

WP 16 Video Meeting

Date: 11.10.2019

Time: 11 to 12 a.m.

Hosted by: CERN (A. Rossi/S. Sadovich)

Invited: A. Rossi, S. Sadovich; P. Apse-Apsitis; O. Meusel, M. Droba; S. Artikova, D. Ondreka

Participants: A. Rossi, S. Sadovich; M. Droba; S. Artikova, D. Ondreka

Indico-Page: : <https://indico.cern.ch/event/833551/>

1 TE²: Status

The reported status corresponds to end of September, since work was interrupted due to a two weeks' vacation period.

The test stand for TE² has been equipped with a pair of Helmholtz coils to immerse TE² in a longitudinal magnetic field, which is necessary for extracting higher electron currents.

Small electron currents have been extracted by applying positive potential to the grid with cathode on ground. Simulations give reasonable agreement.

Planned next steps:

- Preparations for tests with nominal grid distance (calendar week 42)
 - Mechanical modification on TE² to reduce grid distance to nominal value
 - Bake-out, heating, extraction tests with potential on grid
 - Measurement of cathode-grid capacitance
- Extraction tests with cathode on potential (calendar week 43)
 - Measurement of electron current
 - Measurement of voltage required to suppress electron current

Regarding the possible integration of TE² into the CERN test stand, it turns out that the present TE² device would not fit into the aperture of the gun solenoid of the CERN test stand.

On the other hand, IAP considers using the TE² design for the final gun, provided the electron beam parameter requirements can be demonstrated with the present device. Due to the limited time left for the project, the participants agree that a test with TE² at the CERN test stand may be skipped.

If the final gun design is ultimately based on the present TE² design, a second device of this type will be built with mechanical modifications to make it fit into the CERN test stand.

The decision on the final gun design will be postponed until reliable results are available from the ongoing TE² tests at IAP.

2 CERN Test Stand: Status

The installation of the test stand has been completed. High voltage tests with a cold cathode have been performed to check the HV installations. No electron current has been extracted so far.

The outgassing rate of the diagnostic elements in the diagnostic chamber turned out too high. Therefore, a second chamber was ordered in which those elements can be baked and pumped separately until the outgassing rate has reached an acceptable value. The diagnostic elements will then be reinstalled into the test stand.

The static vacuum pressure inside the gun is below 10^{-9} mbar at room temperature and without HV applied. This is sufficient and consistent with experience from the Tevatron hollow gun.

3 Next Meetings

The participants agree to have another video meeting in calendar week 44. The date will be fixed through a Doodle poll (**Action:** D. Ondreka).