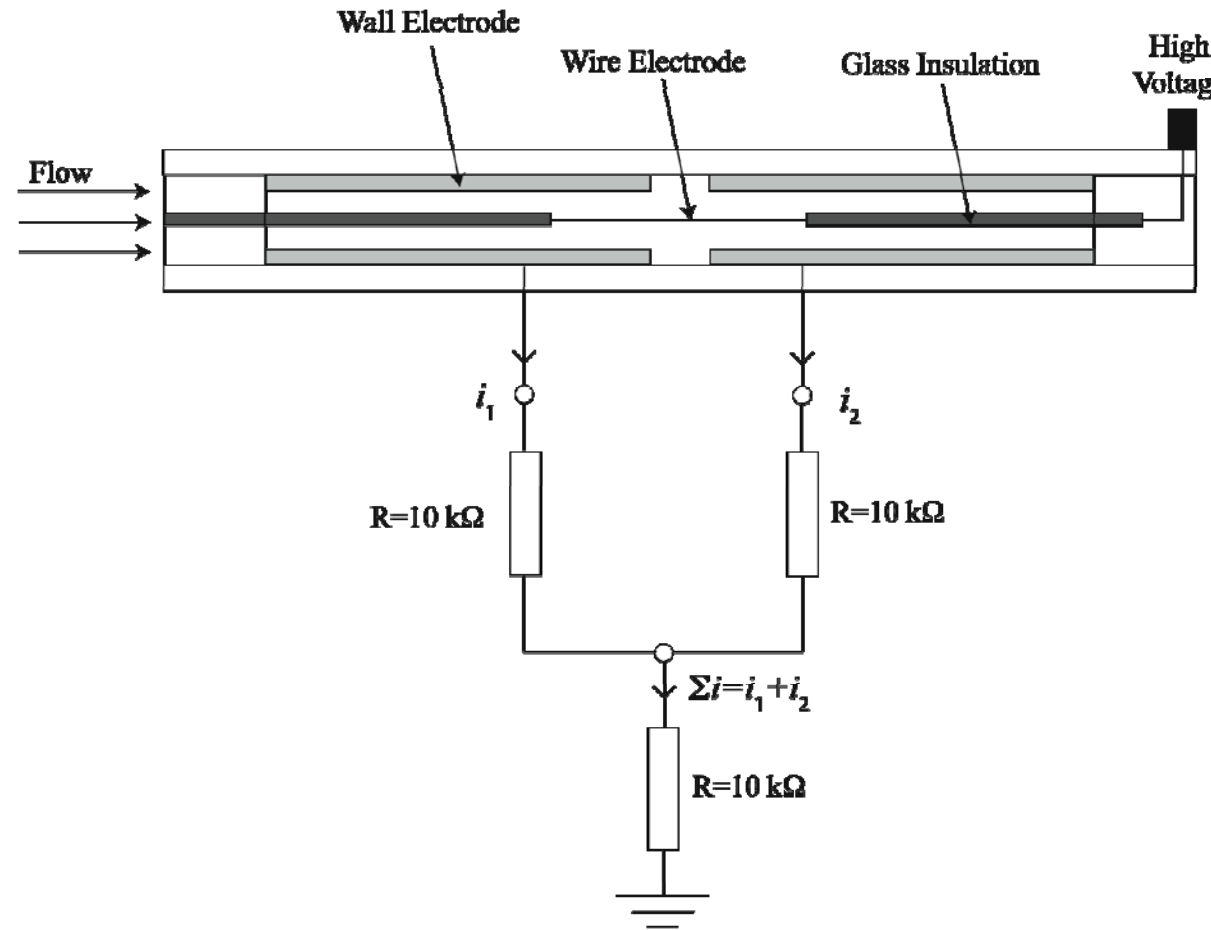
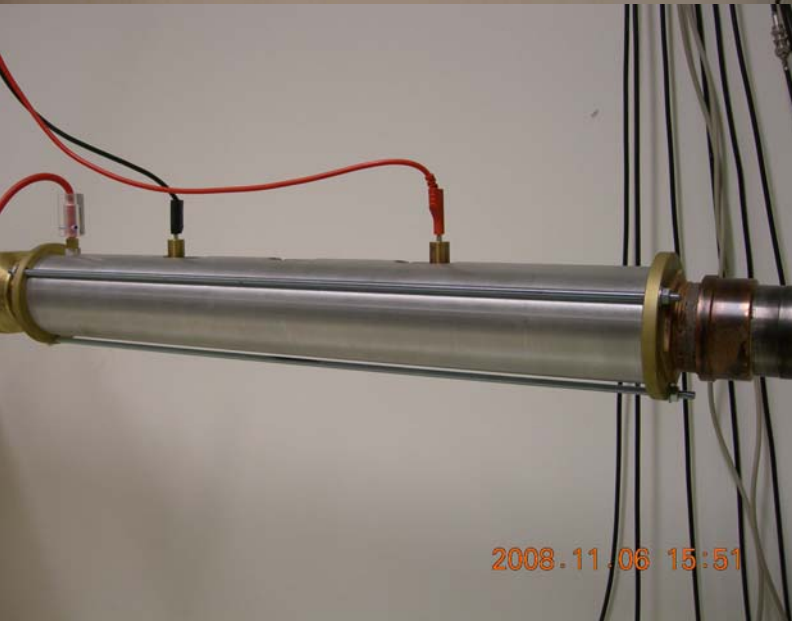
