

Figure 1 - Schematic for 2 Generator Power Station

SHORTED TURNS  
DETECTED IN  
Unit 2 - SLOT D2

PRESS F11 TO  
ACKNOWLEDGE

### ROTOR SHORTED TURN MONITOR

Current Time & Date: 14:08 25 FEB 1999

GENERATOR	STATUS AT LAST SCAN	TIME OF LAST SCAN
Unit 1	NO SHORTED TURNS	14.04 25 FEB 1999
Unit 2	1 SLOT WITH SHORTS	14.04 25 FEB 1999
Unit 3	NO SHORTED TURNS	14.05 25 FEB 1999
Unit 4	MONITORING TURNED OFF	

STANDARD DELAY

Unit 1

GENERATOR SELECTED: 2

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**FURTHER INFORMATION**

F1 : PRESENT SHORTS    F4 : WAVEFORM PLOT  
 F2 : ARCHIVE OF SHORTS    F5 : TAKE A FINGERPRINT  
 F3 : ROTOR MIMIC    F6 : COMPARE FINGERPRINT  
 F7 : TURN MONITORING OF SELECTED GENERATOR ON/OFF  
 F8 : CONFIRM KEY    SHIFT F1 : UTILITY MENU  
 F9 : CLOSE WINDOW    F11 : ALARM ACKNOWLEDGE  
 F12 : STOP PROGRAM

**GENERATOR SELECTION**

1 : Unit 1  
 2 : Unit 2  
 3 : Unit 3  
 4 : Unit 4

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Figure 2 - Supervisory Program Main Screen

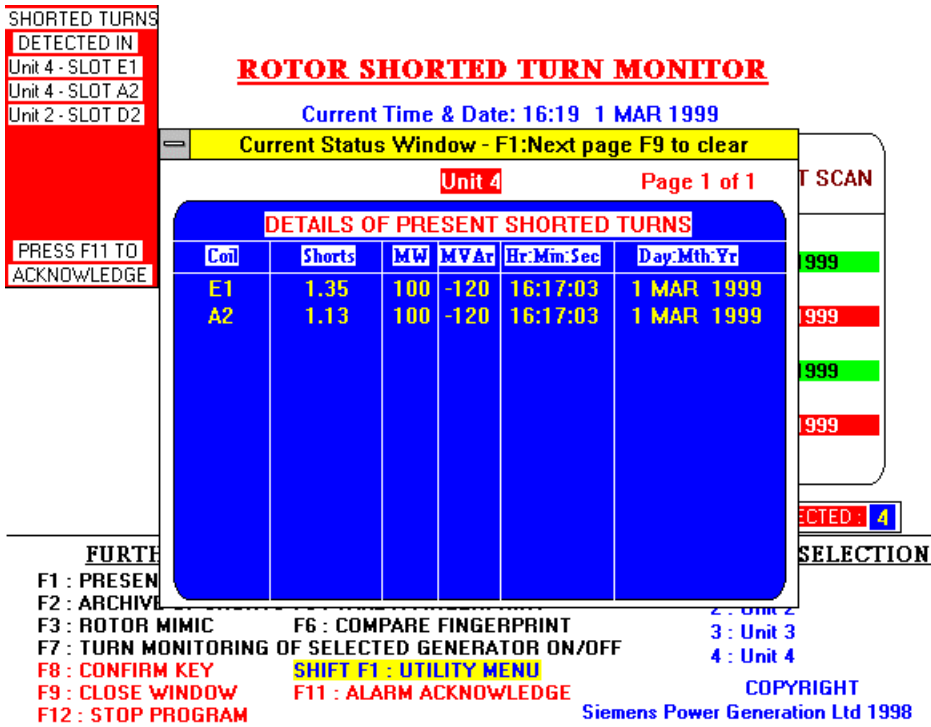


Figure 3 - Present Shorted Turns (F1 key)

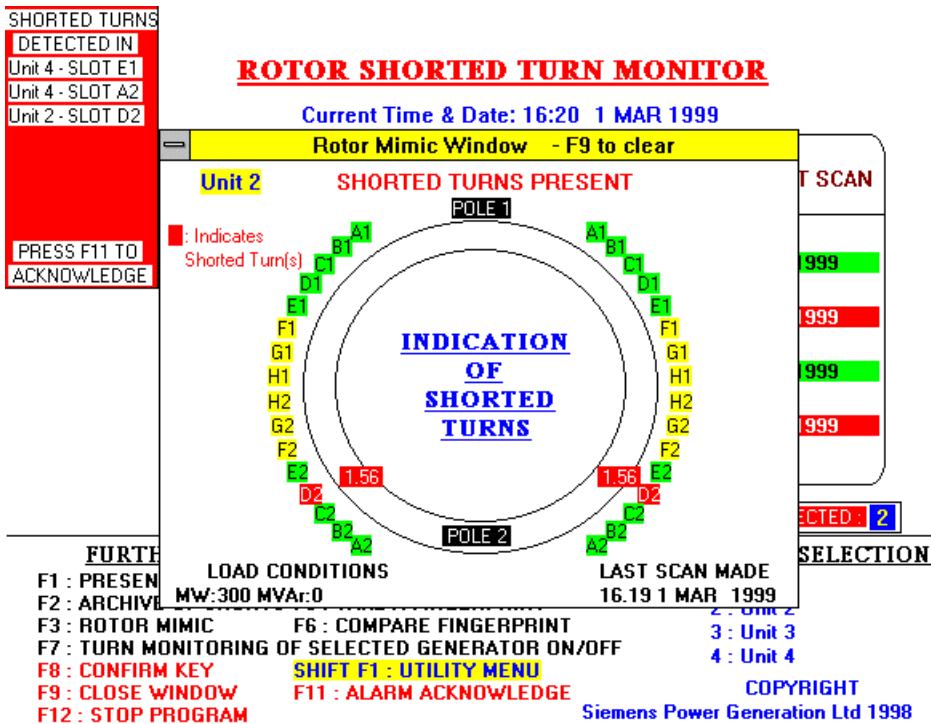


Figure 4 - Rotor Mimic Diagram (F3 key)

