



1.2 The RISC OS Simulator

Many problems had to be overcome before we could start building our Enigma. First of all we needed to understand exactly how the mechanics and the electronic circuits inside the Enigma work. How do the wheels move when a key is pressed? What is the effect of the Ringstellung? What happens if you accidentally press a wrong key? What does the Steckerbrett do? How many wheels are available? What is the wiring of each wheel? Questions, questions, questions...

Programming a small micro processor is a tedious task. As the memory in such devices is rather limited, they are best programmed in machine code (also known as Assembly Language). The problem with machine code however, is that experimenting and debugging is not very easy, to say the least. So we had to find a way to test the Enigma algorithm before actually starting to program the micro controller. Time to build a simulator.

For our regular jobs, we have some RISC OS computers available. You may remember these machines as they were at one time very popular in British schools. The BBC Computer, followed by the Archimedes and later the Acorn Risc PC. Recently these machines have been superseded by the all new IYONIX pc, which runs the latest release of the RISC OS operating system. RISC OS is believed to be very powerful and comes with an advanced BASIC language (BBC BASIC V), which is excellent for our experiments.

Simple BASIC programs were created to test the permutations of the wheels and to check the wheel wiring. In the end the BASIC program turned out to be a real simulator, capable of decoding every message we could find and suitable to simulate every Enigma variant we had found. As we were already suffering from the Enigma Virus, we thought it would be 'neat' to finish off the simulator and make it available via the Internet to other users of the RISC OS operating system. Finally, it became the most advanced and realistic Enigma simulator yet available. It features high quality graphics, sound, smooth animation and much more. Details of our findings can be found in chapter 6, where we explain the working principle of the Enigma machine.



Here's a screen shot of the Enigma Simulator for RISC OS, running an M4 emulation. If you're interested, the full software is available from the website at

<http://www.xat.nl/enigma/>

The website also contains links to Enigma Simulators on other platforms, such as Windows, Palm, Psion, Java, etc.