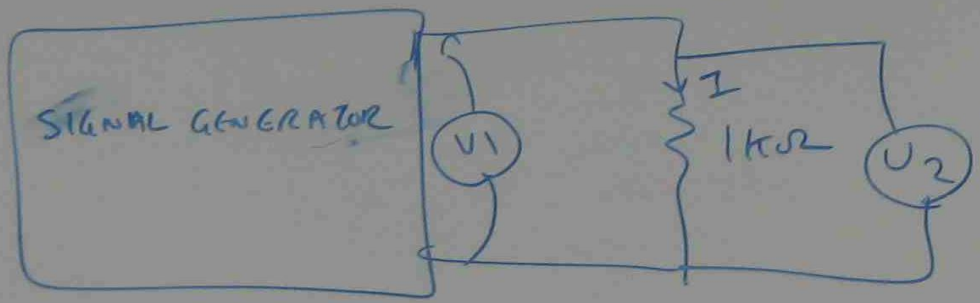
SERIES R L C CIRCUIT

TO STUDY THE BEHAVIOUR OF RLC CIRCUIT

(I) CONNECT THE CIRCUIT



$$I = \frac{V}{R}$$

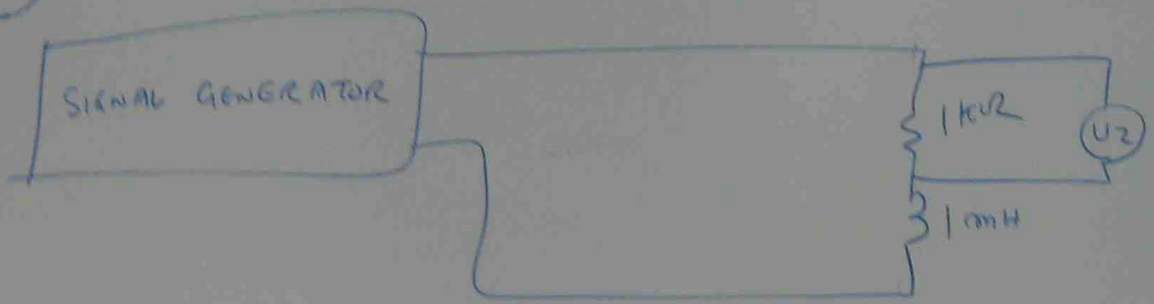
INCREASE FREQUENCY 10 TO 100 Hz)

If	U_2	$I_R = \frac{U_2}{1000\Omega}$
10 Hz 20 Hz 50 Hz 70 100 Hz		

COMMENT = ?

II

CONNECT THE CIRCUIT



INCREASE FREQUENCY, MAKE COMMENT

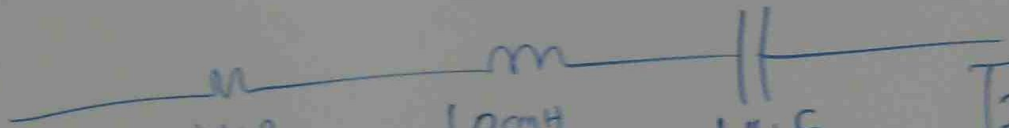
f	U_2	$I = \frac{U_2}{1\,k\Omega}$
10		
20		
50		
70		
100 Hz		

MAKE COMMENT: ?

