The aim of this project is to develop an automatic system of electrode commutation in order to make measures of electric impedance, and to calculate the apparent resistivity.

To perform these measures we need four electrodes. Two electrodes inject alternating current and the other two electrodes measure potential differences. We have a 16 electrodes array, therefore, we can set up different configurations so that we may get a resistivity distribution.

Our system basically consists of a function generator, two meters, two 32 relay targets and 16 electrodes. All these instruments are connected to a computer through different communication buses. When using this system we don’t need to handle any instrument.

In order to control this system, two computers are used. One computer controls the relays targets with Labwindows program, and the other computer controls the rest of the system and makes calculations of apparent resistivity with LabVIEW program.

To check the system’s correct performance many measures have been done. Conductor and insulating objects have been submerged in a water bucket, and thanks to the resistivity measures, we can detect these objects.