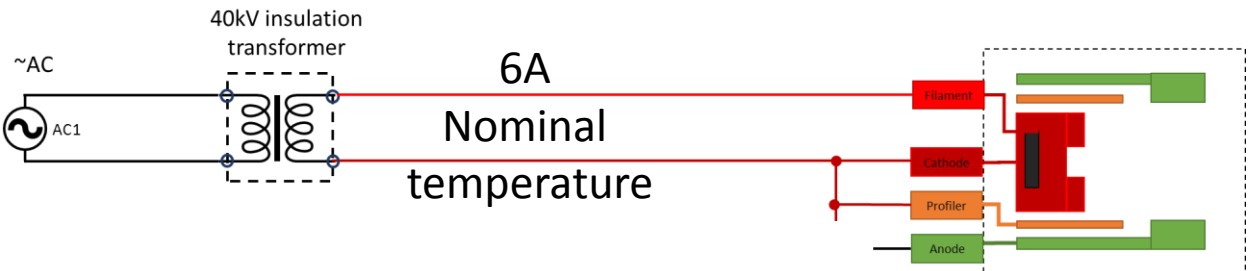


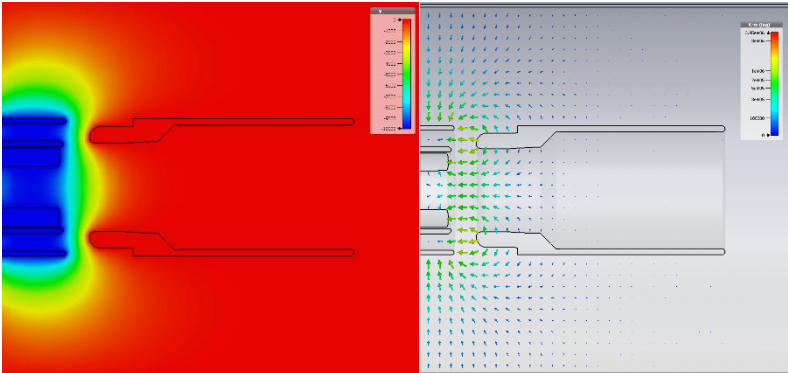
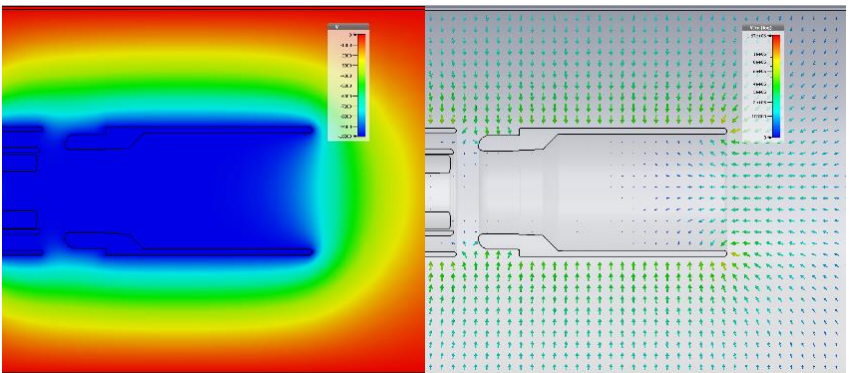
# E-Gun commissioning

