

## Inside SME Ltd.—A Pictorial Factory Tour of the Turntable/Tonearm Legend



Posted by: Neil Gader at 3:03 pm, August 13th, 2009

There are few names in audio, analog or digital, that get the heart racing like the turntables and tonearms from SME Ltd. Long admired for its precision mechanical engineering and jewel-like construction SME components are perennial Editor's Choice stand outs. Recently I was on holiday in England, so when the opportunity to visit the factory presented itself I grabbed for it.

Located in the modest working class environs of Steyning in the West Sussex region of England there is nothing especially glamorous or prepossessing about the 1940s-style two-story, brick edifice that is the SME factory, nor its cross-town, second facility used for die-casting, plastic molding and grinding. The areas are cramped yet unquestionably neat. Every raw material, parts bin, and table or tonearm in whatever stage of completion is carefully in its allotted space with finished parts arrayed on wooden jigs so as not to come in contact with and possibly scratching one other prior to final assembly.

The adventure began with Managing Director Cameron Robertson-Aikman greeting me at the Shoreham-By-Sea train station. On the short drive to Steyning he informed me that the day would commence with the factory tour led by factory general manager Liam Daly to be followed by lunch and a listening session with the new flagship—the SME Model 30/12A, a larger more massive version of the Model 30/2 with the Series V-12 twelve-inch tonearm—an experience which I will cover in another installment.



A CMM or coordinate measuring machine CMM that is programmed to check a part's dimensions for accuracy and flatness relative to itself and other impacted parts

While the CNC machinery (Hardinge, a US company makes these machines) is the high tech mainstay for creating the complex angles and precision geometries that are so much apart of analog playback, what really hit home is the sheer amount of hand finishing, polishing, very close up examination that goes on. Obviously this is not the kind of backbreaking work demanded of depression-era Welsh coal miners but working with steel, brass, aluminum and magnesium requires more than the usual elbow grease and you can see it in the toughened hands and forearms of many of the SME crew. One fascinating element that speaks to



Control arm brackets drilled and tapped prior to final machining, Placement on the jig keeps them from damaging each other.