## ROTOR SHORTED TURN MONITOR

Current Time & Date: 16:21 1 MAR 1999

**ALARM LEVEL MODIFICATIONS**

**THE CURRENT VALUES OF THRESHOLD & INCREMENT LEVELS ARE AS FOLLOWS**

	THRESHOLD	INCREMENT	MODIFIED?
1 Unit 1	0.30	0.20	999
2 Unit 2	0.30	0.20	999
3 Unit 3	0.30	0.20	999
4 Unit 4	0.30	0.20	999

PRESS "ENTER" KEY WHEN VALUE IS KEYED IN  
PRESS F9 TO ABORT AND NOT ALTER PREVIOUS VALUES  
PRESS F8 TO CHANGE VALUES TO THOSE SHOWN ABOVE

**FURTHER INFORMATION:**

F1 : PRESEN  
F2 : ARCHIVE  
F3 : ROTOR MIMIC  
F7 : TURN MONITORING OF SELECTED GENERATOR ON/OFF  
F8 : CONFIRM KEY  
F9 : CLOSE WINDOW  
F12 : STOP PROGRAM

F6 : COMPARE FINGERPRINT  
F11 : ALARM ACKNOWLEDGE

2 : Unit 2  
3 : Unit 3  
4 : Unit 4

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Figure 5 - Alarm Level Modifications Screen

**ROTOR SHORTED TURN MONITOR**

Current Time & Date: 16:19 1 MAR 1999

Archive Window - F2:Next page F9 to clear

<SHIFT> F2 - Changes Paging Direction Unit 4 Page 1 of 1

ARCHIVE OF SHORTED TURNS							
Coil	Shorts	*	Thresh.	MW	MVAr	Hr:Min:Sec	Day:Mth:Yr
A2	1.13		0.50	100	-120	16:17:03	1 MAR 1999
E1	1.35		0.50	100	-120	16:17:03	1 MAR 1999
A2	0.93		0.50	100	-120	16:14:17	1 MAR 1999
E1	1.15		0.50	100	-120	16:14:17	1 MAR 1999
A2	0.73		0.50	100	-120	16:11:34	1 MAR 1999
E1	0.95		0.50	100	-120	16:11:34	1 MAR 1999

\* - INDICATES AN ALARM RAISED

**FURTHER INFORMATION:**

F1 : PRESEN  
F2 : ARCHIVE  
F3 : ROTOR MIMIC  
F7 : TURN MONITORING OF SELECTED GENERATOR ON/OFF  
F8 : CONFIRM KEY  
F9 : CLOSE WINDOW  
F12 : STOP PROGRAM

F6 : COMPARE FINGERPRINT  
F11 : ALARM ACKNOWLEDGE

2 : Unit 2  
3 : Unit 3  
4 : Unit 4

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Figure 6 - Archive of Shorted Turns for Unit 4 (F2 key)

## ROTOR SHORTED TURN MONITOR

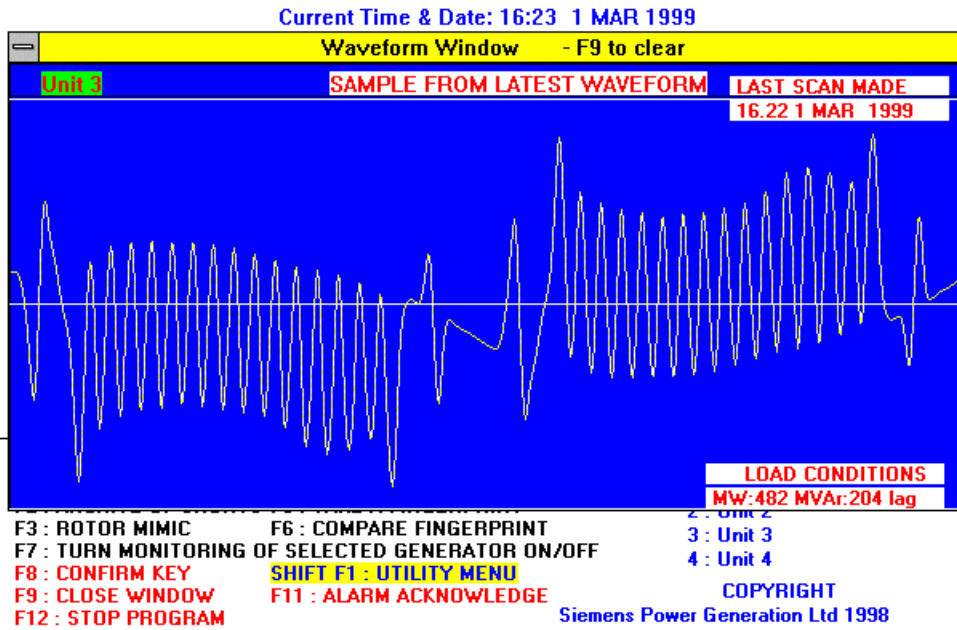


Figure 7 - Search Coil Voltage for Unit 3 (F4 key)

## ROTOR SHORTED TURN MONITOR

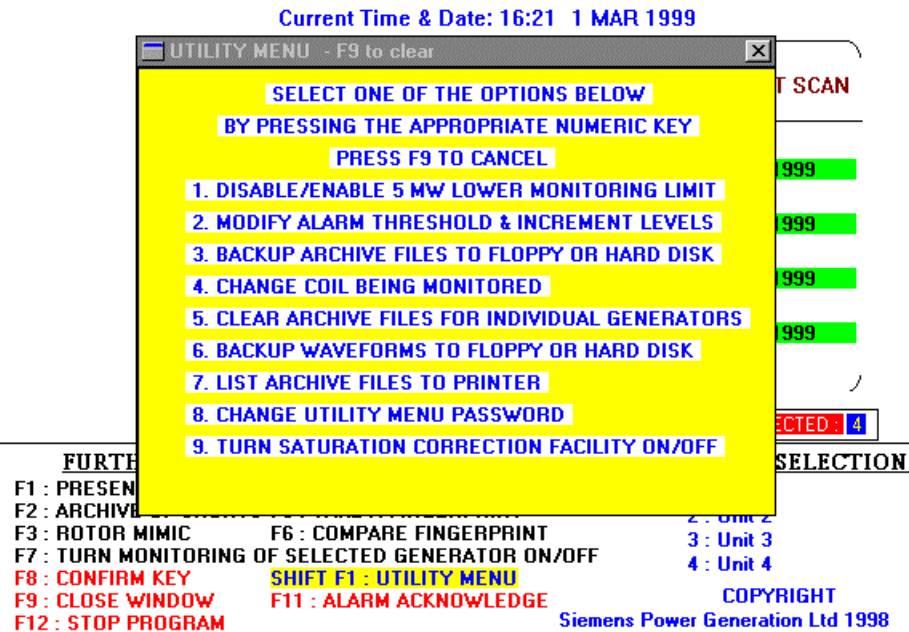


Figure 8 - Password Protected Utility Menu (shift F1 key)

