

Ensayo de Caracterización Magnética de Superficie



CNEA – UTN FRD

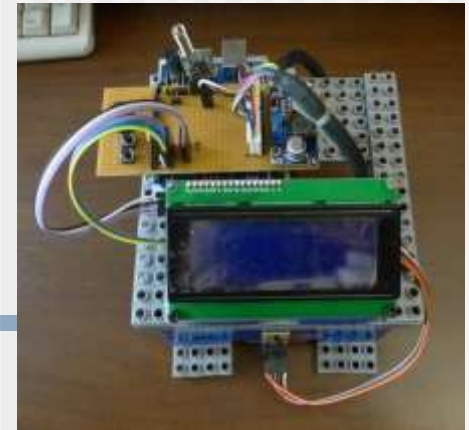


Sistema de adquisición de Datos en Tiempo Real

Dr. José Ruzzante

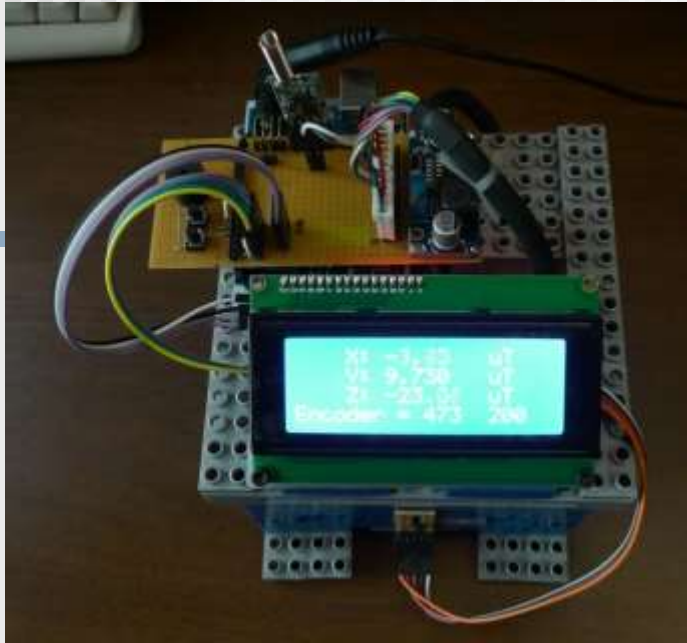
Ing. Lic. Pablo Alonso Castillo

Sistema de adquisición de datos de Campos Magnéticos Bx, By, Bz superficiales en tiempo real



■ El sistema comprende

- Sonda magnética de 3 ejes (sensibilidad 1nT)
- Encoder absoluto (resolución 0,25mm)
- Conectividad Inalámbrica
- Software de adquisición para Windows®
- Muestreo de datos en tiempo real
- Compensación de campo magnético terrestre
- Formateo para exportación a Excel



