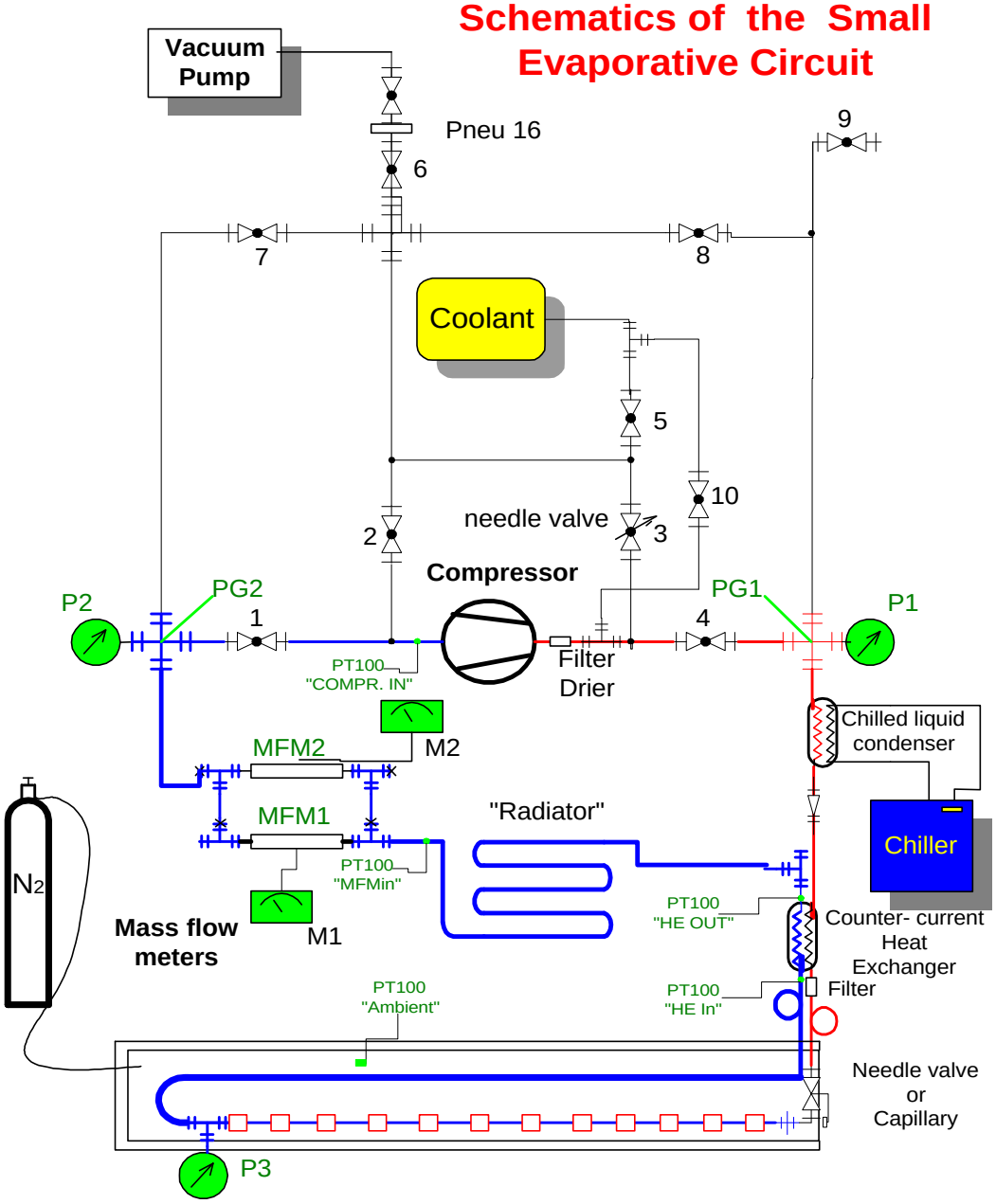
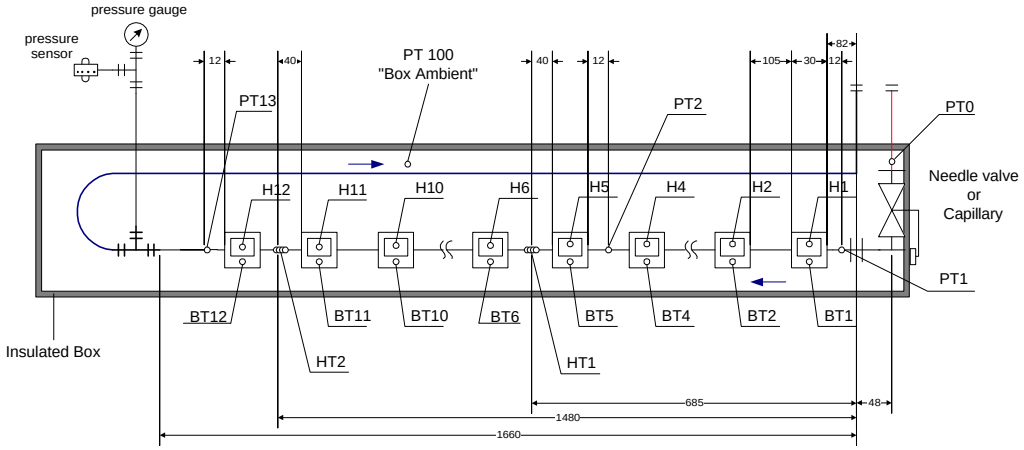
Rig 2 for Measurements of Heat Transfer Coefficient