2019-11-21

# E-Gun connection (simplified)



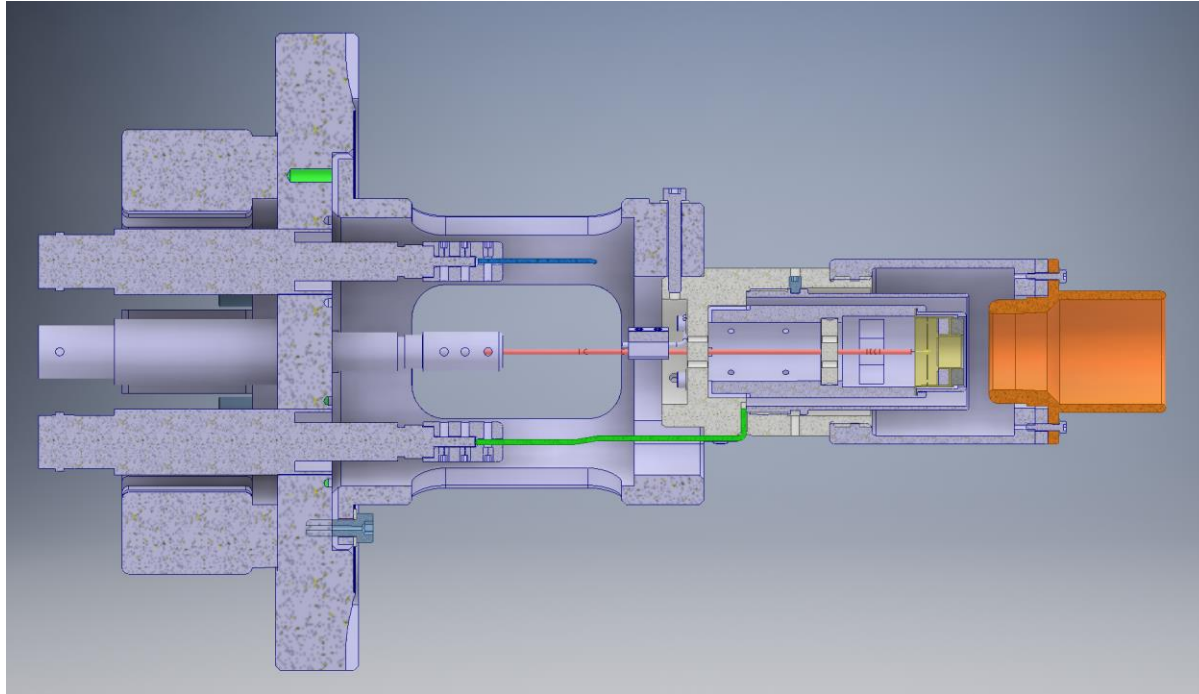
Electron gun



# E-Gun commissioning: workflow

- Biasing gun (cathode and anode) with cold cathode to -15kV
- Heating cathode
- Biasing gun (cathode and anode) to -15kV with hot cathode to -15kV
- Extracting beam by applying pulse to anode

# Cold gun at -15 kV

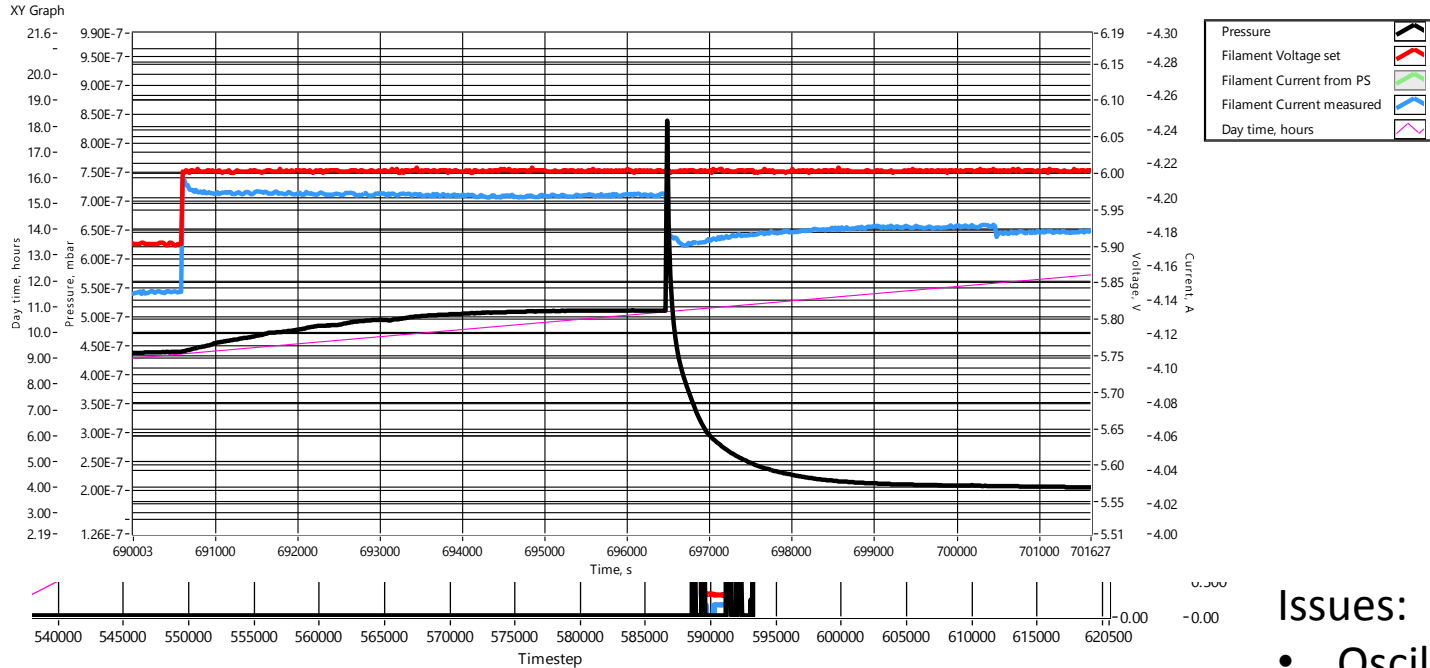


Issues:

- Breakdowns > 10kV  
(should be studied in more details)

\*R between all electrodes  
and GND ~ 30 GΩ

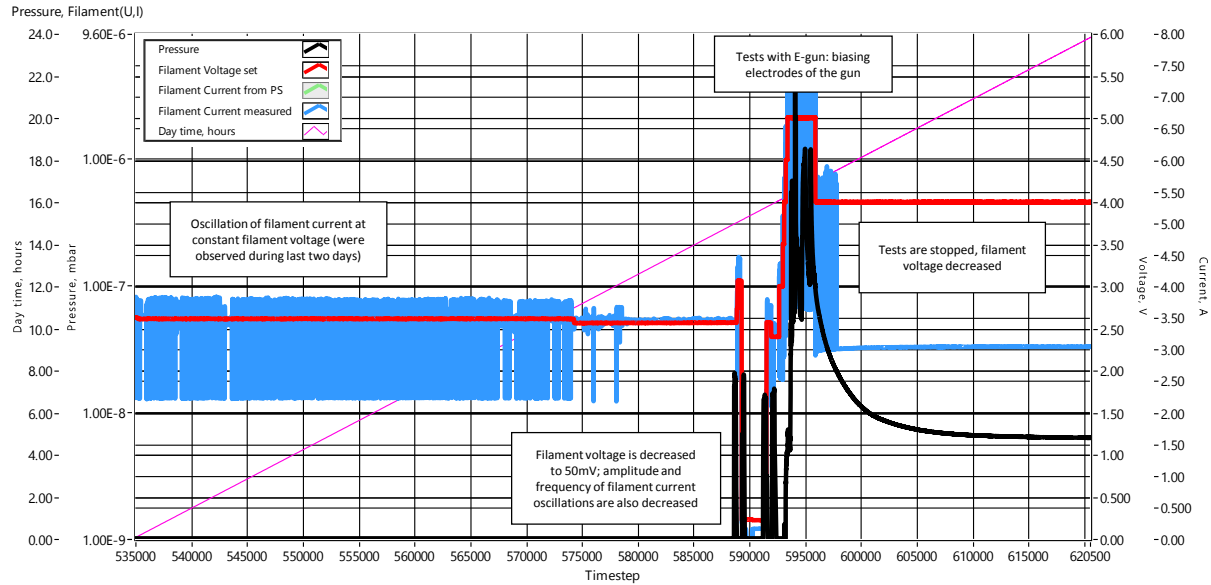
# Heating cathode



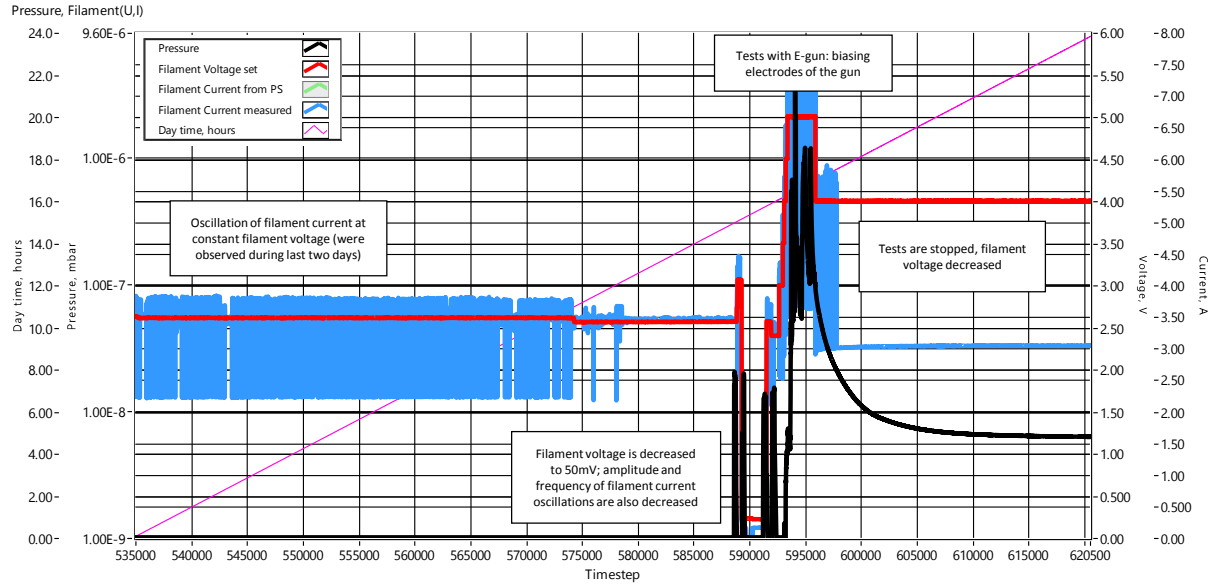
## Issues:

- Oscillations of the current
- Shortcut at the filament
- “trap volumes”

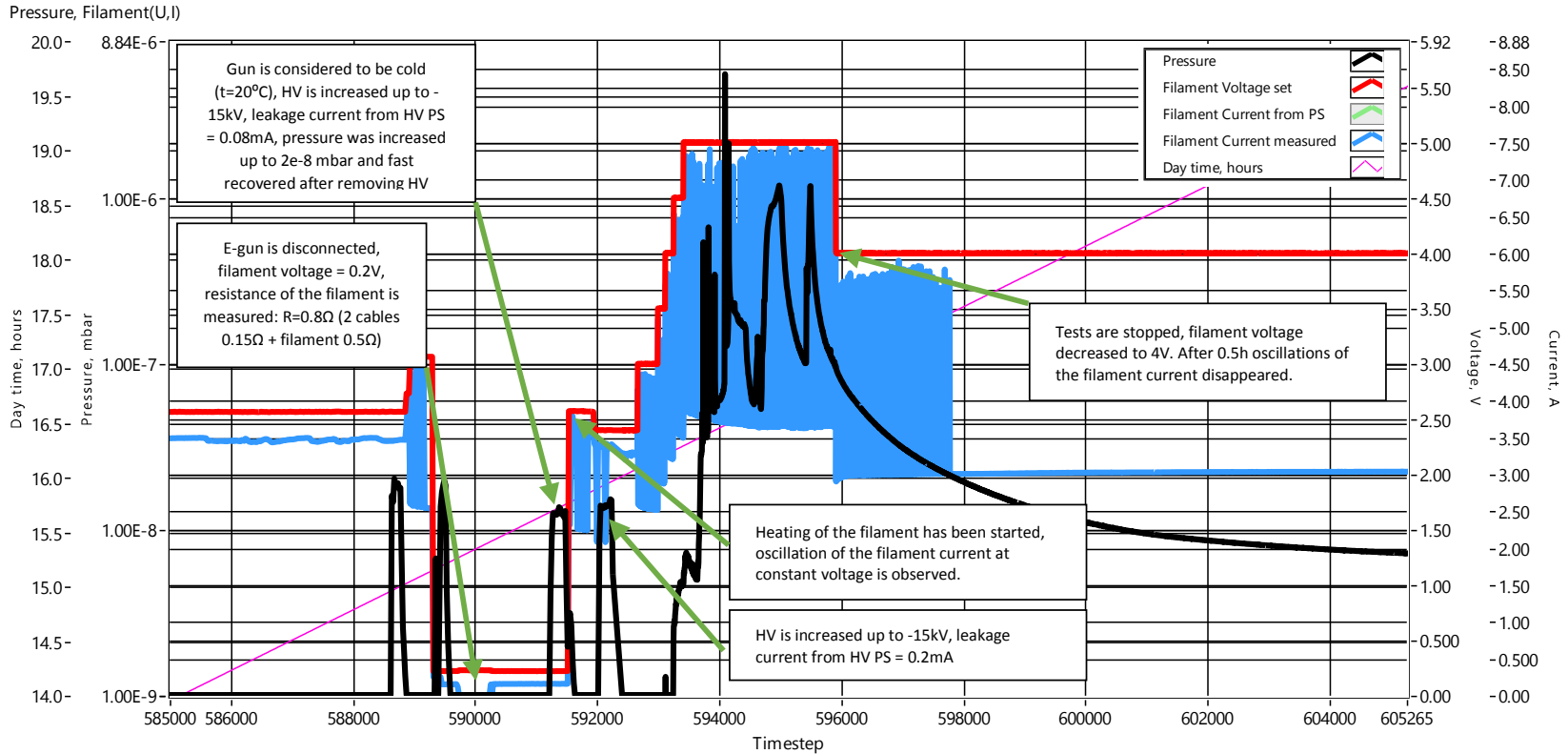
# Biasing gun with hot cathode



# Biasing gun with hot cathode

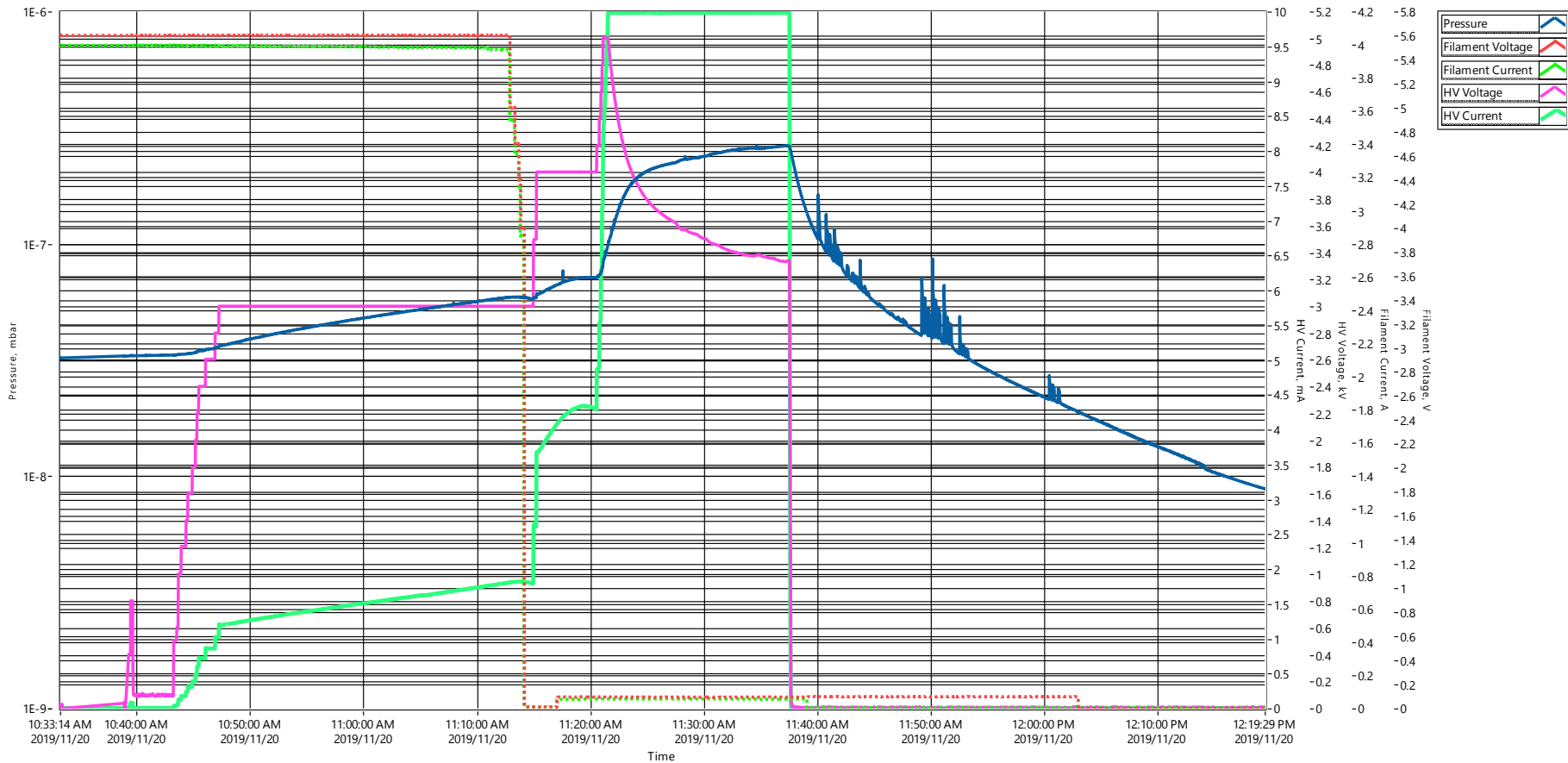