1-Vista Frontal

a-Display con campo B y posiciones Absolutas

b-Sensor de campo B

c-Dispositivo de Wi-Fi

1

2-Vista Lateral

a-Buzer y pulsadores de reset y campo terrestre

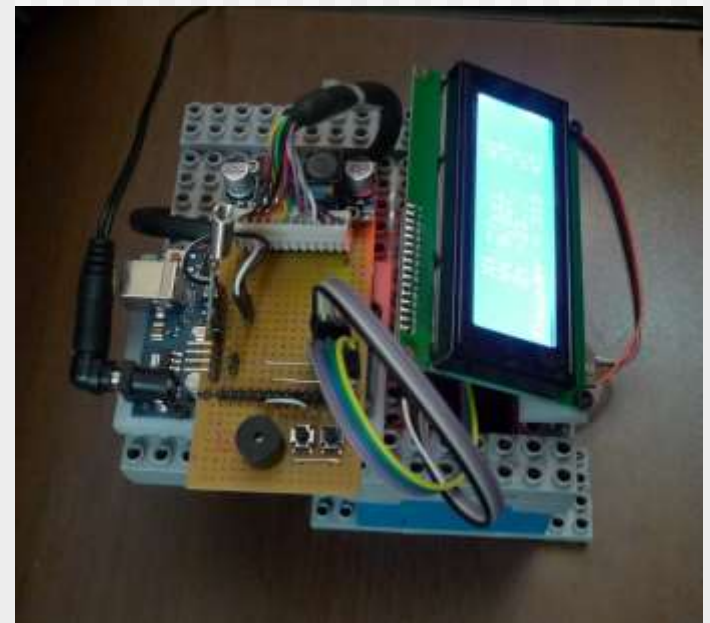
b-Fuente elevadora de tensión

c-Board Arduino Uno

d-Conector de fuente externa

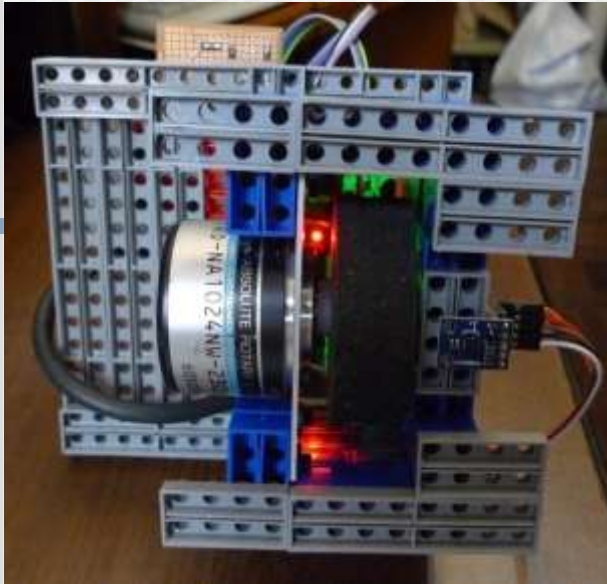
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Sensor digital de 3 ejes:

