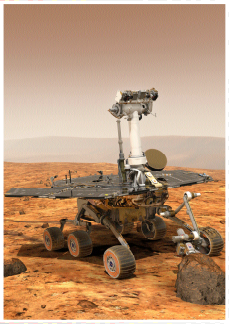
CASE STUDY

ONE SINGLE PROCESS "MICRO EDM DRILLING AND MICRO EDM MILLING" FOR MULTI-FIBER TITANIUM FERRULES

INTRODUCTION

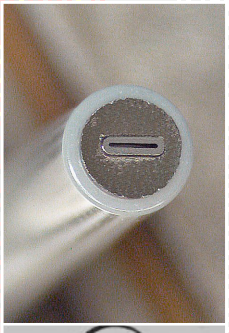
The design of technology or new feature generation is nowadays so small and so precise on complexity on the technical conception, that machining still remains backwards to the practice and reality. During the last few years this evolution trend opened the door of effective conventional machining combinations. In additional, the leads of the micro parts machining have reached a level of precision and size requirements, that now handling the tools is still a critical issue. The miniaturisation of devices and micro features have been always the major topic of Diamond SA as world leader on the Fiber optical components.

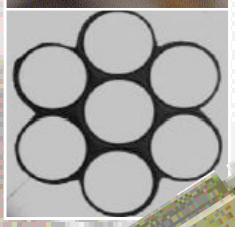
OBJECTIVE AND SPECIFICATION



One of the challenge of Diamond SA have been to achieve multi-fiber optical connectors for NASA. In this case several fibers were used for a hyper spectral imaging meant to be used on Mars. The multi-fiber ferrule needed to be within a tight position within precision of 2 micron or less. Complex pattern cavities or ultra small single holes (ca. 50um) are all subject to a very high machining precision. An other major concern was also to provide a high precision vertical structure (better than a couple of microns) for the complete pattern Their machining choice was immediately aimed to the Micro EDM Drilling associated to the Micro EDM Milling capability.
"We need to have a one step machining process creating the whole pattern or structure. The machining lead time and obviously the repeatability on the ferrules on the titanium alloy used is the key for this project" Diamond project manager

SOLUTION IMPLEMENTED





Understanding clearly the importance of the technical facts, SARIX offered its latest 3D Micro EDM Milling Technology. Using a 60 microns solid carbide electrode, the requested cavities could be realized within very tight precision of 0.001 mm including the very accurate position and concentricity of the cavity to the body of the ferrule.
The constant electrode wear compensation control together with the continuous automatic electrode re-feeding allowed to complete the structure in one machining program.
The slot and the structure were produced to specification.
This "one setup Micro EDM machining" has been successfully applied to several other custom pattern ferrule and has been delivered by Diamond SA to the Photonics Team at Goddard Space and Flight Center – NASA.

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THE BENEFITS OF µEDM

SARIX offers automated industrial turn-key µEDM equipment, that compete with traditional process, while having all the advantages of the Micro EDM Machining.
SARIX MICRO EDM machines demand that the operator define the work piece material, electrode material and hole depth. Once it has been set up the machine controls and optimises the process automatically. The permanent presence of an operator is not needed and the machine can work as an autonomous production cell.
Parts machined through the µEDM process can be immediately used with no additional finishing.

ABOUT SARIX SA

SARIX designs, manufactures and markets highly efficient Micro-EDM Equipment typically used in many industries such as: die-making, microelectronics, medical, watchmaking, automotive and aerospace as well as research centres and universities.
The SARIX SX-100 and SX-200 product line is designed for use in various 3D Micro EDM Machining modes offering users the highest level of flexibility including Micro-Drilling, 3D Micro-Milling and Micro-Sinking.

THE BEST MICRO EROSION TECHNOLOGY
SARIX
3D Micro - Milling

For additional product information contact SARIX + 41 91 785 81 71 or visit us @ www.sarix.com