$$I = \frac{V}{\sqrt{R^2 + X_L^2}}$$

$$= \frac{V}{\sqrt{R^2 + (2\pi f L)^2}}$$

CONNECT THE CIRCUIT



$$Z = R + jX_L + (-jX_C)$$
$$= R + j(X_L - X_C)$$

CALCULATE RESONANT FREQUENCY

$$X_L = X_C \Rightarrow 2\pi fL = \frac{1}{2\pi fC}$$

$$2^2 \pi^2 f^2 LC = 1$$

$$f = \sqrt{\frac{1}{2^2\pi^2 LC}} = \frac{1}{2\pi\sqrt{LC}}$$

$$= \frac{1}{2 \times 3.1416 \sqrt{10\times10^{-3} \times 1\times10^{-6}}}$$

$$= 50\,Hz$$

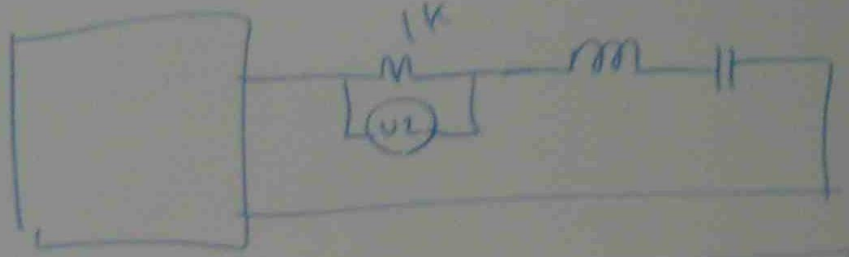
III

CONNECT THE CIRCUIT

AT RESONANT POINT

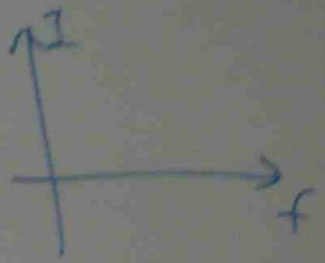
$$I = \frac{V}{R + \sqrt{(X_L - X_C)}}$$

