H2: Reconstruction of Konrad Zuse’s Z3 Computer

This project was finished just a few months ago. We built a modern reconstruction of Konrad Zuse’s Z3 computer, using electromechanical relays for all the logical components. In 2006 we will be working on a new version of the addition unit printed with Plastronic components.

The reconstruction started in 1997, when I first deciphered the construction plans of the Z3. I published the result of this investigation in 1998 (Die Rechenmaschinen von Konrad Zuse, Springer-Verlag). Shortly afterwards, we started working on the reconstruction of the Z3’s addition unit. Together with Dr. Frank Darius (TU Berlin) and Georg Heyne (Max-Planck-Gesellschaft) we produced ten addition units, which were distributed to several German and American universities. The next step was to produce a working copy of the whole machine. The same team worked from 2000 to 2003 until the machine was finished. It is now part of the collection in the Konrad Zuse Museum in Hünfeld, Germany.

The main challenge during reconstruction was to use modern components while retaining the original circuits of the machine. We opted for simulating the console of the machine with a computer, in order to eliminate purely mechanical components and extend the working life of the machine. The pictures below show some views of the Z3 reconstruction, a project which involved ten people from different institutions over a period of three years.

View of the back of the processor (left) and memory (right) of the Z3

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The Plastronics version of the addition unit is being developed in collaboration with Siemens.