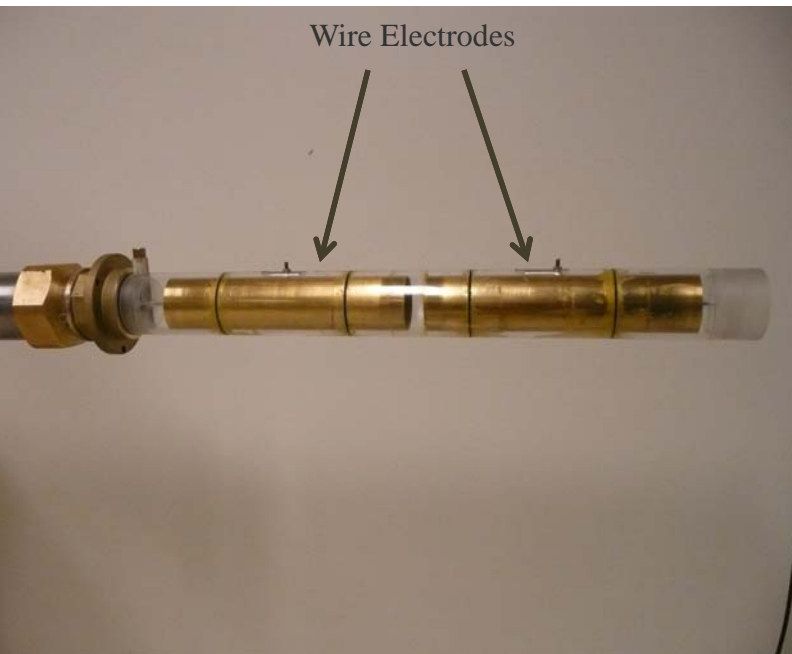