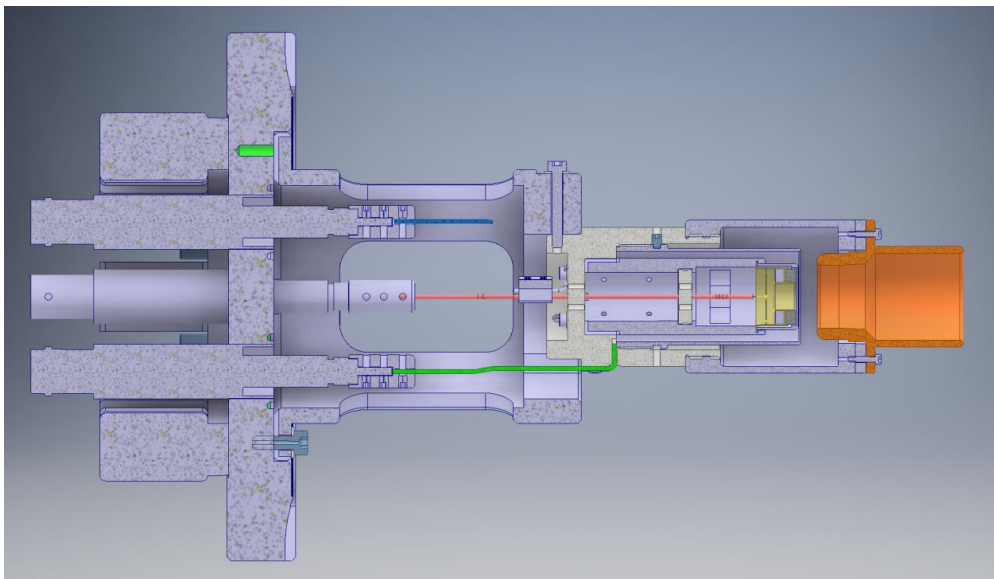
# Tests with E-gun: biasing electrodes



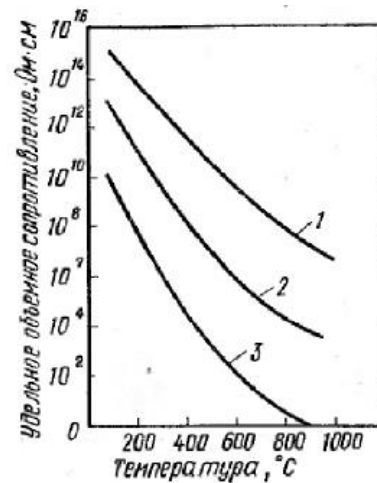


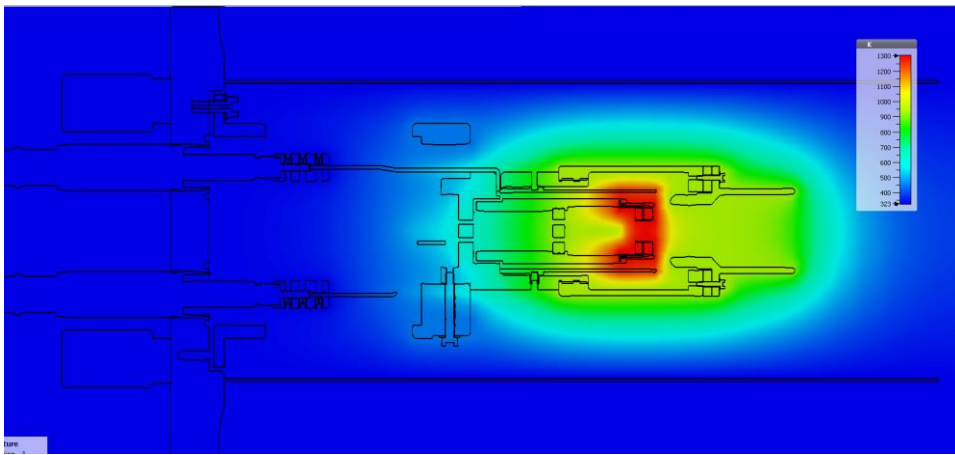
Main plot



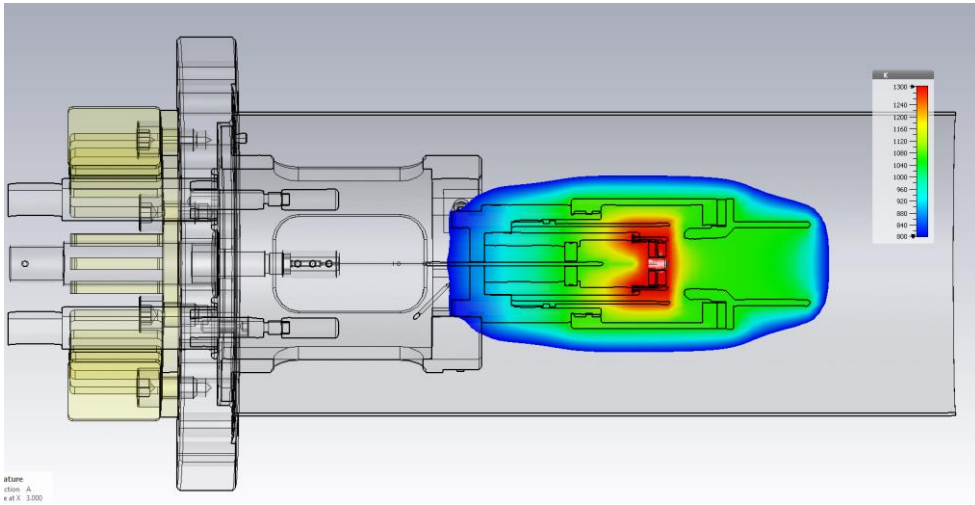


