RLC Circuit Data Table

Mills Sum 11

Data Table

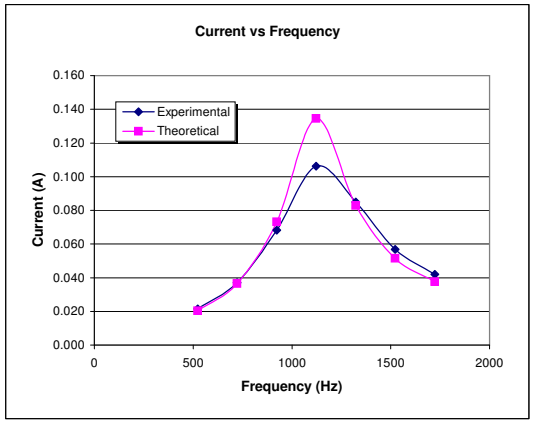
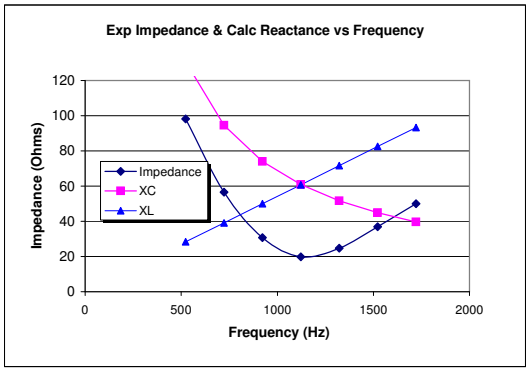
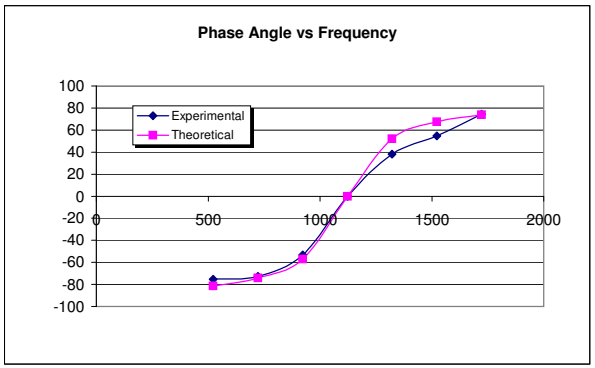
Name	Value	Name	Value	Delta F
Inductance L (H)	0.00862	Resonant Freq ω_o (Rad/sec)	7.06E+03	112
Coil Resistance $R_L(\Omega)$	5.610	Resonant Freq. f_o (Hz)	1123.0	
Capacitance C (F)	2.33E-06	Q = Factor	6.08	
Resistance R (Ω)	10		70	

Calculated Theoretical Values

Frequency (Hz)	Angular Freq (Rad/sec)	X_L (Ω)	X_C (Ω)	Z_{calc} (Ω)	I (A)	Θ_{calc} (degrees)	Θ_{calc} -Θ_{exp} (degrees) % Diff
523	3283.0	28.30	130.73	103.61	0.02027	-81.34	7.79
723	4539.6	39.13	94.54	57.57	0.03648	-74.27	1.96
923	5796.2	49.96	74.05	28.70	0.07317	-57.05	7.10
1123	7052.9	60.80	60.85	15.61	0.13453	-0.21	0.00
1323	8309.5	71.63	51.65	25.35	0.08283	52.00	30.88
1523	9566.1	82.46	44.86	40.71	0.05159	67.45	20.68
1723	10822.8	93.29	39.66	55.86	0.03759	73.77	-0.86

Experimental Values Stays Constant

Frequency (Hz)	Angular Freq (Rad/sec)	V_R (V)	V_g (V)	Z_{exp} (Ω)	I (A)	Θ_{exp} (μs)	Θ_{exp} (degrees)
523	3283.0	0.214	2.10	98.1	0.02140	-400.0	-75.24
723	4539.6	0.371	2.10	56.6	0.03710	-280.0	-72.83
923	5796.2	0.682	2.10	30.8	0.06820	-160.0	-53.14
1123	7052.9	1.063	2.10	19.8	0.10630	0.0	0.00
1323	8309.5	0.850	2.10	24.7	0.08500	80.0	38.09
1523	9566.1	0.568	2.10	37.0	0.05680	100.0	54.81
1723	10822.8	0.420	2.10	50.0	0.04200	120.0	74.41

Measured Value Calculations (Using measured I)

Frequency (Hz)	Angular Freq (Rad/sec)	V_R (V)	V_L (V)	V_C (V)	V_g (V)	V_g (V) %Diff	Z_{calc} - Z_{exp} %Diff
523	3283.0	0.334	0.6056	2.7976	2.217	5.44	5.44
723	4539.6	0.579	1.4518	3.5075	2.136	1.69	1.69
923	5796.2	1.065	3.4075	5.0499	1.957	-7.04	-7.04
1123	7052.9	1.659	6.4626	6.4686	**1.659**	-23.44	-23.44
1323	8309.5	1.327	6.0884	4.3902	2.155	2.59	2.59
1523	9566.1	0.887	4.6837	2.5483	2.312	9.62	9.62
1723	10822.8	0.656	3.9183	1.6655	2.346	11.08	11.08