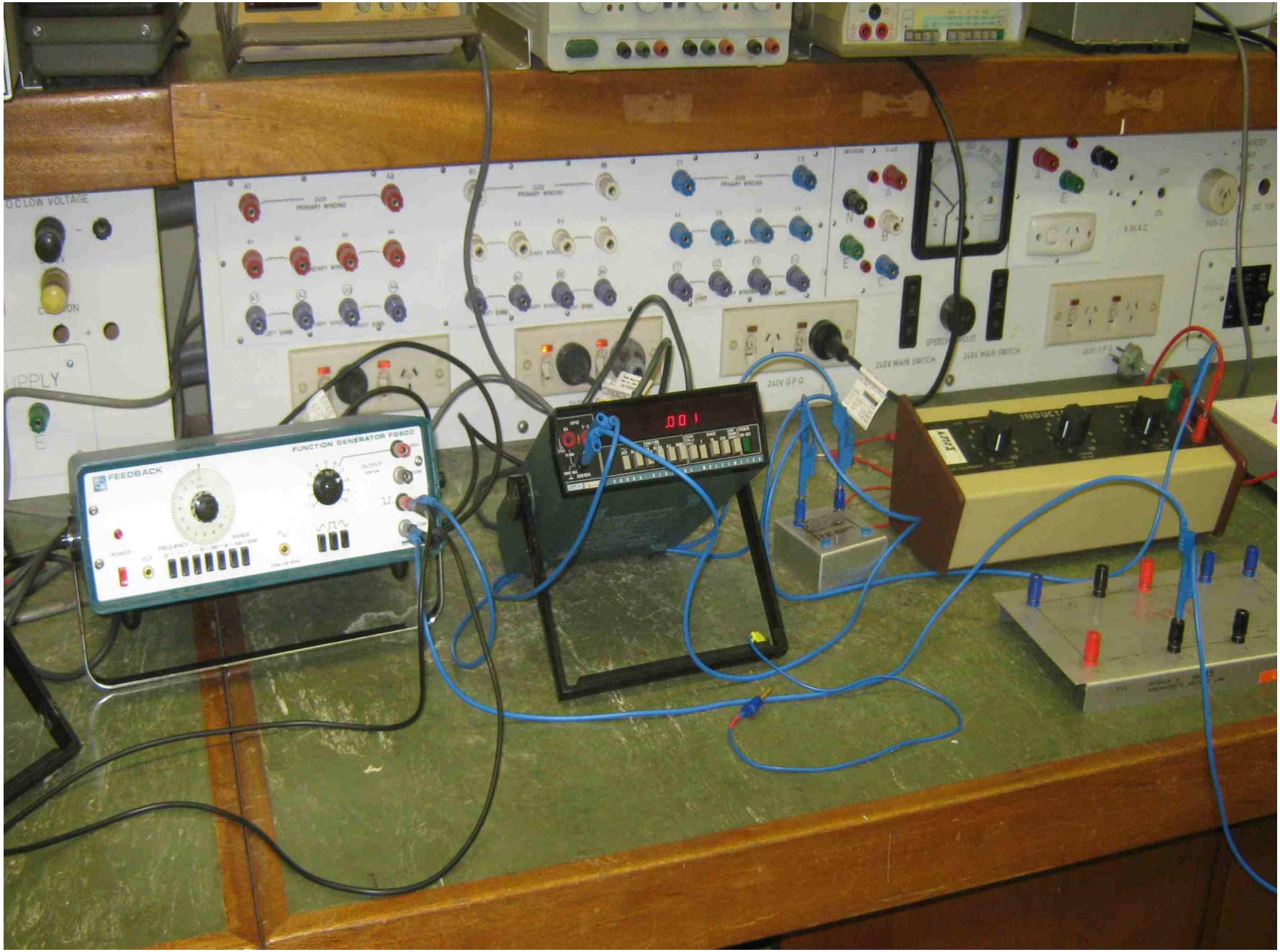
CANCEL

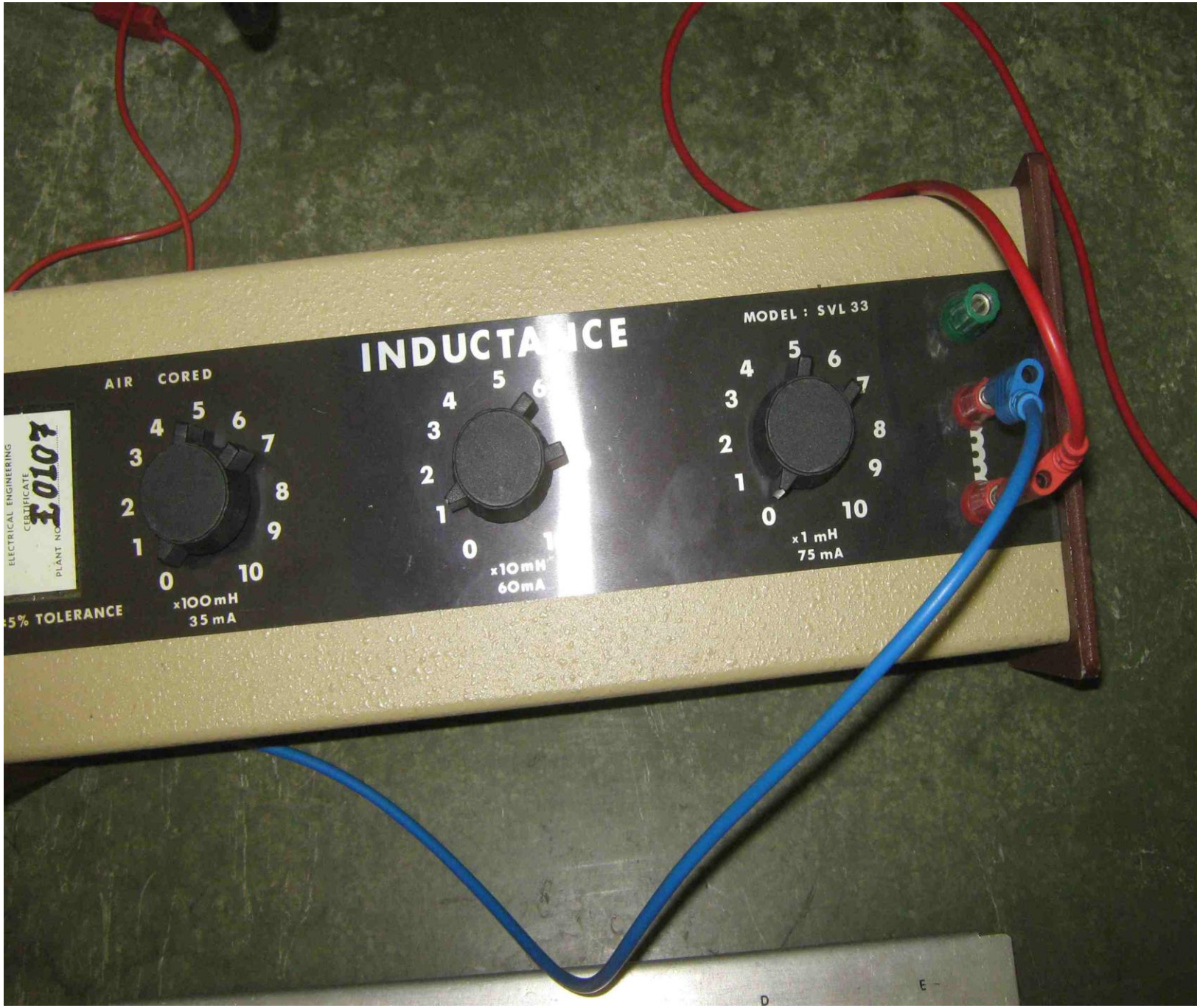