Schematics of the Small Evaporative Circuit



Rig 2 for Measurements of Heat Transfer Coefficient (cont)

Position of the sensors attached to the single-tube for heat transfer coefficient measurements

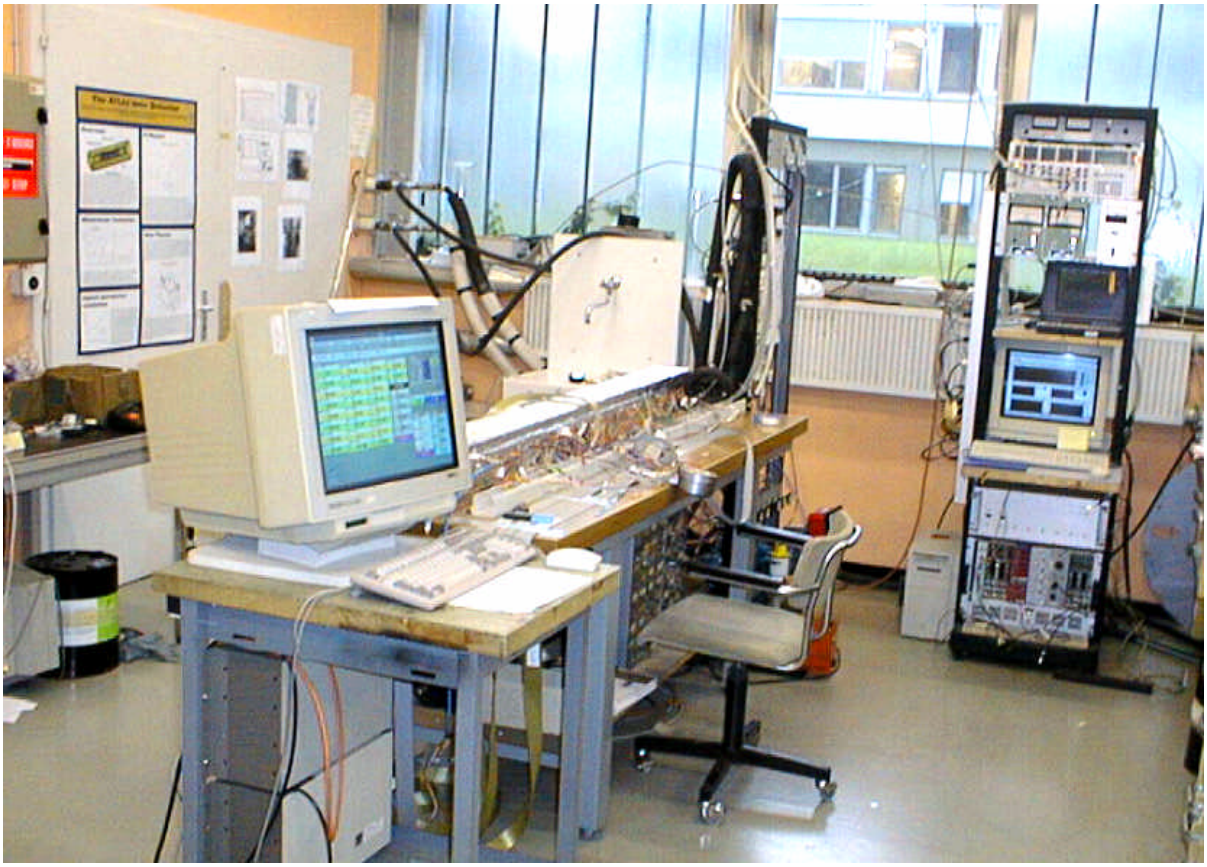


HT (1,2) - coil heater-thermometers

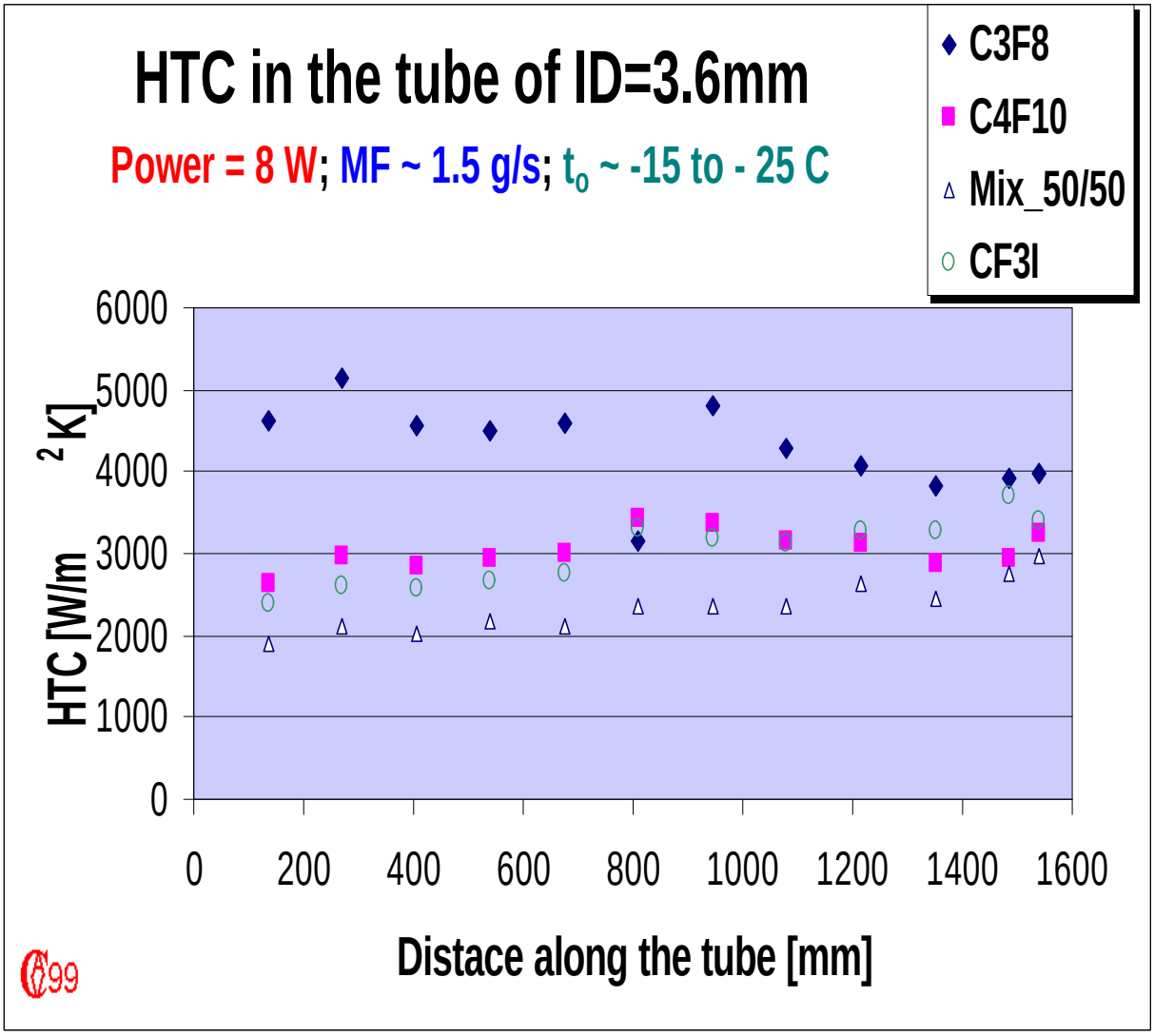
PT (0..3) - PT100 sensors on the pipe [total number of sensors on the pipe = 13]

