

Tanya will be working with Bridgewire to improve member management by integrating the automatic systems that we now have in place into one coherent process as a prototype for a future software application.

BELOW CLICK on Calendars to go to Bridgewire Calendar with interactive event details.

ALL MEMBERS, If you would like to add an event. Email us at info@bridgewire.org or click on the button below the calendar to schedule your event with details and contact info. The new event will be approved by an officer or director to make it show up. Your events can be any project you want to share or get help with. Add Event