Test of DC0306 "Stiening Heater"

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Magnet DC0306 is equipped with a 350 Ohm WK type strain gage (Micro-Measurements) attached to the outer coil lead end ramp splice preform as a local heater for remnant field studies. There were actually two such strain gages installed, however one failed during end clamp installation.

Figure 1 shows the power dissapated by such a strain gage, mounted in the same manner as the DC0306 strain gage to a short length of cable, when submerged in a styrofoam cup of liquid nitrogen. In Figure 1, the power has been calculated by multiplying the observed voltage and current. No attempt has been made to measure the contribution of the leads to the dissapated power.

Figure 2 shows the power plotted against the square of the current, with a linear fit that shows that the total circuit resistance is not changing much over this range. The only final limitation to the measurement was the 50 V voltage limit of the power supply used.

It appears that it should be possible to dissapate several watts in the DC0306 heater without destroying it.

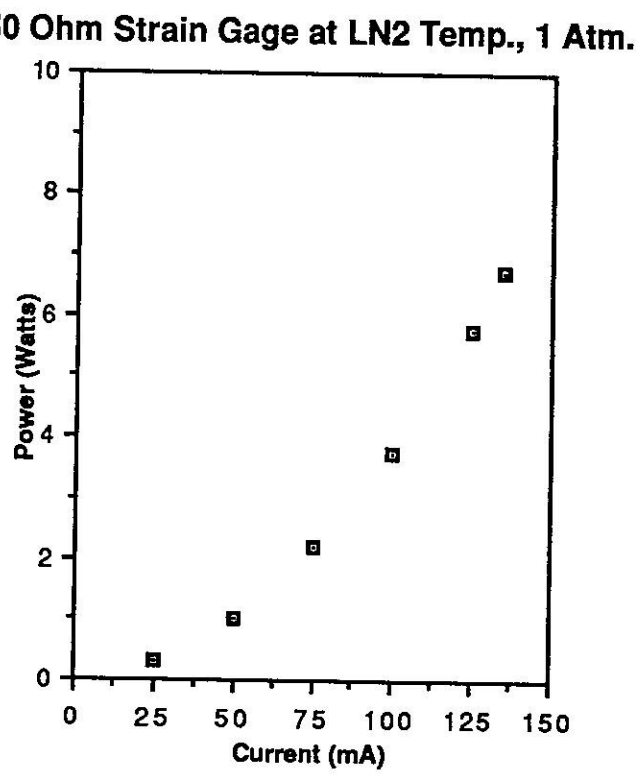

Figure 1. Power Dissapated by Strain Gage in Boiling LN2

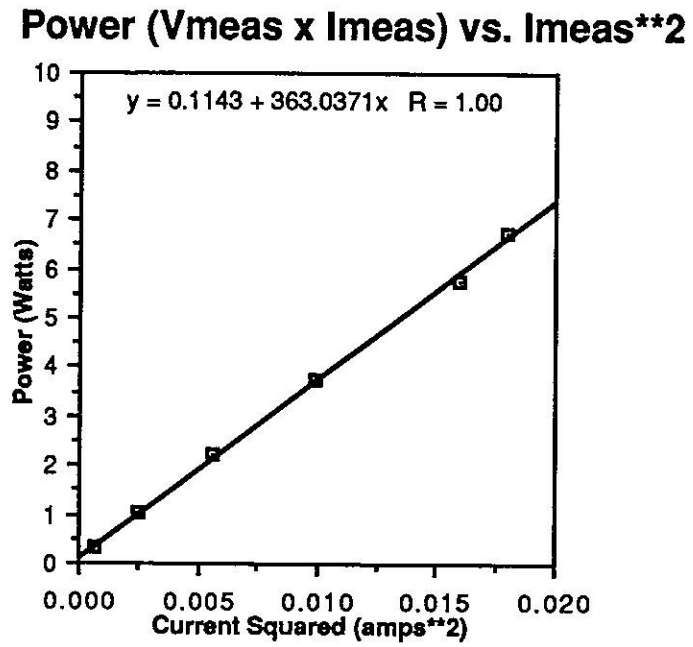

Figure 2. Power Dissapated vs. Current Squared, with Linear Fit