H (1..12) - heaters -on blocks

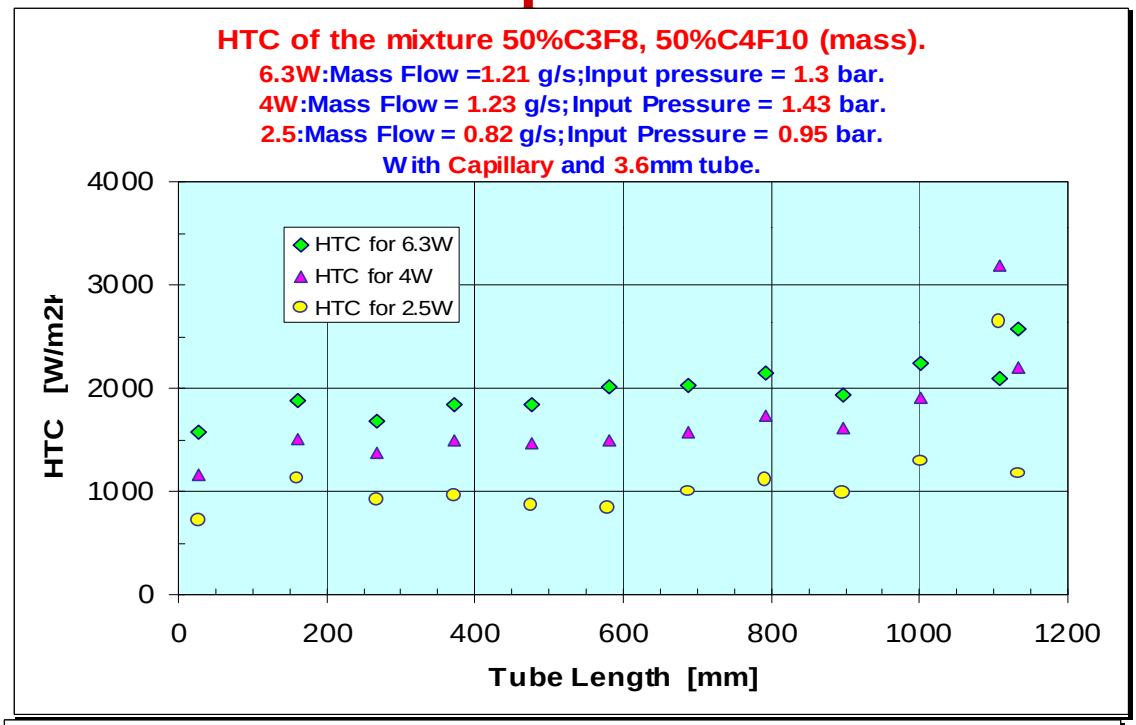
BT (1..12) - PT100 sensor on the blocks [total number of sensors on the blocks = 12]

