### Dallas sensors calibration part IV

March 13th, 2006

## Dallas sensor on the mixing vessel – no conductive pasta



### February 21st: sensor 106F4A8E000800F2

Heating with resistor: different combinations: a/ no heating b/ 1.0 W c/ 2.2 W d/ 3.9 W

Thermal response of the mixing vessel is much — faster than in case of two other sensors.



### hysteresis



### Calibration

#### heating – 2 points

heating – 4 points



# Another measurement of the same sensor (march 8th)

An attempt to make isolation with aluminium foil



### Calibration 106F4A8E000800F2

heating

cooling



### Sensor 10B45B8E0008007F - near Xe bottle

(grazie a Francesca chi ha fatto le misure)



### hysteresis



### Calibration

heating cooling T<sub>Dallas</sub> [C] 29日 Calibration of sensor 10B45B8E0008007F Calibration of sensor 10B45B8E0008007F 28 27 26 26 25 24 24 E 23 22  $p_0 = -8.49 (0.69)$ p<sub>0</sub> = -7.20 (0.74) 22  $\vec{p} = 1.37 (0.03)$ p<sub>1</sub> = 1.41 (0.03) 21 (20.875,21.054) 20 (20,065,20.2) 26 T<sub>Pt</sub> [C] 26 T<sub>Pt</sub> [C] 21 22 24 23 25 22 23 24 25 20 21  $p_1 = 1.37 \pm 0.03$  $p_1 = 1.41 \pm 0.03$  $p 0 = -7.20 \pm 0.74$  [C]  $p 0 = -8.49 \pm 0.69$  [C]

### Errors

Pt error = stdev (Pt measurements) but Dallas sensor error cannot be smaller than 0.5 C because this is Dallas sensor accuracy, so all fits repeated with Dallas sensor error 0.5 C.

The summary is the following:

Summary		
	p0 [C]	pl
sensor 106F4A8E000800F2	-1.45	1.05
(mixing vessel)	(2.40)	(0.10)
sensor 10F6528E00080097	-1.44	1.05
(CO2 bottle)	(1.29)	(0.07)
sensor 10B45B8E0008007F	-7.850	1.39
(Xe bottle)	(2.09)	(0.10)
Repeat this measurement (there was problem with Pt-thermometer contact)	+1 C – systematic error due to heat flow	

Air-conditioning variations (0.2 C) do not introduce additional syst. error