



SCHSM

Southern California Home Shop Machinists

February 2, 2019

OFFICERS

President	Charlie Angelis
Vice President	Michael Vulpillat
Secretary	Ron Gerlach
Treasurer	Jim Endsley

COMING EVENTS

March Meeting
Sat, March 2, 2019, 2:00 p.m.
El Camino College

March Meeting
Sat, April 6, 2019, 2:00 p.m.
El Camino College

PREFACE -

The January meeting of the Southern California Home Shop Machinists was called to order at 2:00 p.m. on Saturday, February 2, 2019. We met in classroom AJ115 on the first floor of the Industry and Technology Building at El Camino College in Torrance, California. There were only 19 members in attendance due to an ongoing heavy rainstorm. There were no visitors.

CLUB BUSINESS -

Michael Vulpillat sat in for Charlie Angelis as the presiding officer. He reiterated that the date for the picnic is June 8th, which is the second Saturday of June. He also mentioned the possibility of another foundry day in March. This will be dependent upon the schedule of Jim Kreter.

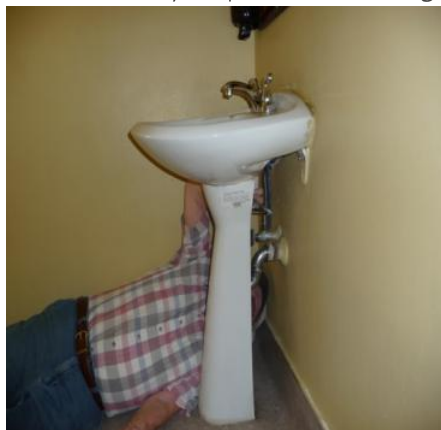
Ed Hauffman – Ed mentioned that he expected to have his foundry furnace at the school to be up and running soon and that some Saturday could be set aside for a foundry day at El Camino.

Officer Elections – It was pointed out by Jim Endsley that the club officer elections should have been conducted at the February meeting and that the nominations are supposed to be put forward at the January meeting. To correct this procedural faux pas, a motion was made and seconded to carry last months election results forward and make them official. A vote was taken with a unanimous result of all in favor. The motion was carried. The bonified official officers are:

President - Charlie Angelis
Vice President - Michael Vulpillat
Treasurer - Jim Endsley
Secretary - Ron Gerlach

PRESENTATIONS -

Eldon Barlkey Special Plumbing Tools



Eldon volunteers time at his church helping to maintain parts of the facilities. This often involves plumbing and being a fairly old building, the fixtures and plumbing connections are in poor to bad shape.

His first challenge was to replace the faucet fittings on a pedestal sink. Getting to the hot and cold water fittings was tough but not

Eldon trying to tighten the drain nut

exceptionally bad. The big challenge came when he had to tighten the nut securing the drain to the bottom of the bowl. He started with an adjustable wrench which he ground away sections. He kept cutting back the wrench tips and handle until it was small enough to get into the cramped space.



Highly Modified Adjustable Wrench

Next up were several drain clean-out plugs that likely had not been removed for 40+ years. The problem was compounded by the fact that the plugs were located flush with walls and were positioned under counters and cabinets. This made it virtually impossible to get any kind of decent grip and leverage. Eldon again came to



Old Drain Clean-out Plug

the rescue with a custom wrench built from scratch out of scrap plate steel and pipe. He cut four sections of heavy steel plate to form the sides of a square socket and ground deep reliefs in the edges



Custom Fabricated Square Wrench

to allow good penetration during welding. He then used his 1/8" 6011 rods at a 180A AC setting to join them together to form the square cavity. He then welded this assembly onto a section of heavy pipe. A chunk of wood was grooved to act as a level



Final Setup W/ Socket, Pipe Wrench and Support Block

support for the tool during the actual plug removal. It took a lot of force, but his full weight applied to the end of 24" pipe wrench finally persuaded the plugs to back out.

His next project was realigning the fittings on a Sloan valve because the original installation had developed a slow leak which had been acting up for years. This boiled down to aligning the fittings coming from the wall to the toilet.