1



1- Vista Inferior

a-Sensor Magnético Microprocesado

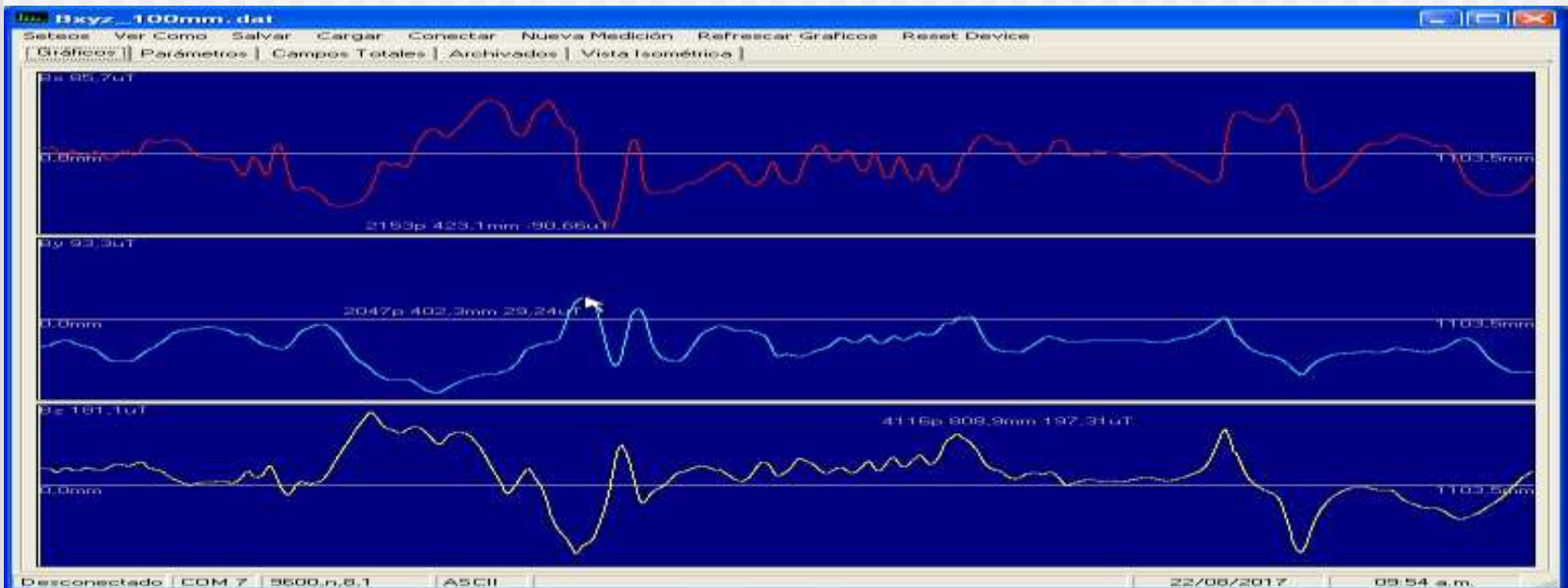
b-Rueda del Encoder Absoluto

c-Encoder Absoluto

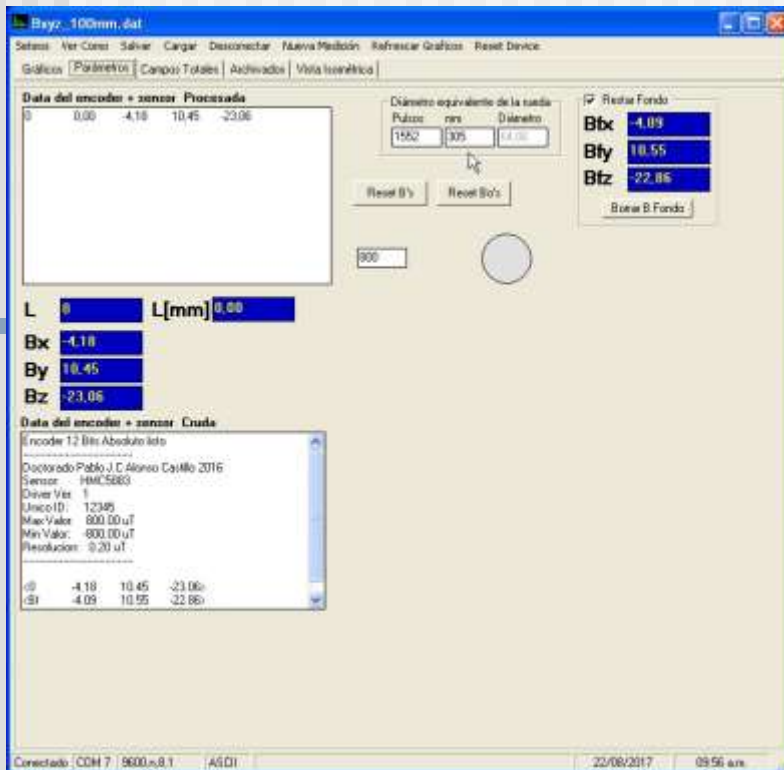
2-Software de Adquisición

a-Ejes Bx, By, Bz

b-Valor de pico en posición del Mouse



2



1

2-Panel de Exportación

a-Listas con campos Bx, By y Bz

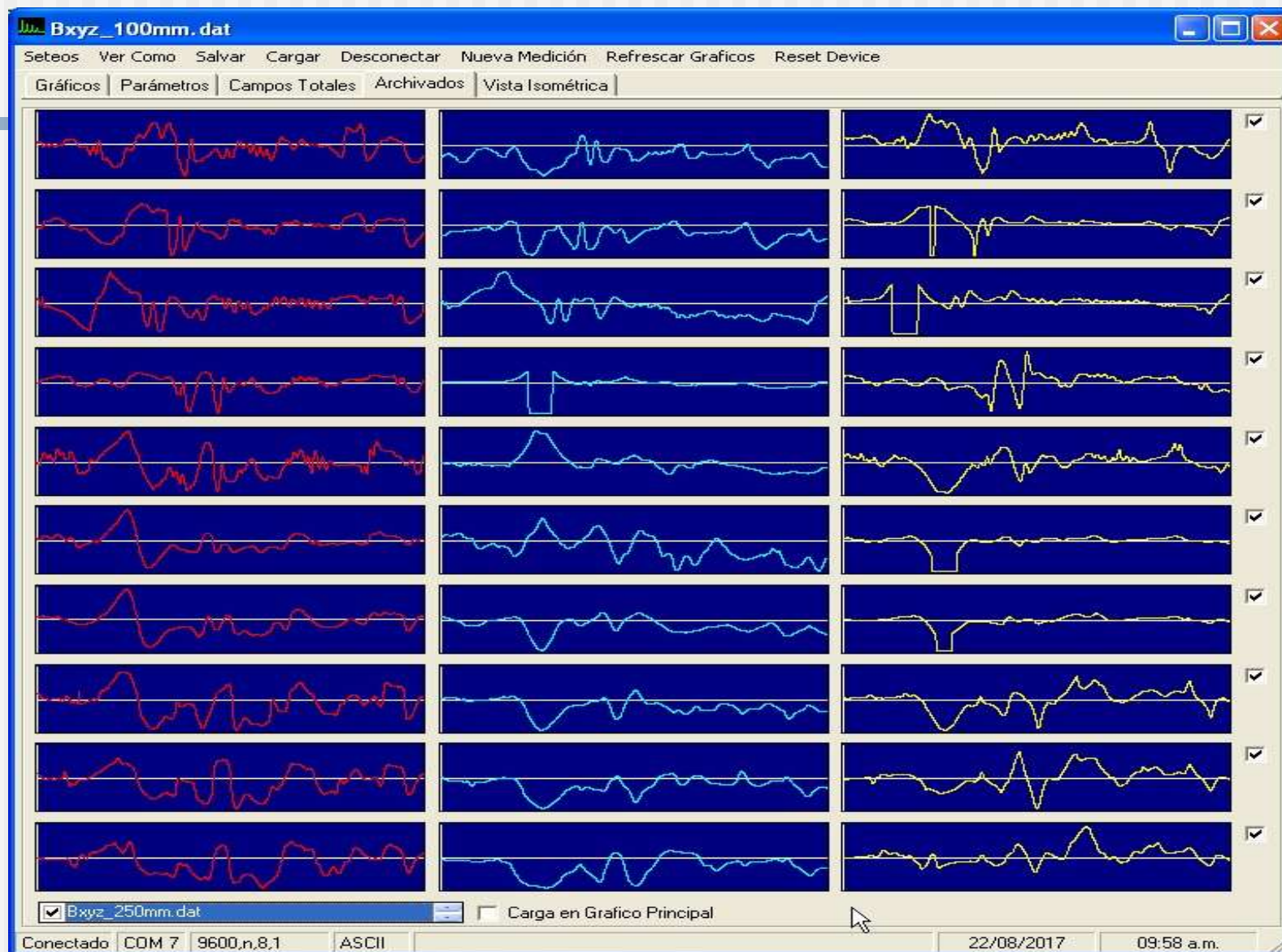
b-Lista con campo total B

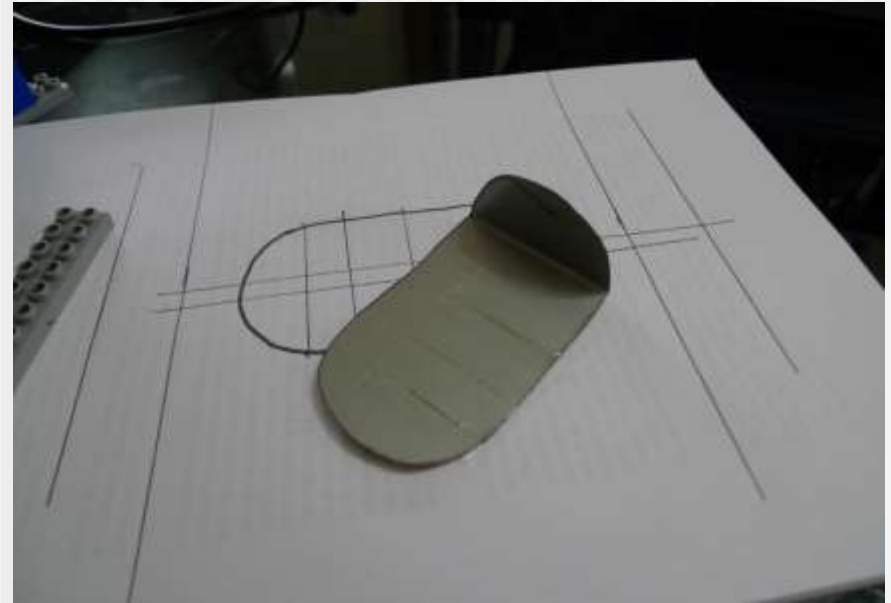
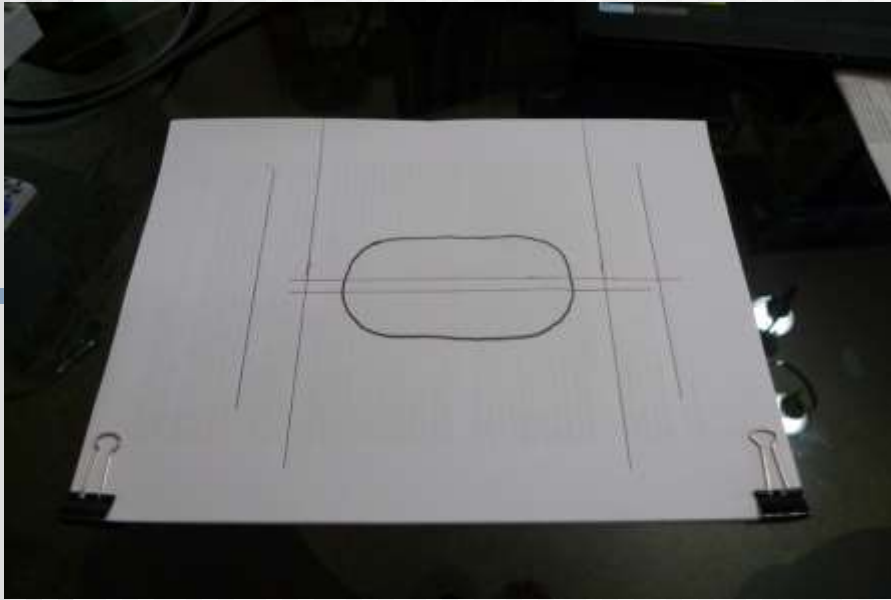
Campo Bx	Campo By	Campo Bz	Campo Btotal
0 0.0 06.91	0 0.0 35.63	0 0.0 42.96	0 0.0 06.55 -35.63 42.96
1 0.2 06.91	1 0.2 35.27	1 0.2 42.96	1 0.2 06.91 -35.27 42.96
2 0.4 06.91	2 0.4 35.27	2 0.4 42.96	2 0.4 06.91 -35.27 42.96