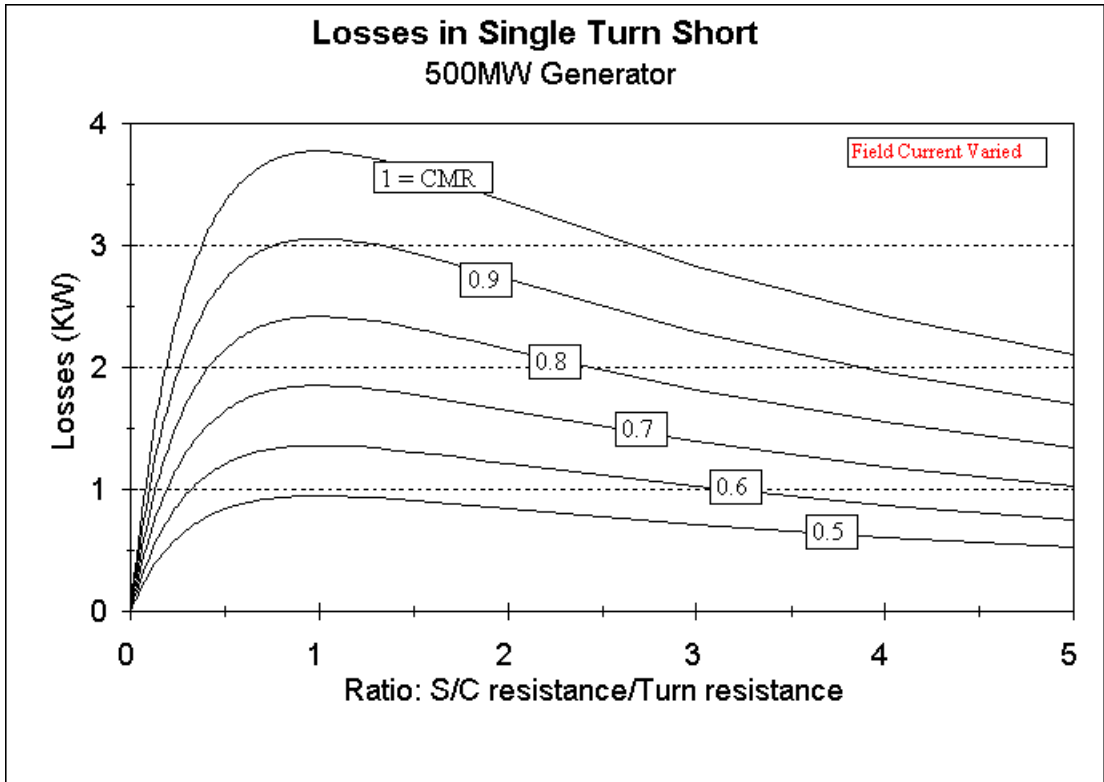


Figure 9 - Losses in the 'Short- Circuit' Resistance

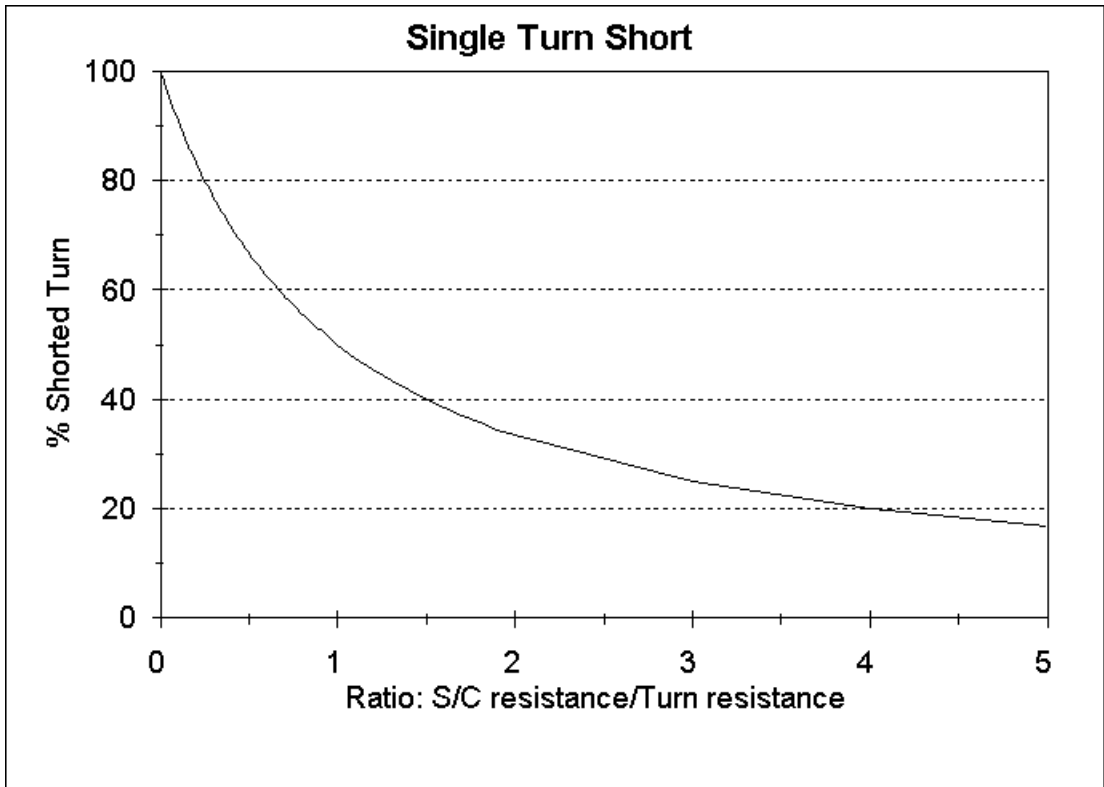


Figure 10 - % Shorted Turn Variation with 'S/C' Resistance