Misaligned Sloan Valve

Last but not least were the urinals. There were 10 urinals that had been installed after being donated to the church by the manufacturer. These were a special type that did not require flushing water. They utilized instead a chemical canister that fit into the bottom that chemically



treated the urine to minimize odors. Changing out the canister proved to be an expensive process, so they needed to change the urinals to a different style. The problem was removing the 2" drain flange. It was too close to the wall to get a grip with a pipe wrench. His solution was a special fixture with a bolt that fastened to the actual flange. The first attempts were a failure when standard carriage bolts were used, since they just bent under the applied torque. The fixture finally worked as planned when they changed over to Grade 8 bolts which are much tougher than the standard stuff sold at the home improvement stores.



Flange Removing Tool

SHOW and TELL –

Michael Vulpillat – Michael gave an impromptu dissertation on heat treating steel. His first topic was the embrittlement around weld zones and why cracking always occurs at certain points around the weld zone with certain steels with higher carbon content. The technique is to heat the affected area to a dull red which allows the grains to shrink in size. Small grains form at around 1414 Deg F (this is also the non-magnetic temperature of carbon steel). This dull red is hard to discern in bright light and should be observed in a shaded area. He also presented a chart of color vs temperature. There were two different effects coming into play with color. Light emitted from a heated metal at higher temperatures has its range of colors from dull red to bright yellow. Colored light reflects off hot metal as a function of its temperature. These reflected colors occur at much lower temperatures than the emitted colors. The reflected colors are very useful in determining the desired tempering temperature. Some process definitions:

Fahrenheit	The Color of the Steel
2000°	Bright Yellow
1900°	Dark Yellow
1800°	Orange Yellow
1700°	Orange
1600°	Orange Red
1500°	Bright Red
1400°	Red
1300°	Medium Red
1200°	Dull Red
1100°	Slight Red
1000°	Very Slightly Red, Mostly Grey
800°	Dark Grey
575°	Blue
540°	Dark Purple
520°	Purple
500°	Brown/Purple
480°	Brown
465°	Dark Straw
445°	Light Straw
390°	Faint Straw

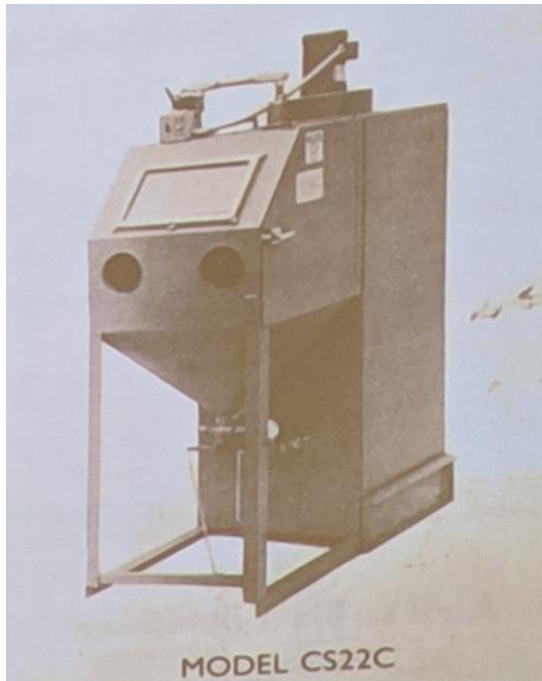
Color vs Temperature Chart Similar to the One Presented

Annealing: Raise temperature up very high but well below the melting point and then allow the metal to cool very slowly; at least 8 hours. This produces a material that is optimum for machining, reduces internal stress and improves ductility.

Normalizing: Heat the material just up to the non-magnetic point and then back down below this point. Repeat this process several times. This maximizes the amount of the small grain structure and leads to a very tough material, stable material that is easy to machine

A good way to heat treat a chisel is to heat it to the necessary point and then quench just the tip. Grind off the scale in one section on the tip and then observe the descaled area as the temperature of the body of the chisel propagates back up to the tip and changes its reflected color to the desired tempering temperature then completely quench the entire chisel.