3 0.6 06.91	3 0.6 35.27	3 0.6 42.96	3 0.6 06.91 -35.27 42.96
4 0.8 06.91	4 0.8 35.27	4 0.8 42.96	4 0.8 06.91 -35.27 42.96
5 1.0 06.91	5 1.0 35.27	5 1.0 42.96	5 1.0 06.91 -35.27 42.96
6 1.2 06.91	6 1.2 35.27	6 1.2 42.96	6 1.2 06.91 -35.27 42.96
7 1.4 06.91	7 1.4 35.27	7 1.4 42.96	7 1.4 06.91 -35.27 42.96
8 1.6 06.91	8 1.6 35.27	8 1.6 42.96	8 1.6 06.91 -35.27 42.96
9 1.8 06.91	9 1.8 35.27	9 1.8 42.96	9 1.8 06.91 -35.27 42.96
10 2.0 06.91	10 2.0 35.27	10 2.0 42.96	10 2.0 06.91 -35.27 42.96
11 2.2 07.27	11 2.2 35.27	11 2.2 42.96	11 2.2 07.27 -35.27 42.96
12 2.4 07.27	12 2.4 35.12	12 2.4 42.96	12 2.4 07.27 -35.12 42.96
13 2.6 07.27	13 2.6 34.96	13 2.6 42.96	13 2.6 07.27 -34.96 42.96