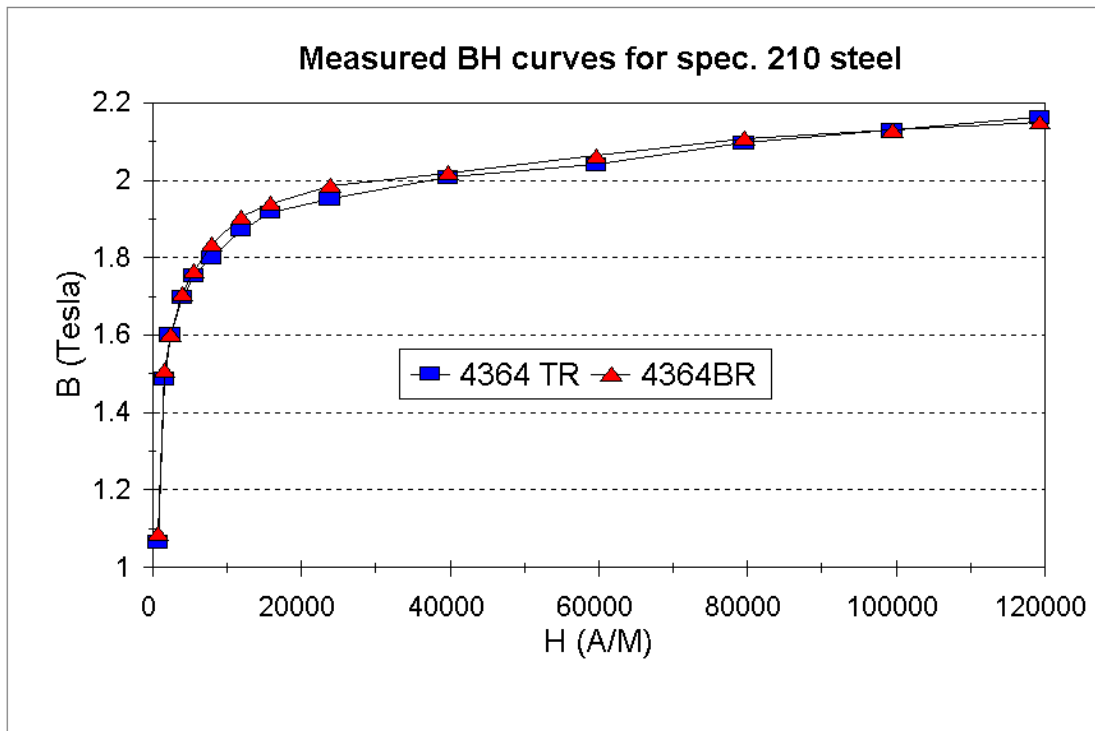


Figure 11 - Magnetisation for Samples from Rotor Forging

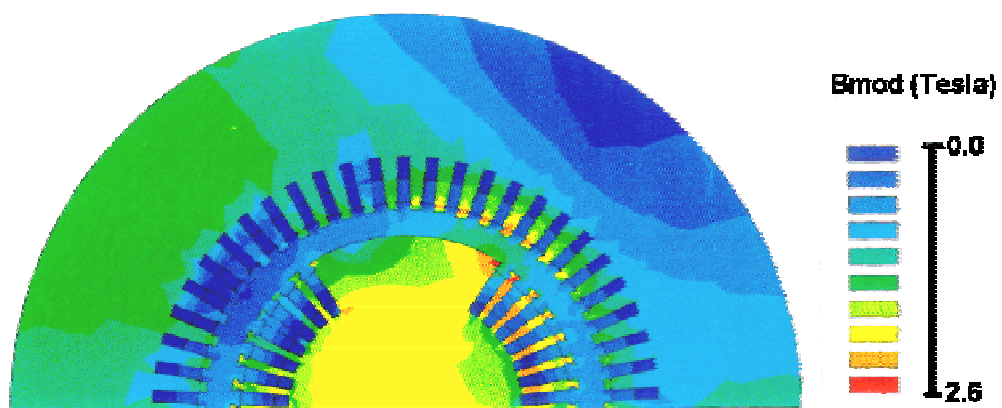
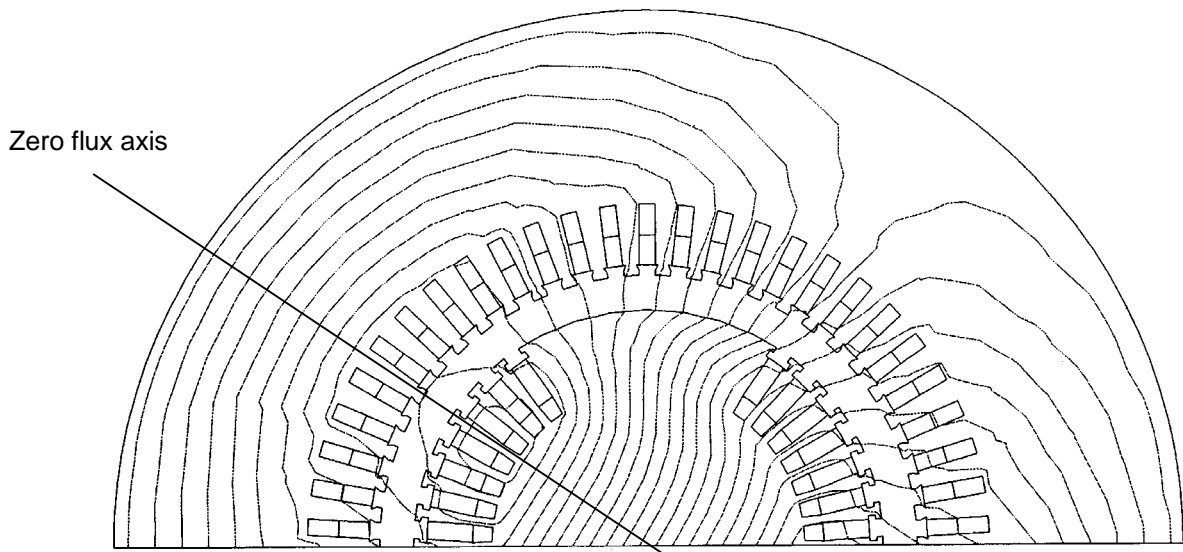
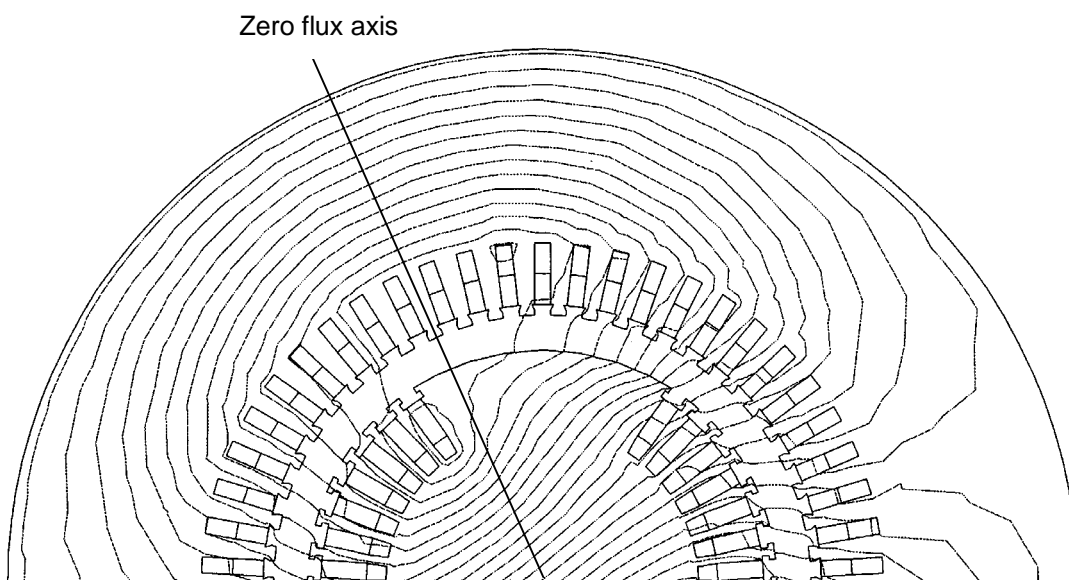


