

Technical Spotlight

Submitted by Mike Dolan

***Firm:* Hillerich & Bradsby Company, Inc.**

Ontario, California

***Machine:* EASCO Sparcatron 914 Toolmaker**

***Electrode:* POCO EDM-200**

***Application:* Cold Forging Dies for Metal Baseball Bats**

At one time it took 120 hours to EDM a set of dies for the production of metal baseball bats. The die is 15 inches long and each die half tapers from a depth of .798" to 2.240" at the opposite end. This job was plagued by long off-times and ram cycle times to clear the gap. The off-time was equal to or greater than the on-time. Heavy electrode wear caused the round electrode to become oval shaped, thus limiting the number of die halves produced from each electrode.

As the metal bat industry grew, the EDMing of the dies became more critical. With the development of new alloys and thinner wall bats, precision dies were necessary. Along with the popularity of the metal bats came the demand for different designs and variations, and it became important to reduce the time required to produce a set of dies. H&B changed their electrode material to EDM-200 for better performance and developed fixturing for rotation of the spindle.

Rotation of the electrode radically changed the production of the dies. Since it was easier to keep the gap free of debris, the ram cycle was virtually eliminated and the off time was decreased. Electrode wear has decreased and the number of dies produced with each electrode has increased. The most significant improvements are the more closely matched die halves with less polishing and hand work and the reduced EDM time.

EDM time has been reduced from 120 hours to less than 20 hours. This means that design changes can get into production much faster and with greater accuracy. The machine settings for roughing are 48 amps peak current, 120 microseconds On-time and 2 microseconds off-time. The metal removal rate is 2.831 in³/hr. and surface finish is 507.4Ra. Machine settings for finishing are 44 amps peak current, 50 microseconds on-time and 2 microseconds off-time. The metal removal rate is 1.2 in³/hr and the surface finish is 311.9 Ra.

Howdy, Pardner! What Brand Will It Be?

There are certain advantages to being a Texas based company. Branding is a concept that is rooted in our heritage. Branding is one of the new business buzz words which gives Texas a head start since branding is a centuries-old tradition. In the old west, it was important to brand because one steer looked just like any other steer. A brand was used to protect your herd from rustlers and made it easier to identify the owner of a roaming steer.

We haven't heated up the branding iron lately, but we proudly apply the POCO brand to the graphite we make. Of course, not every block of graphite we produce is worthy of the POCO label. It has to meet strict physical properties and EDM performance specifications for its grade, then, if it's good enough, we label it with the POCO name. If it isn't good enough, we don't sell it. That's a simple way of providing a consistent material that will give consistent performance block after block, year after year.

We stand behind the material we produce and we diligently protect our brand. Our Materials Testing Laboratory routinely tests graphite materials and are able to identify manufacturers and grades. Unlike identifying that wandering steer by the brand on its hide, graphite can only be identified by scientific testing and by examining the microstructure of the material.

Since we are particular about the quality and performance of our graphites, we don't allow our material to be marketed under other names or to be offered as a house brand.

Next time you think about house brands, remember the old western movies and the saloon scene. The cowpoke bellies up to the bar and says, "Whiskey". Although there are bottles lined up behind him, the barkeep reaches under the sink and pulls out an unlabeled bottle and slaps it on the bar. Probably good enough for a cowpoke who has just eaten a hundred miles of trail dust. It was wet and cut through the dust, but it probably tasted like rotgut and still cost two bits.

The same is true with graphite, house brands are probably good enough if you aren't too particular and like to gamble on EDM performance. But, like the unknown whiskey the cowpoke was drinking, house brands are usually materials that a manufacturer sells in bulk for rebranding. Since companies often sell different materials from a variety of manufacturers

under the same house brand name, there are no guarantees that the material is from a particular manufacturer or what the performance will be. It is also common to find a specific manufacturer's grade offered to the industry under multiple house brand grades with different published specifications and at very different prices.

Just as the old west gunfighter had to outperform the newest fast gun on a regular basis, you need a performance edge to beat the competition on your next job. So the next time you adjust your gun belt and belly up to your EDM machine, ask for your electrode material by name. POCO EDM Graphites, we outperform!