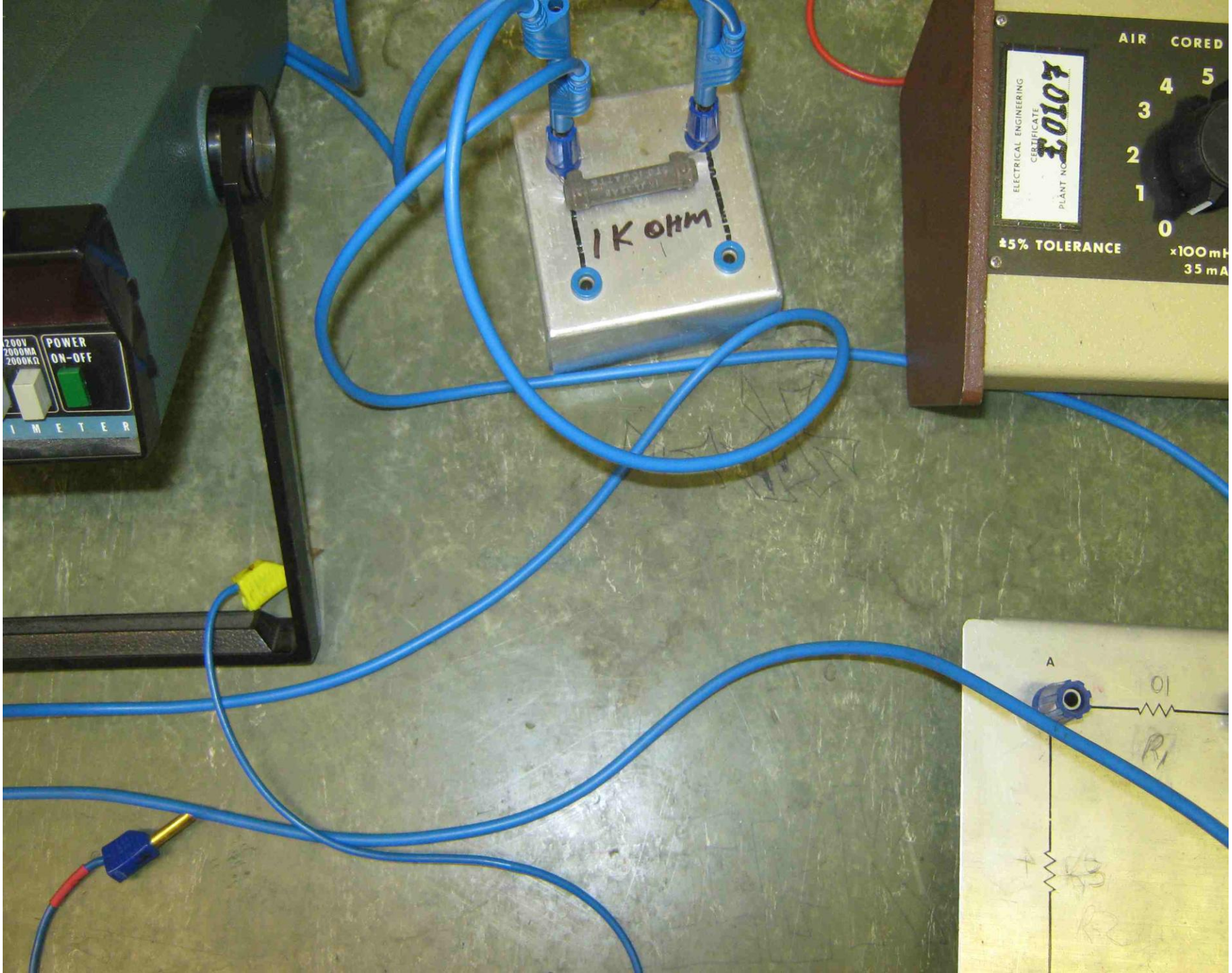
f	V2	$I = \frac{V2}{1K}$
10		
20		
30		
40		
50		
60		
70		
80		
90		
100		