Figure 12 - Flux Density Distribution for Rated Load



**Figure 13 - Flux Distribution (500MW 0.85pf overexcited)**



**Figure 14 - Flux Distribution (500MW 0.95pf, underexcited)**

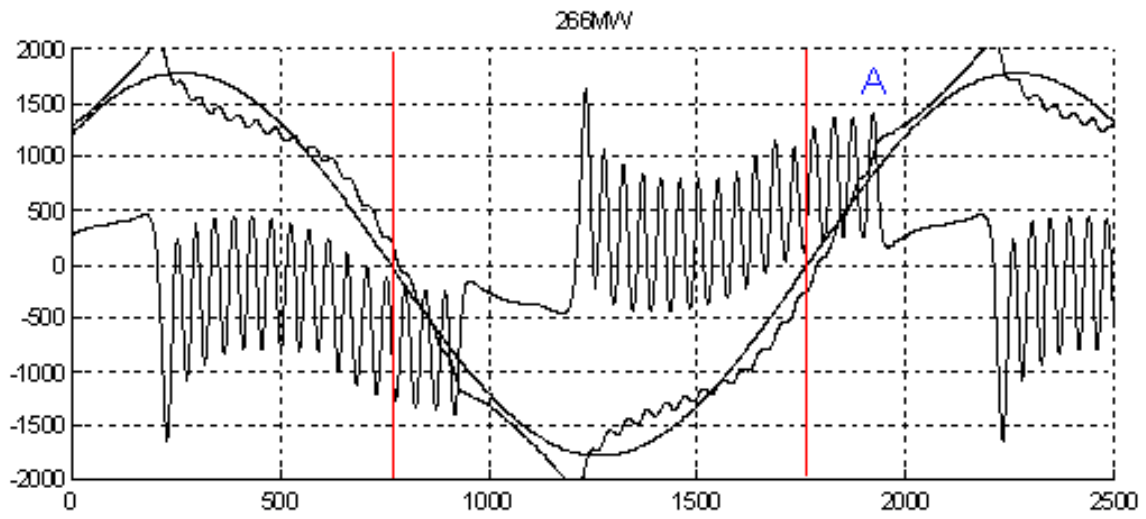