The Corona mass flow meter

- Application
 - General laboratory work
 - Air flow measurement in gas exchange systems of combustion engines ?
- Advantages (according to literature)
 - Rapid response to changes (suited for transient flows)
 - Measurement of reversed flows possible
 - Direct mass flow measurement
 - Measurement of the mean mass flow
 - Low pressure drop

The corona flow meter (measuring section)

TH CICERO



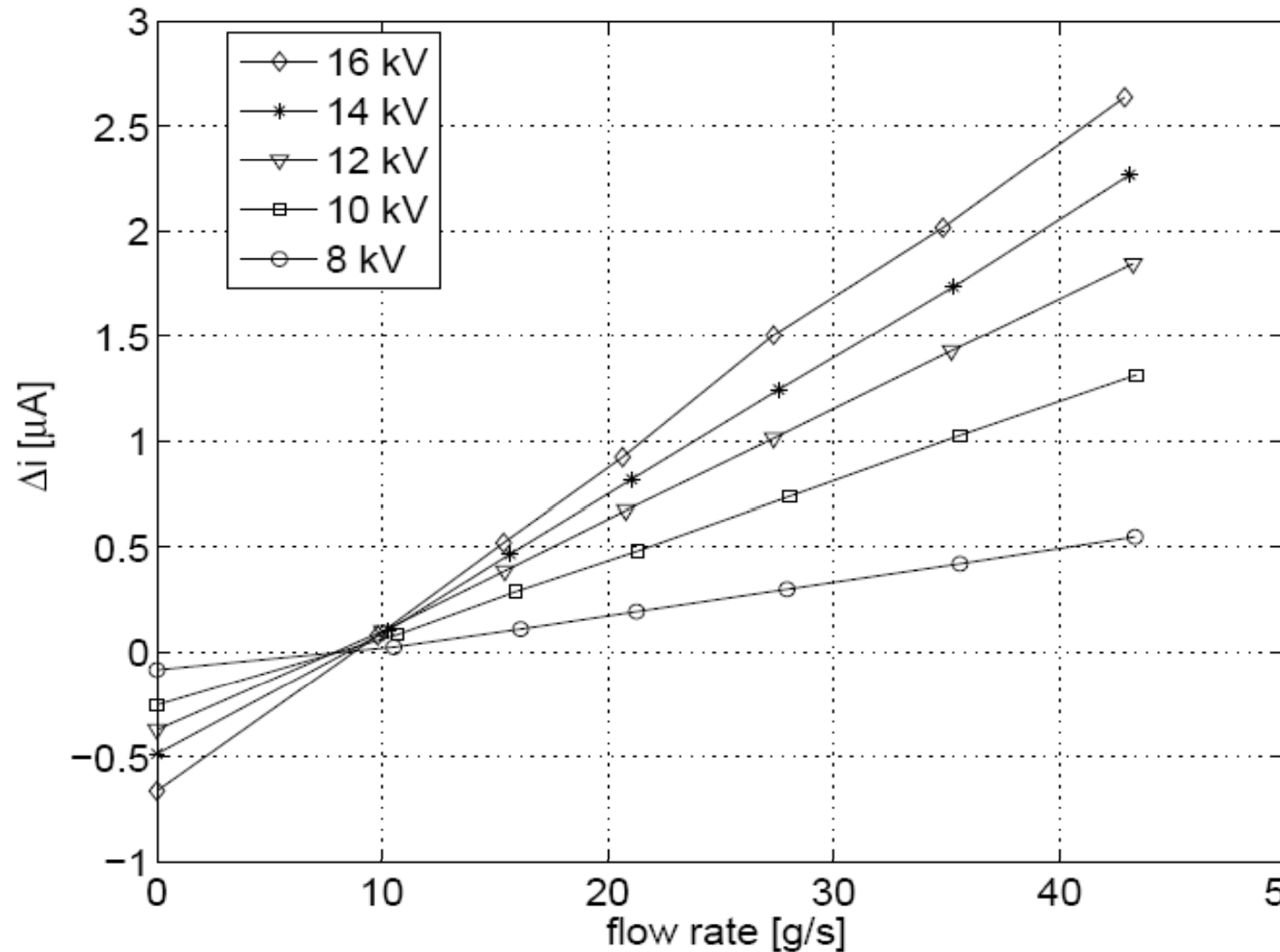
$$\frac{\Delta i}{\Sigma i} = K(\dot{m} + C)$$

$$\Delta i = i_2 - i_1$$

Calibration curves for different wire potentials (first test, proof of concept)

$$\Delta i = K(\dot{m} + C)$$

$$\Delta i = i_2 - i_1$$



Future work

- Numerical modeling:
 - Electric field for different electrode geometries.
 - Ion trajectories
- Experimental investigation of the flow meter's dependence on:
 - Electrode geometry
 - Different gases and air humidity contents
 - Temperature
- Extended measurements on:
 - Pressure dependence
 - Time response for pulsating flow
 - Non-symmetric velocity profiles

END