14 2.8 07.27	14 2.8 34.91	14 2.8 42.96	14 2.8 07.27 -34.91 42.96
15 2.9 07.27	15 2.9 34.81	15 2.9 42.96	15 2.9 07.27 -34.81 42.96
16 3.1 07.27	16 3.1 34.81	16 3.1 42.96	16 3.1 07.27 -34.81 42.96
17 3.3 07.27	17 3.3 34.69	17 3.3 42.96	17 3.3 07.27 -34.69 42.96
18 3.5 07.27	18 3.5 34.57	18 3.5 42.96	18 3.5 07.27 -34.57 42.96
19 3.7 07.27	19 3.7 34.45	19 3.7 42.96	19 3.7 07.27 -34.45 42.96
20 3.9 07.27	20 3.9 34.45	20 3.9 42.96	20 3.9 07.27 -34.45 42.96
21 4.1 07.27	21 4.1 34.45	21 4.1 42.96	21 4.1 07.27 -34.45 42.96
22 4.3 07.27	22 4.3 34.45	22 4.3 42.96	22 4.3 07.27 -34.45 42.96
23 4.5 07.27	23 4.5 34.27	23 4.5 42.96	23 4.5 07.27 -34.27 42.96
24 4.7 07.27	24 4.7 34.09	24 4.7 42.96	24 4.7 07.27 -34.09 42.96