Figure 15 - Search Coil, Radial Flux and Fundamental Waveforms

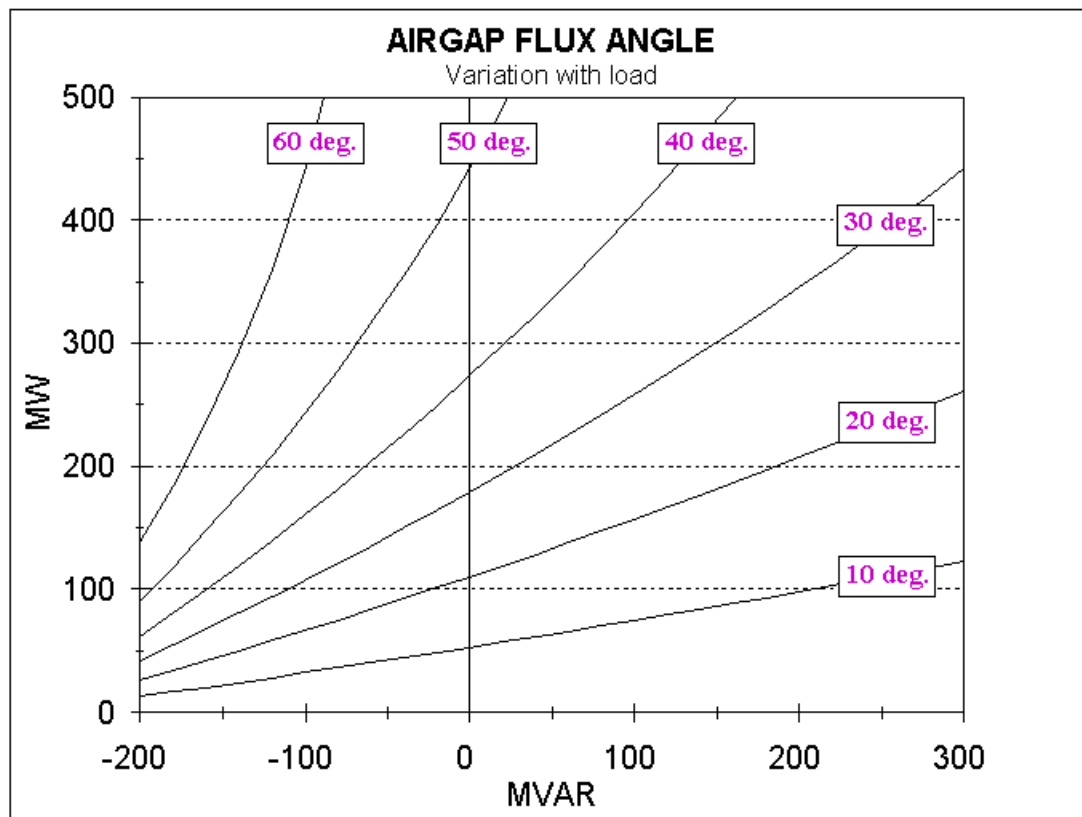


Figure 16 - Contours of Flux Angle for 500MW Unit



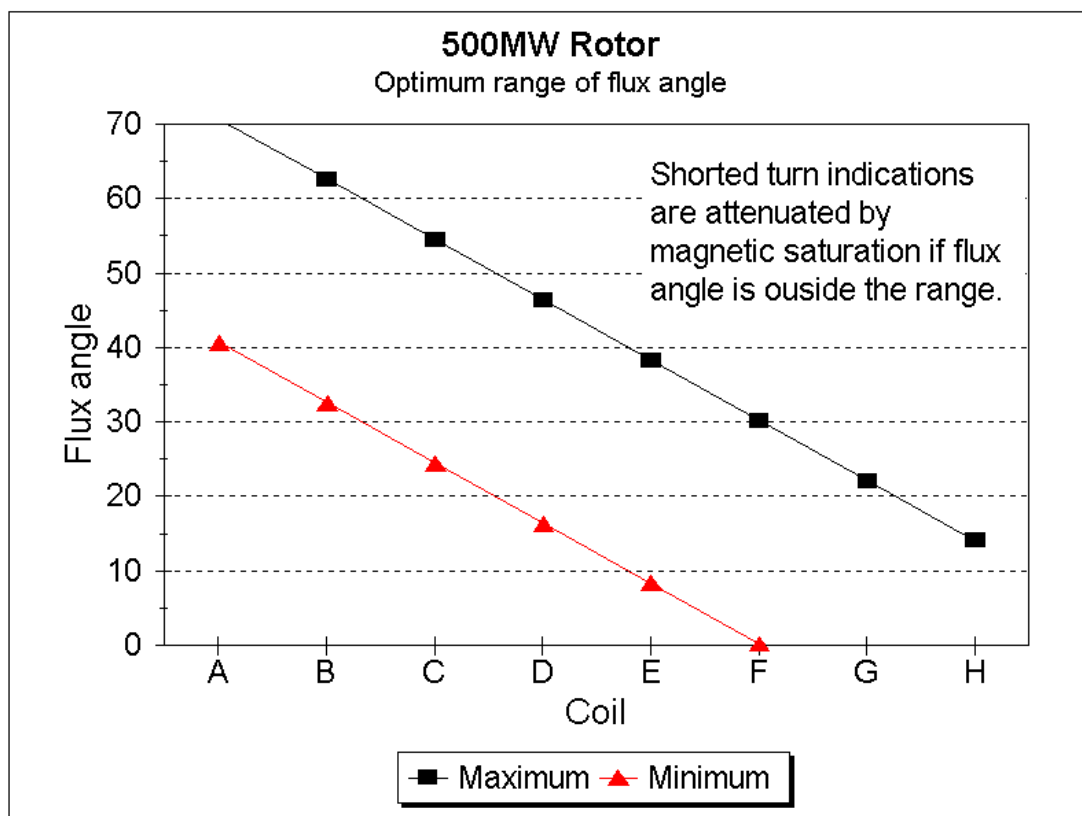


Figure 17 - Optimum Range of Flux Angle for 500MW Unit Coils