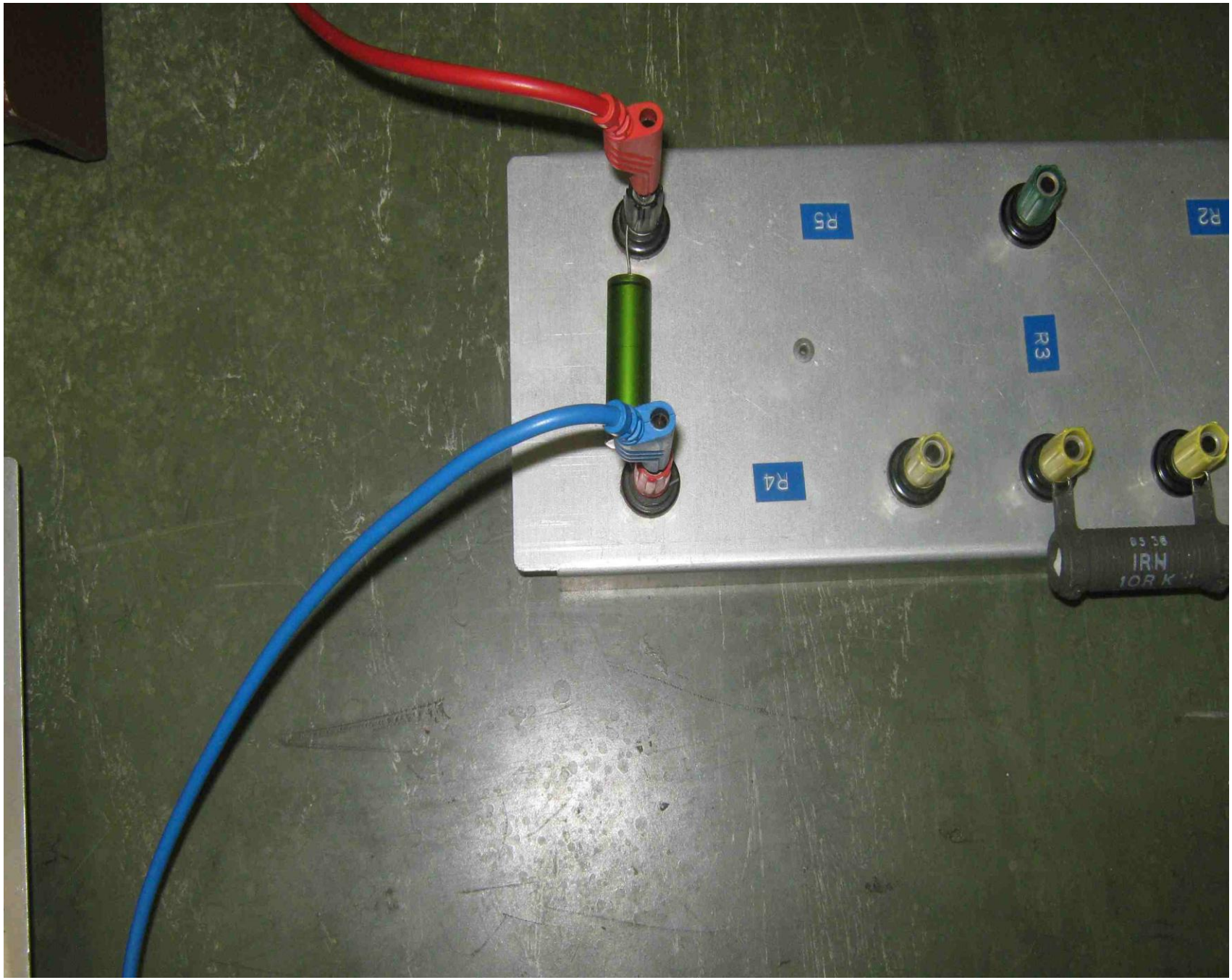
HOW HAPPENS TO CURRENT?