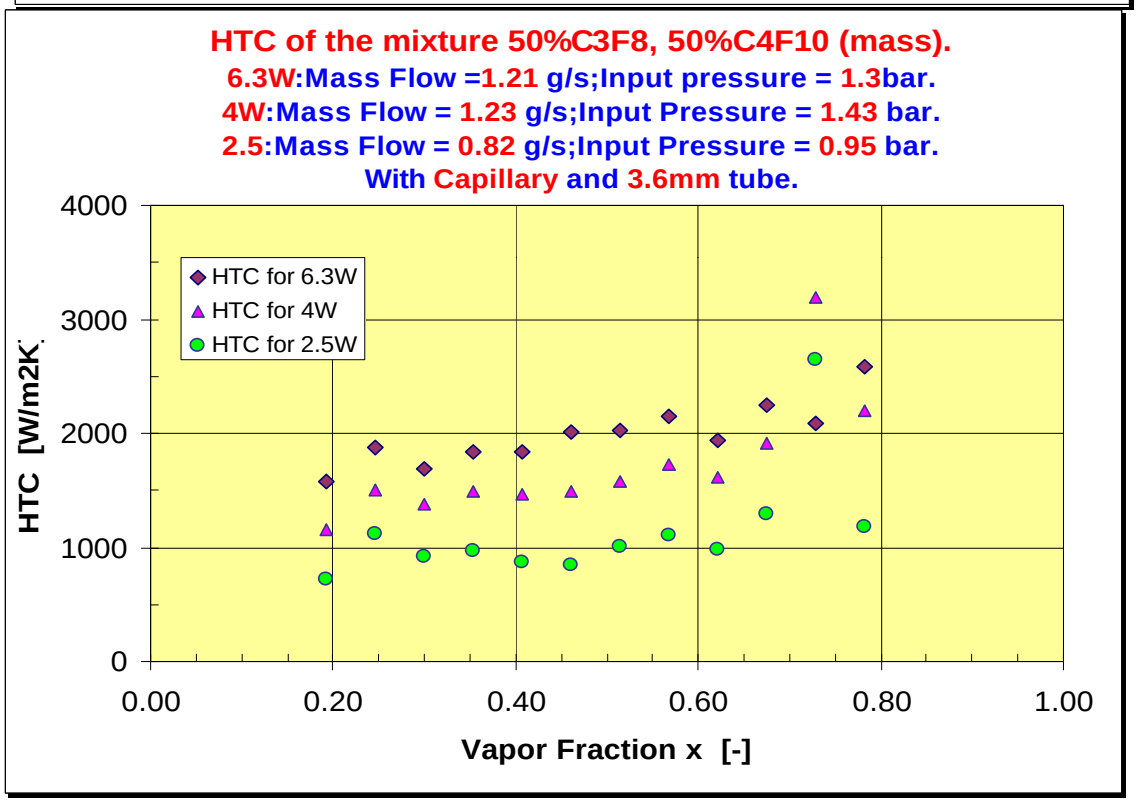


Heat Transfer Coefficient Measurements in 1.6 m long SCT barrel stave simulators

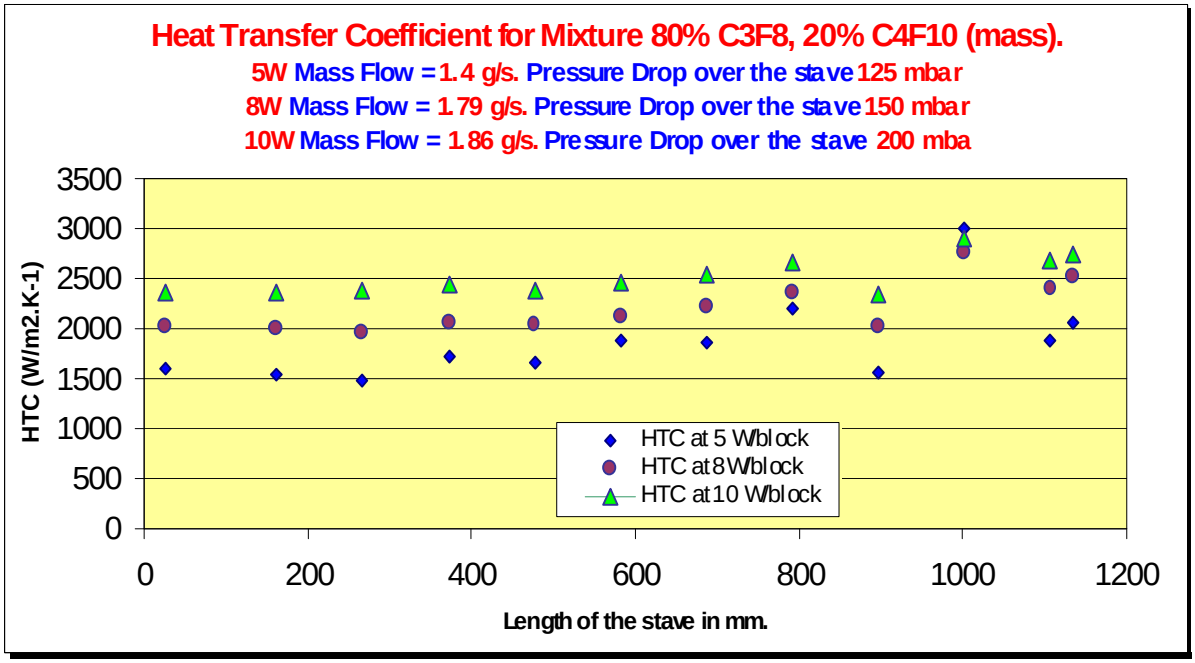