25 4.9 07.27	25 4.9 33.90	25 4.9 42.96	25 4.9 07.27 -33.90 42.96
26 5.1 07.27	26 5.1 33.72	26 5.1 42.96	26 5.1 07.27 -33.72 42.96
27 5.3 07.27	27 5.3 33.54	27 5.3 42.96	27 5.3 07.27 -33.54 42.96
28 5.5 07.27	28 5.5 33.42	28 5.5 42.96	28 5.5 07.27 -33.42 42.96
29 5.7 07.27	29 5.7 33.30	29 5.7 42.96	29 5.7 07.27 -33.30 42.96
30 5.9 07.27	30 5.9 33.18	30 5.9 42.96	30 5.9 07.27 -33.18 42.96
31 6.1 07.27	31 6.1 33.05	31 6.1 42.96	31 6.1 07.27 -33.05 42.96
32 6.3 07.27	32 6.3 32.93	32 6.3 42.96	32 6.3 07.27 -32.93 42.96
33 6.5 07.27	33 6.5 32.81	33 6.5 42.96	33 6.5 07.27 -32.81 42.96
34 6.7 07.27	34 6.7 32.69	34 6.7 42.96	34 6.7 07.27 -32.69 42.96
35 6.9 07.27	35 6.9 32.57	35 6.9 42.96	35 6.9 07.27 -32.57 42.96
36 7.1 07.27	36 7.1 32.45	36 7.1 42.96	36 7.1 07.27 -32.45 42.96
37 7.3 07.27	37 7.3 32.33	37 7.3 42.96	37 7.3 07.27 -32.33 42.96
38 7.5 07.27	38 7.5 32.21	38 7.5 42.96	38 7.5 07.27 -32.21 42.96
39 7.7 07.27	39 7.7 32.09	39 7.7 42.96	39 7.7 07.27 -32.09 42.96
40 7.9 07.27	40 7.9 31.97	40 7.9 42.96	40 7.9 07.27 -31.97 42.96
41 8.1 07.27	41 8.1 31.85	41 8.1 42.96	41 8.1 07.27 -31.85 42.96
42 8.3 07.27	42 8.3 31.73	42 8.3 42.96	42 8.3 07.27 -31.73 42.96
43 8.5 07.27	43 8.5 31.61	43 8.5 42.96	43 8.5 07.27 -31.61 42.96
44 8.7 07.27	44 8.7 31.49	44 8.7 42.96	44 8.7 07.27 -31.49 42.96
45 8.9 07.27	45 8.9 31.37	45 8.9 42.96	45 8.9 07.27 -31.37 42.96