Lewis Sullivan – Lewis described how he converted his Kelco siphon feed sand blast cabinet to a pressure feed style. He basically took a separate pressure feed sand blaster and married it to the bottom catch basin of his Kelco blast cabinet. He had to cut the very bottom section out of the Kelco and make a transition



Kelco Model CS22C Siphon Feed Blast Cabinet

adapter to the fill spout of the pressure feed blaster. Once all the media had been pressure fed out and accumulated in the catch basin he just has to momentarily stop blasting and work a foot lever that opens the valve to transfer the accumulated media back into the pressure blaster canister.

Michael Vulpilat – Michael again stepped up to provide another impromptu presentation. This concerned his cousin's water wheel powered woodworking shop in France. He had a variety of photos of the setup. The conventional water wheel was driven by water from a creek. The wooden water wheel drove a giant gear assembly located indoors. Power was tapped off from various points in the gear assembly to drive a line shaft for powering tools as well as a generator to produce



Giant Gear Assembly for Distributing Power

electricity for lighting and other necessities.

The next image shows how complex the line shaft was with belts coming down at various points to feed power to numerous machines. After that we see a table saw driven by a flat belt from a portion of the line shaft.

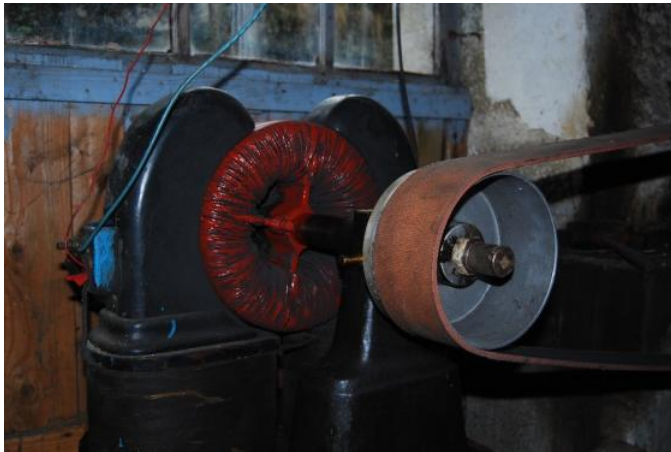


Complex Line Shaft and a Turret Production Machine



Flat Belt Driven Table Saw

Note below the generator driven by a flat belt. The output of the generator went to a big control panel



Electrical Generator Driven by Flat Belt

with a variety of meters and switches. The operator had to have been a Jacques-of-all-trades to be able to set up and run such an amazing concoction of electrical and mechanical devices. To this older



Old Electrical Control Panel

generation of workers, it probably just seemed like another simple day at the office.

The Gordon Wrench: This interesting wrench was presented by one of the members (Name unfortunately was not noted). It is a plastic molded



Gordon Wrench Brochure

wrench designed to fit over the plastic or pot metal water shut off valves that are in most homes under sinks and behind toilets. It provides multiple ways of applying much more leverage on these small handles.



Actual Wrench and a Typical Valve

SCHSM welcomes presentations by members or guest speakers on any subject related to metal working activities. If you have some knowledge or experience you feel may be of interest to our members, or if you know someone that may have something interesting to relate, please consider making a presentation at a meeting. Presentations may be a little longer and more detailed than a show and tell, and may be accompanied by slides, video, or physical displays. Probably every member has some experience they can share, and this is the purpose of SCHSM. Please contact President Charlie Angelis to make arrangements to give a presentation.

SCHSM meets in Classroom AJ115 on the first floor of the Industry and Technology building of El Camino College, 16007 Crenshaw Blvd. Torrance, California, at 2:00 p.m. on the first Saturday of every month. The building is near Parking Lot B. Enter the campus from Manhattan Beach Blvd.

If you would like to contribute an article to this newsletter, or make a comment, contact the editor, Fred Bertsche. He can be reached via the SCHSM Yahoo Group, or at fbschsm@yahoo.com.

Find us on the web at www.schsm.org.