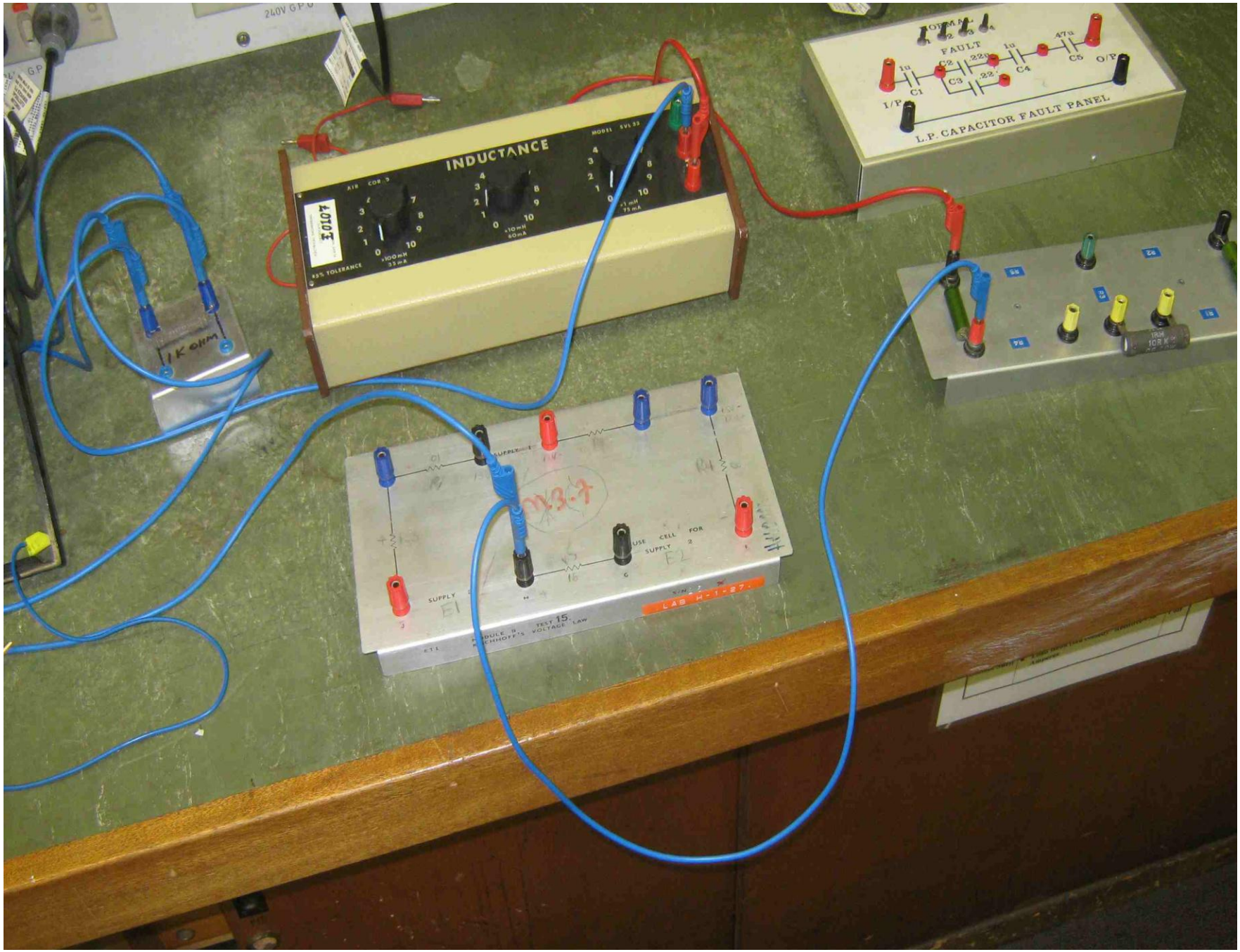



FEEDBACK
FUNCTION GENERATOR FG600
240V MAIN SWITCH
240V O.P.O.


INDUCTANCE
MODEL : SVL 33
AIR CORED
ELECTRICAL ENGINEERING
CERTIFICATE
E0107
PLANT NO
±5% TOLERANCE
0 1 2 3 4 5 6 7 8 9 10
x100 mH
35 mA
0 1 2 3 4 5 6
x10 mH
60 mA
0 1 2 3 4 5 6 7 8 9 10
x1 mH
75 mA


1K OHM
POWER
ON-OFF
AIR
CORED
ELECTRICAL ENGINEERING
CERTIFICATE
E0107
PLANT NO
±5% TOLERANCE
A


R5
R2
R3
R4
IRH
10R K


INDUCTANCE
L.P. CAPACITOR FAULT PANEL
FAULT
I/P
O/P
1K OHM