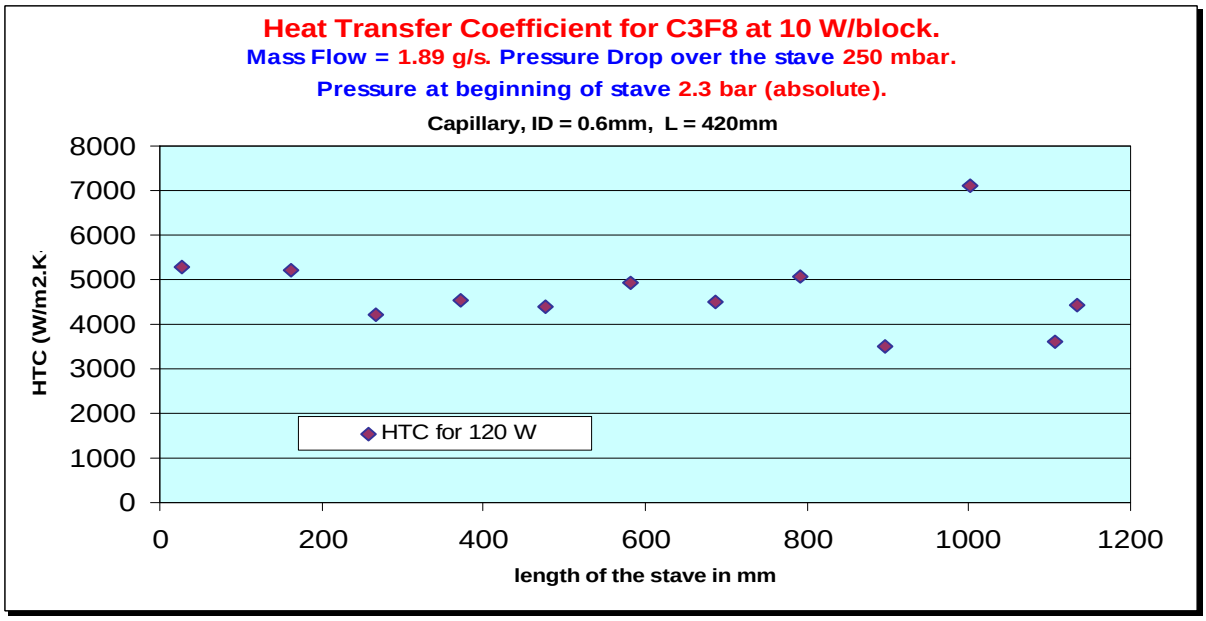
Heat Transfer Coefficient in C_4F_{10}/C_3F_8 mixture, vs length (3.6 mm ID tube), and vapor fraction