	Cathode (FC)	Filament (F)	Control Electrode	Anode (A)	GND
Cathode			20.0 24.1 26.9	3.37 3.55 3.67	1.50 1.62 1.68
Filament			29.3 30.5 31.2	6.31 6.54 6.68	3.24 3.32 3.39
Control Electrode				49.1 53.0 55.2	38.8 41.5 46.3
Anode	* all R in MΩ				3.36 3.48 3.59





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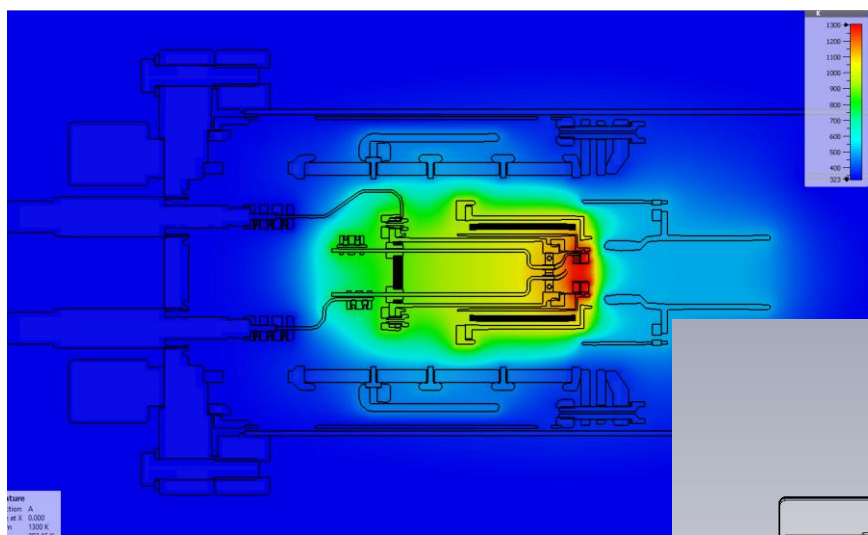


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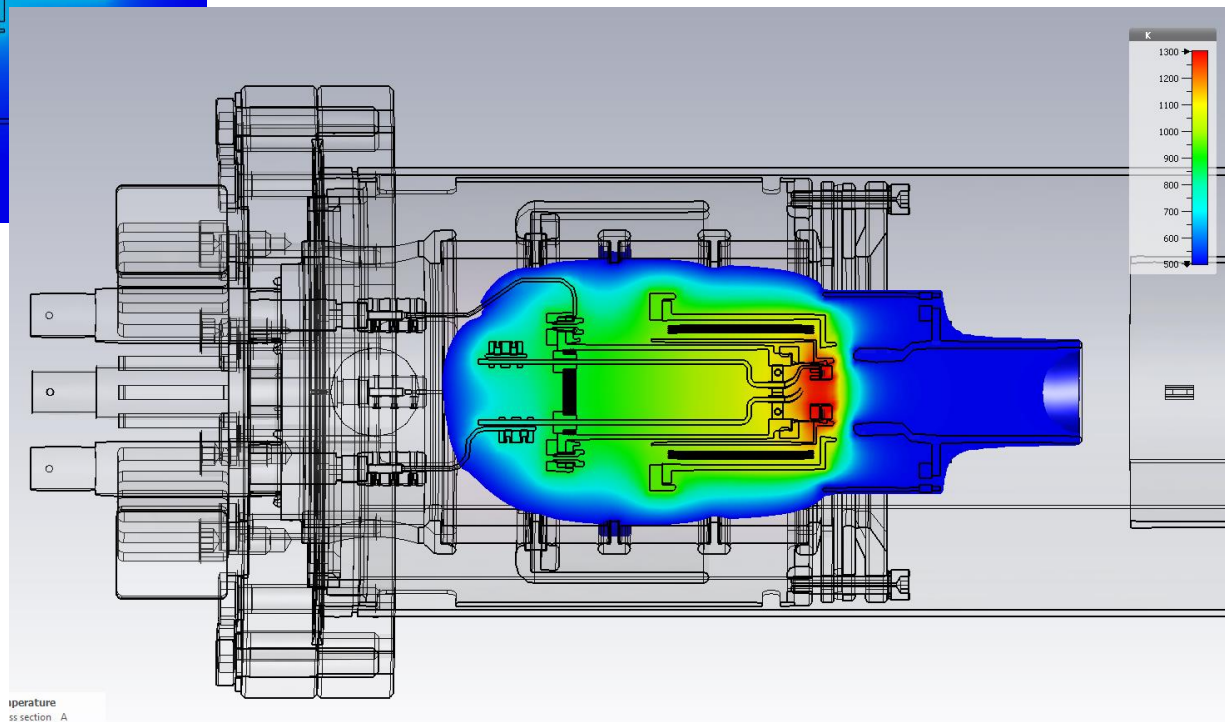
class 4