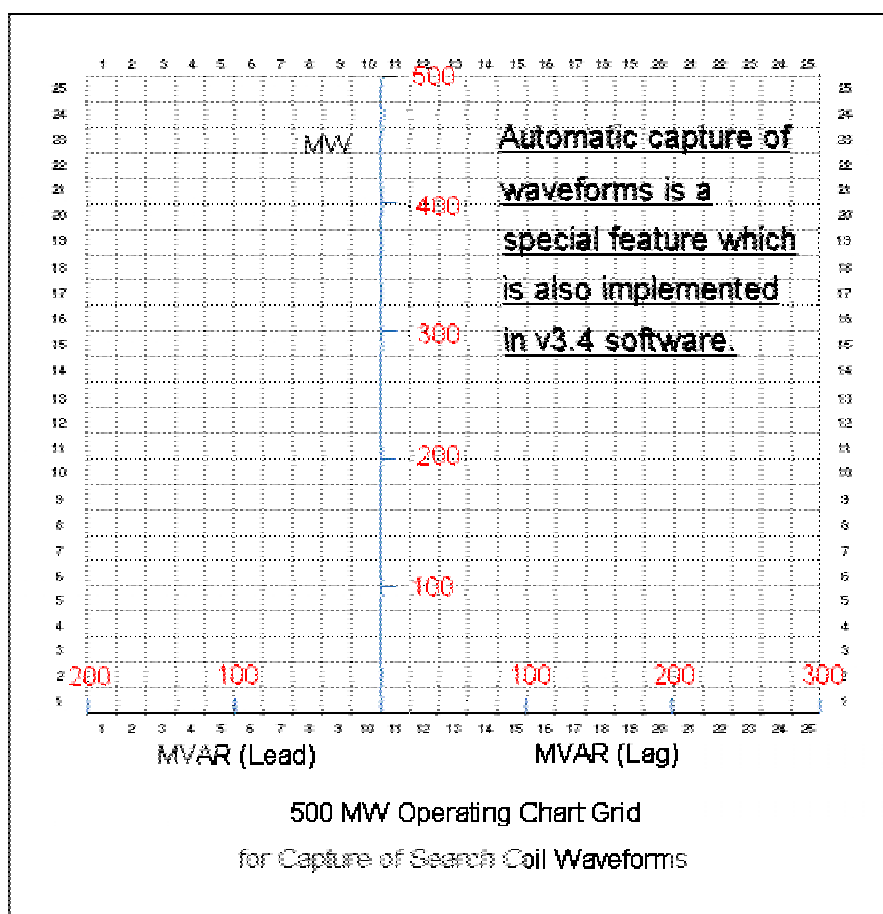


Figure 18 - Operating Chart Grid

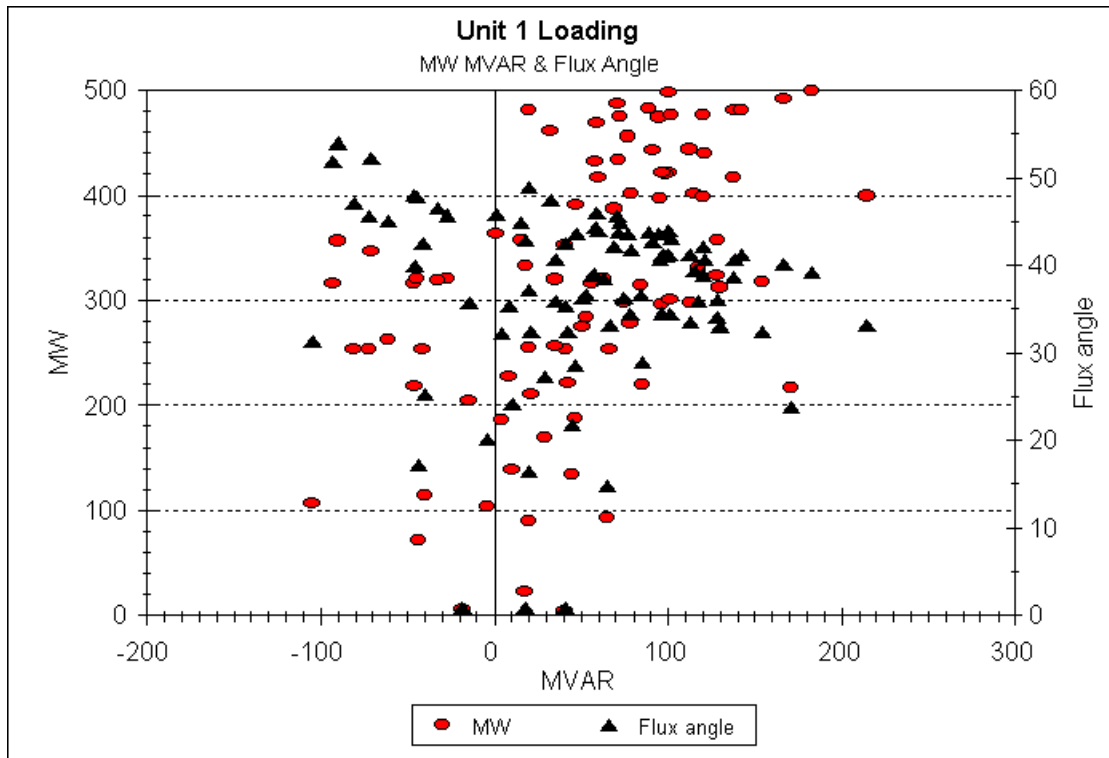


Figure 19 - Loads & Flux Angles for Unit 1 with Original Rotor

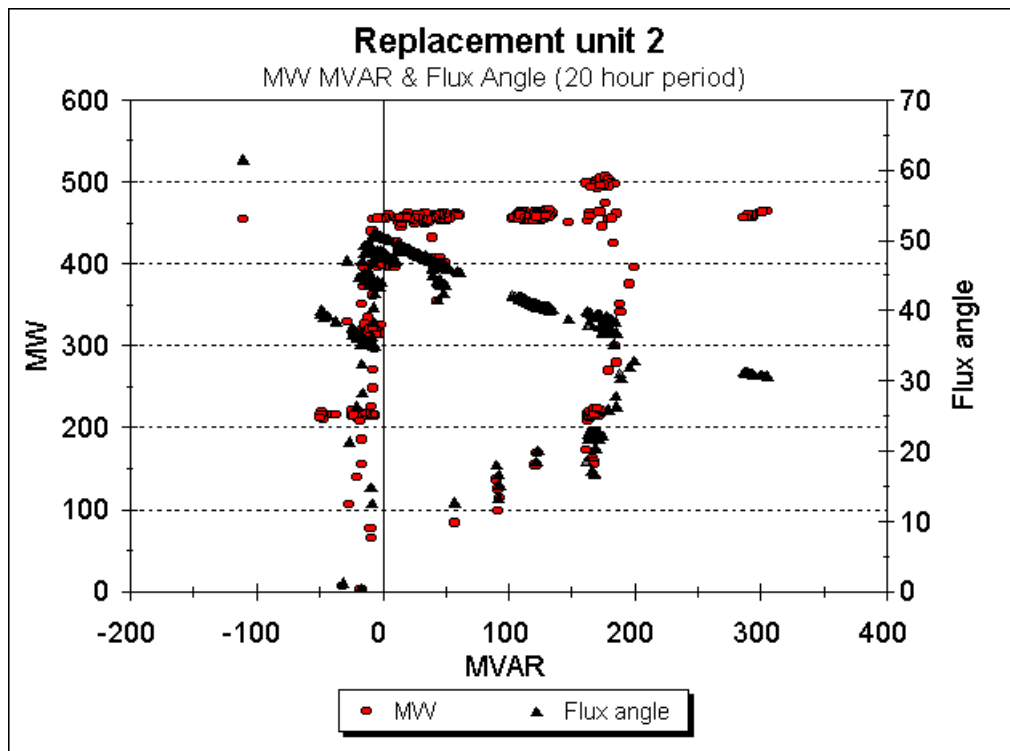