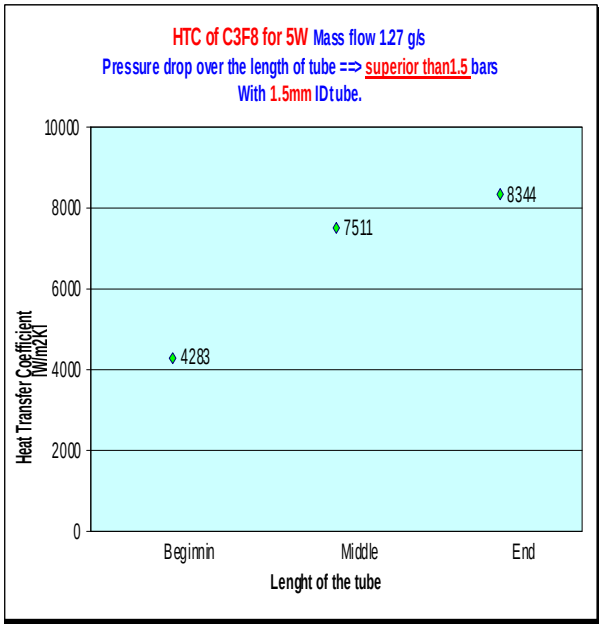


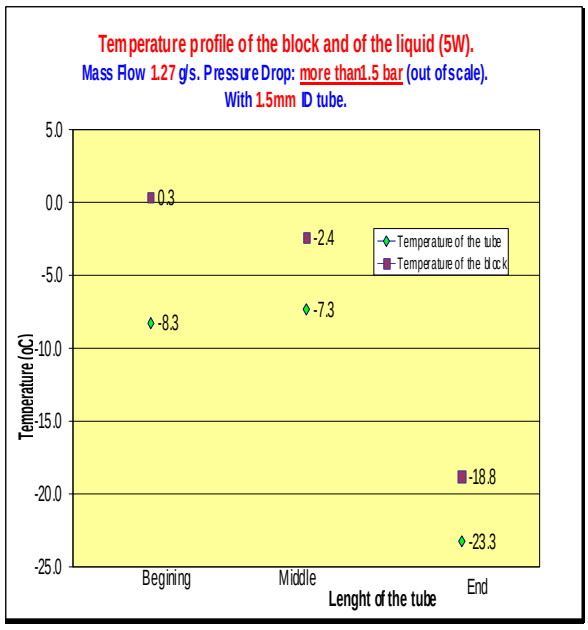
Comparison of Heat Transfer Coefficient in pure C_3F_8 and C_4F_{10}/C_3F_8 mixture, vs length (3.6 mm ID tube), & vapor fraction





Heat Transfer Coefficients and Temperature Profiles along a 1.6 m tube with 1.5 mm ID





Observations:

Heat Transfer Coefficients are higher due to the elevated local heat flux, HOWEVER...

Temperature Profiles along the tube reflects the very high pressure drop.

Conclude:

Such thin tubes unsuitable for evaporative cooling.