v of X 1,000

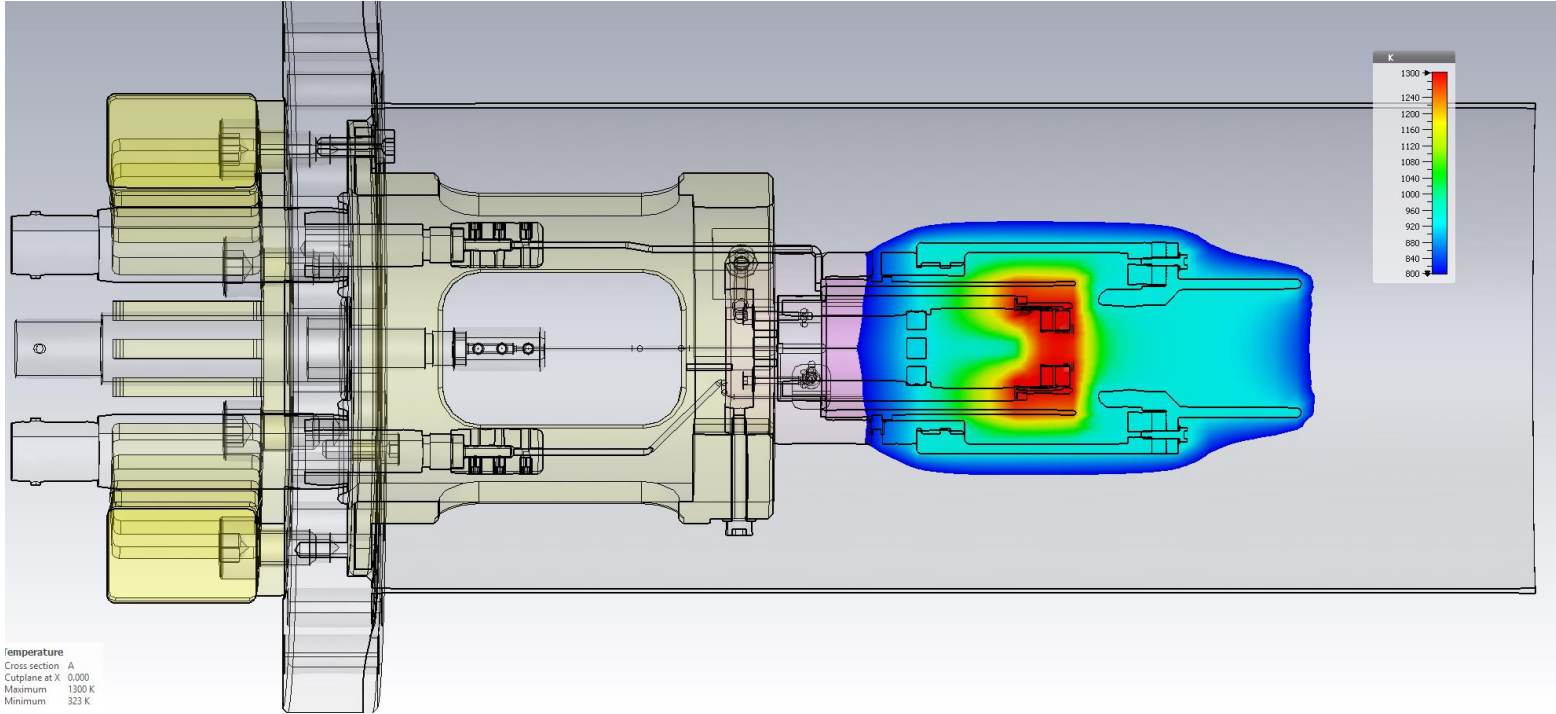




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# Conclusions and future actions

- Any additional tests before opening?
- When to open?
  
- Thermal shielding and electrical insulation of the gun should be improved
- Issues:
  - Breakdowns
  - Oscillations of the current
  - “Trap volumes”
  - ShortCut of the filament heater
  - High I losses due to low resistance of ceramic at high temperature