

The Space Fuse

SCHURTER AG is the first Swiss company ever to have with MGA-S fuse a component included in ESA's QPL (Qualified Parts List). ESA (the European Space Agency) is a joint venture between all European countries and Canada.

ESA is headquartered in Paris and has branches in various countries, each with special responsibilities. Therefore, our contact for the duration of the entire project was ESTEC (the European Space Research and Technology Centre) in Noordwijk, the Netherlands.

Beginning with our first contact with ESTEC in the summer of 2004, the entire qualification process including bid, evaluation and qualification has taken 4 years to complete.

Since there is no company in Switzerland cooperating closely with ESA, SCHURTER was obliged to approach ESTEC (ESA) in the Netherlands directly.



This project was initiated in keeping with ESA's efforts to use European components for its space program and, in the case of the fuse, to replace traditional wire fuses. To this end, ESA was looking for a partner capable of supplying thin film fuses. In an international tendering procedure, SCHURTER, in the fall of 2005, won the project with ESTEC (ESA).

This project was divided into two phases. The purpose of the first, the evaluation phase, put simply, was to find the product's limits. Depending on the results, it was decided whether the product merited the term "preferred" or if it could also go through qualification.

This qualification phase focused mainly on manufacturing in compliance with higher quality demands as determined by the standard processes defined during the preceding evaluation phase.

With the existing MGA, our product portfo-

lio already included a fuse meeting increased technical demands. In aerospace applications, only lead-coated components are permitted. The MGA, only recently converted to the RoHS standard (lead-free), had to be converted back to lead for the aerospace version (MGA-S, S signifying Space). The many tests performed during the evaluation phase included a shock test at a G force of 1600, i.e. 1600 times Earth's gravity - a test which only a company affiliated with the Swiss Army was capable of performing, and which the MGA-S passed with flying colors.

Further testing had to be done at the facilities of third-party companies or, in the case of the vacuum test, specified in greater detail by us first in order to yield any results at all.

After the successful completion of the evaluation phase in late 2006, ESTEC (ESA) proceeded to take us through the qualification phase. Again, a large number of tests were performed, and all processes were described in detail. Of course, ESA also performed an audit of SCHURTER, which we passed after a few minor adjustments.

The whole process turned out to be rather lengthy, and so we were contacted by space technology companies while the evaluation phase was still under way. These companies ordered fuses according to qualification tests, even without the official qualification from ESA. That is why we have already shipped several thousand MGA-S units.



Up to this point, no fuse specifications have been issued by ESA. Therefore, we had to prepare, simultaneously, the specification concerning the general fuse and the special specification for our MGA-S model. Both specifications had to be coordinated not only with ESTEC (ESA), but with all country organizations associated with ESA as well.

By the end of October 2007, the qualification procedure was complete as far as we were concerned. However, it took until early June 2008 to complete the specification process described above. Once again, we had to answer various questions and revise specification details.

What the MGA-S qualification signifies now is that all European companies involved in space technology (e.g. building satellites) will be instructed to use our fuse. It is in the interest of these companies to use a part qualified by ESA. A qualified part allows them to reduce test expenditure for modules.

In conclusion, the MGA-S qualification procedure has significantly boosted our reputation and gained us a great deal of knowledge in a special area. Never mind the many preliminary inquiries, the technical challenges and the project deadline postponements. We have finally reached our goal, our qualification, knowing full well, that we are only 18 months away from our next ESA audit. Supported so well by our R&D and quality assurance departments we will also pass and hoping to be able to provide the market for the next 5 years with a qualified part, our MGA-S model.