

# Note with Robert

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$$QPow - TermHS - PCBHS - LT - LPCB - coreQPow = 0$$

Where

$QPow$  : Q pulse Power in Watts measured at Pi Filter. The power that is going into the Q pulse board and termination

$TermHS$  : Termination Heat Sink Power calculated by

Termination Heatsink Flowrate LPM

Termination Heatsink H2O In T

Termination Heatsink H2O Out T

$PCBHS$  : Q Pulse PCB Heatsink Power calculated by

Q PCB Heatsink Flowrate LPM

Q PCB Heatsink H2O In T

Q PCB Heatsink H2O Out T

$LT$  : Loss of TermHS, and  $LT = \lambda_T * TermHS$

$LPCB$  : Loss of PCBHS, and  $LPCB = \lambda_P * TermHS$

$coreQPow$  : Core Q power is the power deposited in the core

$$coreQPow = (Vrms1 - Vrms2) * Vrms2 / Rterm$$

$$Q_{reaction} = (Q_{flow} + Q_{loss}) - (Q_{heater} + Q_{pulse})$$

Where  $Q_{reaction}$  : heat flow from reaction

$Q_{flow}$  : heat flow captured by the calorimeter's jacket

$Q_{loss}$  : heat flow to the ambient air

$Q_{heater}$  : heater power  $Q_{pulse}$  : power dissipated into the reactor core from electric pulse

Replace equation by helium and no QPulse Hydrogen and Helium then minus helium and No QPulse for Hydrogen and Helium, we have:

$$Q_{reaction} = (Q_{flow} + Q_{loss})_h - (Q_{flow} + Q_{loss})_{he} - Q_{pulse}_h - ((Q_{heater})_h - (Q_{heater})_{he} - Q_{heater_{noQ}})_h - Q_{heater_{noQ}}_{he}$$