

Technical Spotlight

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Company: **MMP** Lyon, France

Machine: **ONA Techno-60**

Electrode: **POCO EDM-100**

Application: **Plastic Handle Mould for Steam Iron**

MMP uses a high speed machining center to prepare mould cavities prior to EDMing and for fabrication of their electrodes.

When the cavity has large open areas, they are milled. EDM is then used to cut slots and detail that can't be milled. This process shortens the production cycle and allows them to produce more work.

Electrode fabrication is done on high speed machining center using ready to use blanks mounted on Erowa tooling.

The mould for this job required a total of 4 cavities: 2 for the silicon insert and 2 for the second plastic injection. The cavities are first rough milled on steel and then the cavities are completed by EDM. Each cavity uses 4 electrodes, 1 roughing, 2 semi-finishing and 1 finishing. Twenty electrodes are used to EDM the 4 cavities in 14 hours.

Electrode Fabrication Is Key to Increased Productivity

Taking advantage of time saving techniques is the key to the success of MMP's increased productivity in their electrode fabrication department.

In order to reduce graphite preparation and mounting time, they are purchasing graphite in standard blanks to fit their Erowa tooling. These blanks have 4 precision milled faces and are ready to mount on the tooling for loading into their new Rödgers high speed machining center.

Ready-to-use blanks are available in several sizes and the operator only has to cut the length needed. This greatly reduces the preparation time and frees up machinery and skilled operators for other tasks. Graphite dust is also minimized since there are fewer cuts made outside the enclosed machining center.

From the Training Center - Solutions to Real Life Problems

Poco's EDM Training Program covers classroom and laboratory activities to give the end user a better understanding of how to control the EDM process. Subjects include EDM and graphite technology, equipment optimization and graphite machining techniques. Practical EDM applications are also covered in this course. Typically, challenging EDM applications are discussed and students are encouraged to bring specific EDM problems to class.

POCO maintains an EDM laboratory that can recreate situations and evaluate ways to solve production problems.

Surface Finish

Copper vs. Graphite Electrode

One recent application problem brought to class by a student concerned their inability to get the desired surface finish using graphite electrodes. The job required that they produce a very fine surface finish from a detailed electrode. They had been using a copper electrode to EDM tool steel. The desired surface finish was a 3 VDI. Typically, graphite electrodes will yield a surface finish of 14 VDI.

Their reasons for preferring to make this electrode from graphite were the advantage of the dimensional stability of the graphite electrode during the cut and the machinability of graphite for electrode fabrication.

The potential for success of the application was high because the surface area of the electrode was small and the tool steel had a high percentage of chrome. The factors that should be considered when trying to control the surface finish are the composition of the work metal, surface area of the electrode and the length of time it takes to get the desired surface finish vs. polishing.

In order to evaluate this problem in Poco's EDM Laboratory, the student provided electrodes and work metal so that the conditions could be duplicated. Repeating the student's application allowed the application specialist to provide the operating parameters necessary to duplicate the successful laboratory results in his shop. They also recommended the appropriate grade of graphite for this application. EDM AF5 was chosen as

the electrode material because it has a very small particle size and could produce the very fine surface finish needed.