Figure 20 - Loads & Flux Angles for Unit 2 with Replacement Rotor

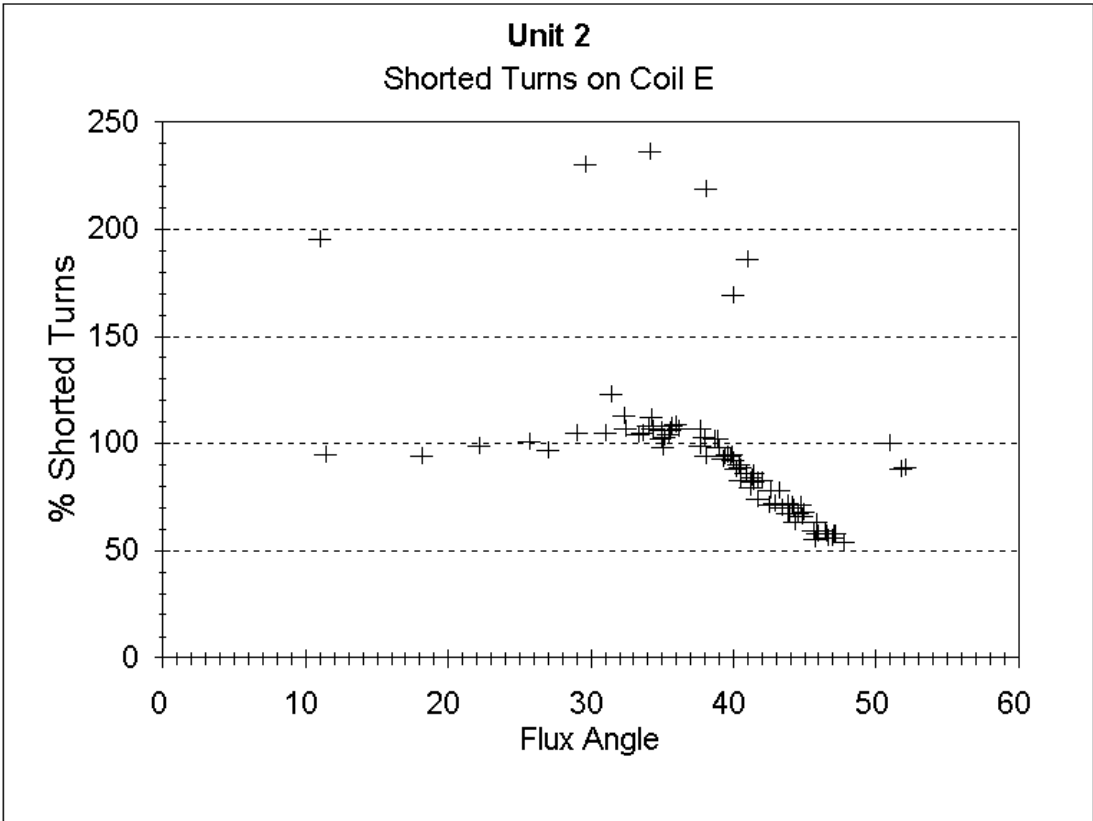


Figure 21 - Shorted Turns for Coil E (results from Analysis Program)

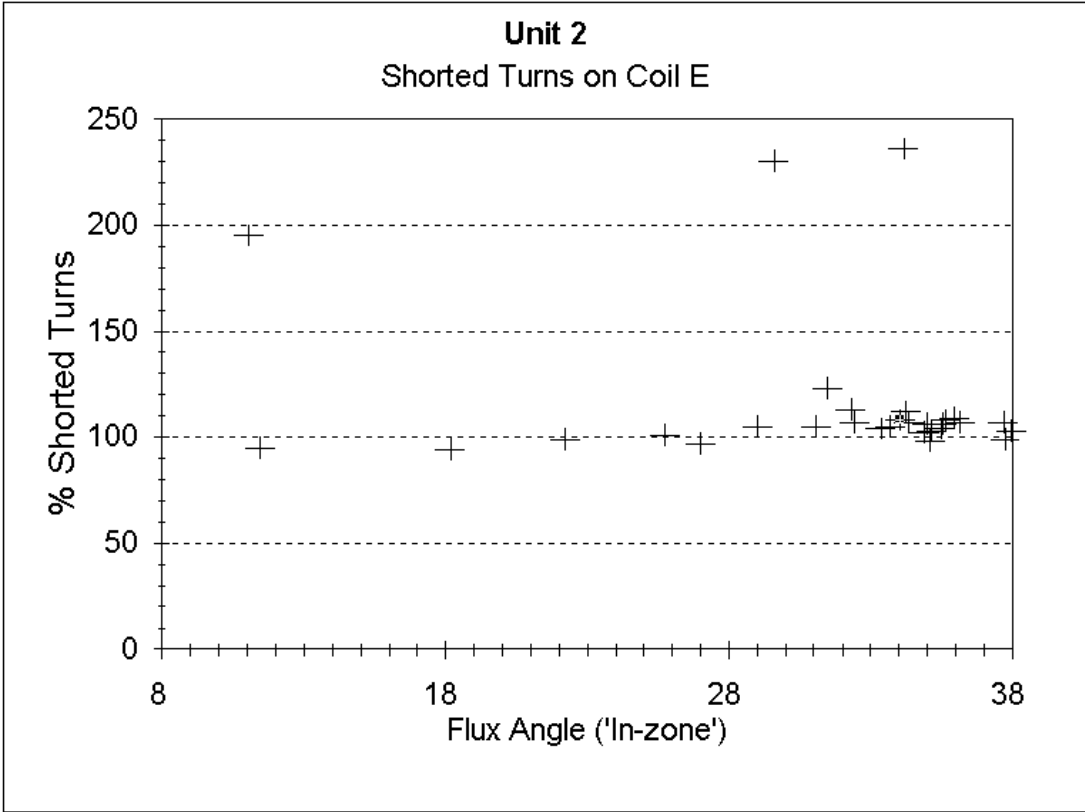


Figure 22 - Shorted Turns for Coil E ('In-zone' results)