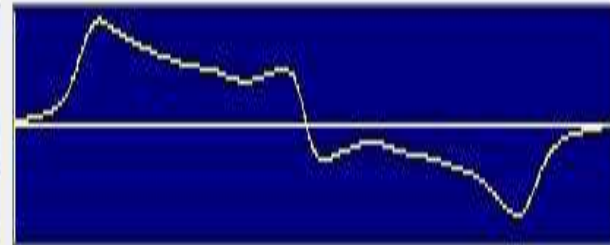
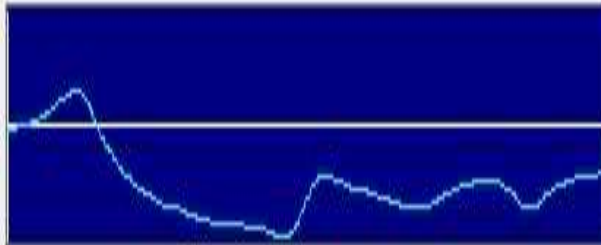
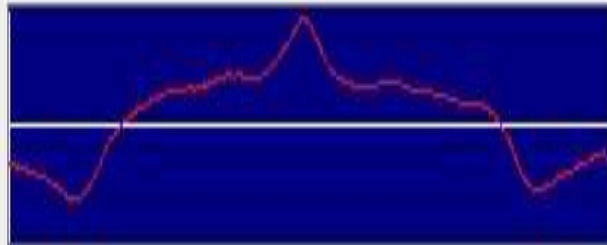
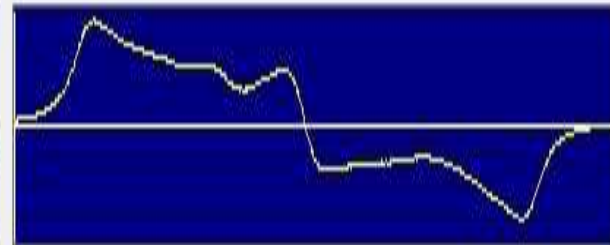
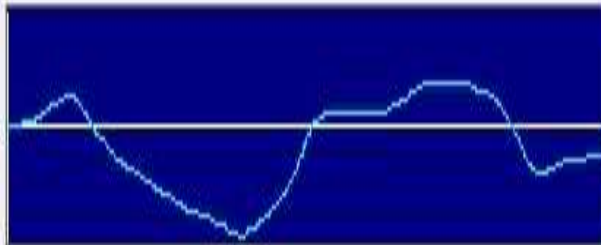
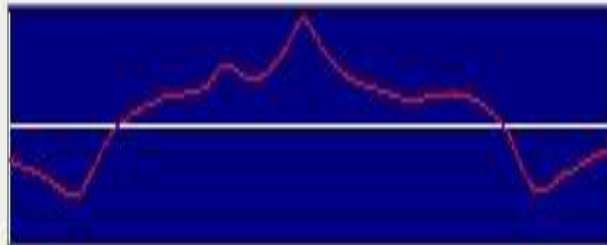
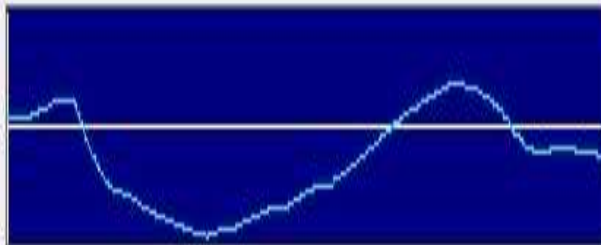
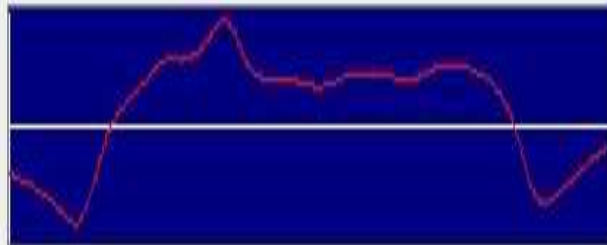
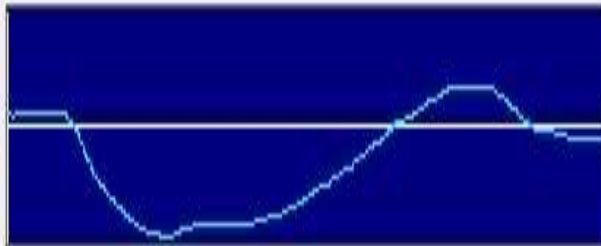
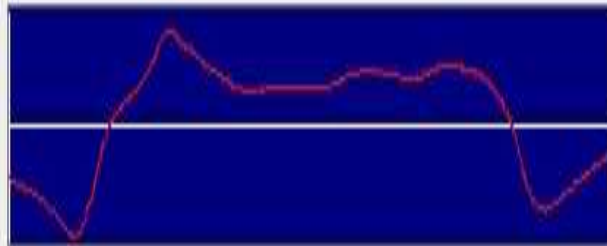
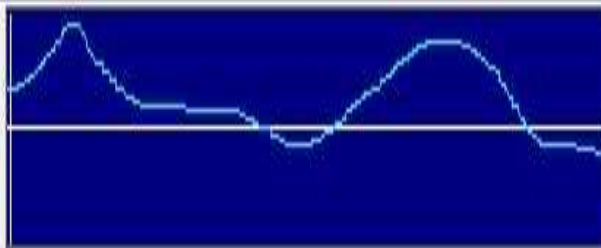
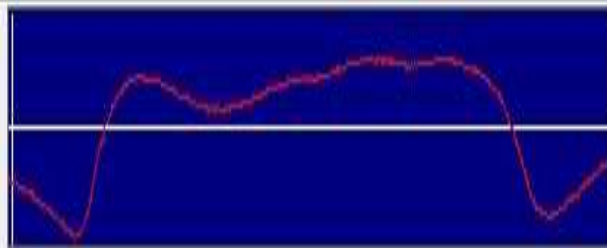
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Panel de Archivos

Permite visualizar sucesivos escaneos y comparar







Conclusiones:

Para continuar avanzando deberemos:

0.-Disponer de chapas vírgenes donde los campos B superficiales no se hayan visto afectados

1.-Caracterizar el ancho y profundidad de la zona comprometida de la soldadura

2.-Definir exactamente los límites de la zona comprometida de la soldadura que no se observa a simple vista

3.-Conocer con exactitud la metalografía de la chapa

4.-Efectuar mediciones en condiciones de umbral de los campos en Y y Z

5.-Medir otras chapas con zonas similares a fin de poder comparar resultados