Despite the fact that a not approved item has not a lot of resources
The gun
The gun is ready at the MME work shop
The cathode is missing:
  order to Heatwave Labs Inc August 2015
  first production not conform
  still waiting for the delivery
Another order to Ceradyne Inc. should leave CERN in the next days

Having good cathodes seems not trivial
Impregnated Barium Calcium Aluminate Dispenser Cathode

Flow Chart:

- Matrix precursor powder
  - Pure Tungsten
  - Scandium-doped Tungsten

First consolidation
- Isostatic pressing (60% theo)

Sintering
- 2500°C Hydrogen atmosphere (80% theo)

Filling
- Plastic infiltration
- Copper infiltration

Machining

Filler Removal
- Plastic: 400°C/1000°C firing
- Copper: >1000°C firing

Impregnation
- Filling of tungsten matrix w/ emission material

Residue Impregnant removal

Thanks to Pascal Simon

- Look for data, procedures, processes in literature
- Define a test programme with Brevetti Bizz
- Try to produce ‘European’ Cathodes

We have the experience and tools of Brevetti Bizz and of the metallurgy service EN-MME.
Magnetic field computations – trajectories of the electrons
The field shape is dominated by the 5T solenoid. A smaller contribution comes from the 0.5 T solenoid. The other coils give a negligible contribution. So we probably do not need them. This makes the construction and assembly easier.

A 0.5 T resistive magnet is a ‘monster’ of 15-20 kW and 300-400 A. In the tunnel there is Helium so we could have superconducting gun and collector solenoids.
Position of the gun solenoid: 2 – 2.1 m, 60° – 70°.

The position is very sensitive to the field values -> we will need to freeze some parameters and corrector coils.
In the next months:

• Computations of the collector (kWs to cool). Just started.

• Design of the gun and collector solenoids and cryostats.

• Pre-design of the collector.

• Continue the work with Brevetti Bizz. This is a long time programme.

• Get a working cathode out of the firms we contacted.

Explore some alternative geometries.