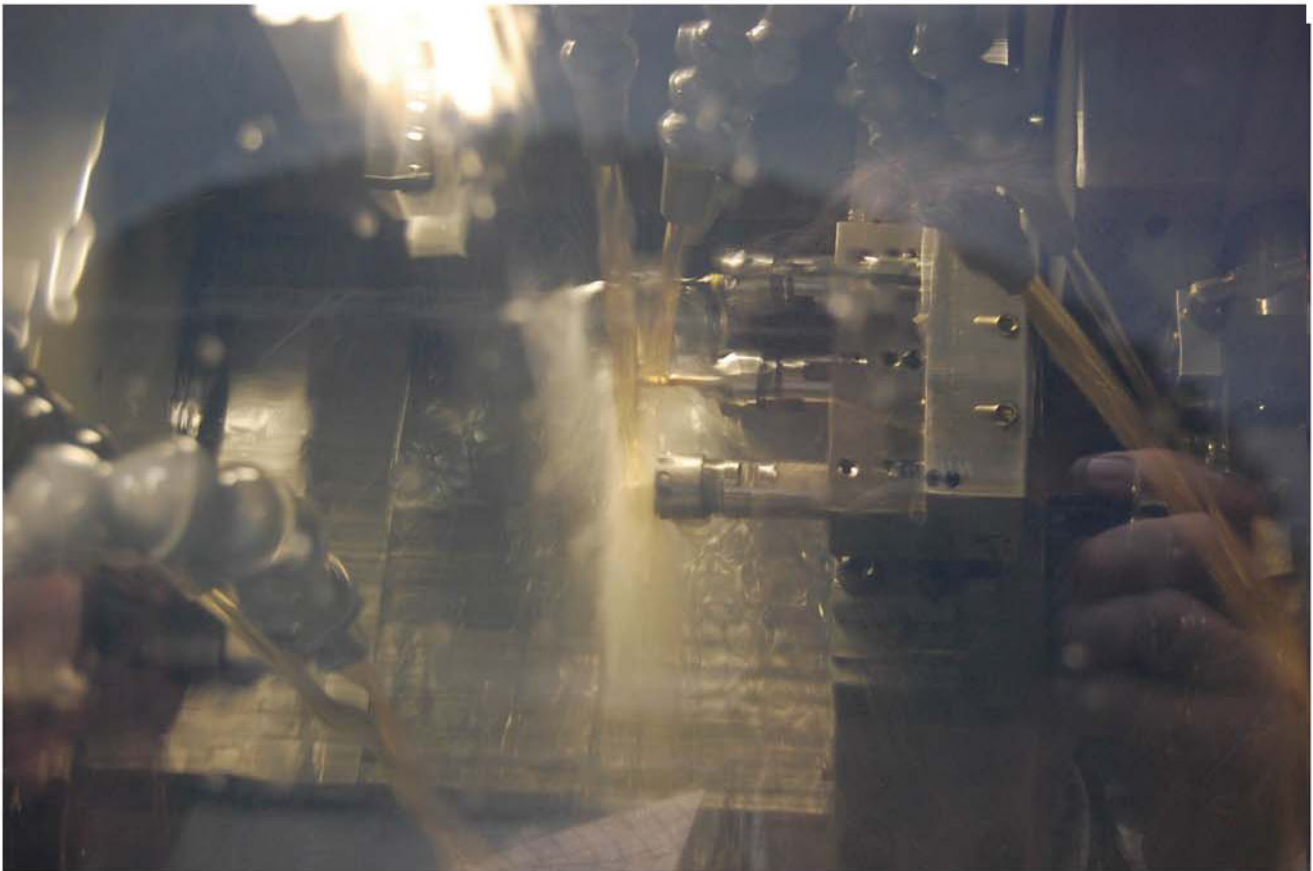


The rumbling or barrelling machines and plating. Different grades and sizes of these resin pebbles act like very fine sandpaper to gently round every hard edge. Usually runs about eight hours, generally through the night.

SME's health commitment to its workers and the larger environment regards what I didn't smell throughout the tour- to my nostrils the factory didn't emit a whiff of industrial chemicals. Curious I asked Daly about this and he smiled and replied that the air of the factory was completely exchanged four times a minute! A staggering thought, especially for a factory that is now running multiple shifts, seven days a week.

### Nice Set of Threads

One example of the perfectionism that SME is renowned for is that it extends to even the smallest lead tonearm screws. They don't "source" them from a third party vendor. Rather they stamp out their own "blanks" and use a 1950s era-built thread generator. I didn't actually see it in action in the other facility but as Mr Daly explained to me the threads are not "screw-cut" onto the blanks which is crudely typical, rather they generate or "thread roll them" to produce a very accurate blank that's ground within microns of accuracy. The blank is forced between two wheels that are hydraulically driven. It then moves the metal blank into the thread former within them. Daly: "Hence when you roll it between your fingers, normally you think, that's sharp! But not on these screws since the metal isn't cut, it's formed." And if for example you've ever rotated the thumbwheel adjustment for overhang at the rear of an SME tonearm you'll know what I mean when I describe the action as silken—as if it wasn't metal at all. Following is the first installment of images with short comments. A second installment is forthcoming.



CNC machine programmed to cut up to 16 distinct angles. All programs are downloaded to disc. Note-although it's indistinct looking through the protective glass, there twin spigots of oil cooling the point of contact in center of image

Before turning to the next batch of images a little background on SME Ltd is in order. The company was originally formed in 1946 by Alastair Robertston-Aikman and was known as the Scale Model Equipment Company Limited.

Specifically they manufactured scale models and parts for the model engineering trade – not to be confused with the toy industry or perish the thought Mattel's Hot Wheels. In the 1950s they segued from models to precision engineering including parts for aircraft instruments and business machines. At the behest of Robetson-Aikman, a life-long audio enthusiast, a tonearm was designed and constructed for his own private use and ultimately received such a glowing reception that by 1959 it went into low volume production, roughly 25 units per week. It was at that time that the company name officially shifted to SME, connoting the expanding nature of the company. Even today audio remains an almost side-hobby for SME. They number automotive, aircraft sectors among their biggest clients and have worked on projects as diverse as a solid gold Parker Pen, vacuum cleaner prototypes as well as a secret array of specialist projects for some of the biggest audiophile companies in the business. Today's SME has the facility for both in-house design and toolmaking and virtually all aspects of manufacturing including CNC machining, pressure die-casting, injection moulding, metal finishing, electro-plating, anodizing among many others too lengthy to include here. Currently the company manufactures four turntables and nine standard tonearms as well as special models for distinct applications.



A gorgeously finished top gallery suspension column for SME 30- followed by the raw, rod material that begins the process.





Putting a bit of muscle into polishing a stainless steel armtube for the M2-9 tonearm



Putting a slight angle on the tonearm counterweight-this move is almost imperceptible to the eye. Too much pressure for a second too long means the trash heap.



If you look closely at the counterweights in the lower right corner, the delicate angle that was being sanded is plainly visible.



the machine that inks in gold the lettering for the Model 30/12 control panel. This operation is performed twice almost instantly without any ghosting



Still wet, ready for the oven to bake dry. Perfect.



This is the work station for the critical vertical bearing assembly; the small hand press (right) is used to check tolerances/resistance.



Detail of bearing assembly



SME's latest tonearm, the twelve-inch V-12





V-12 tonearms awaiting final QC prior to packaging and shipping.



Tables playing-in prior to final QC and shipping. These will running continuously at various speeds for seven days.



This one-of-a-kind gold plated beauty is destined for a lucky and wealthy customer in China. Keep in mind that the MSRP for a "stock" Model 30 with Series V tonearm is roughly \$40K. The price for this baby? Like the old cliché; If you have to ask, you can't afford it.