

CONTROL AVANZADO DE POTENCIA

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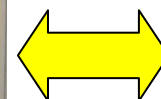
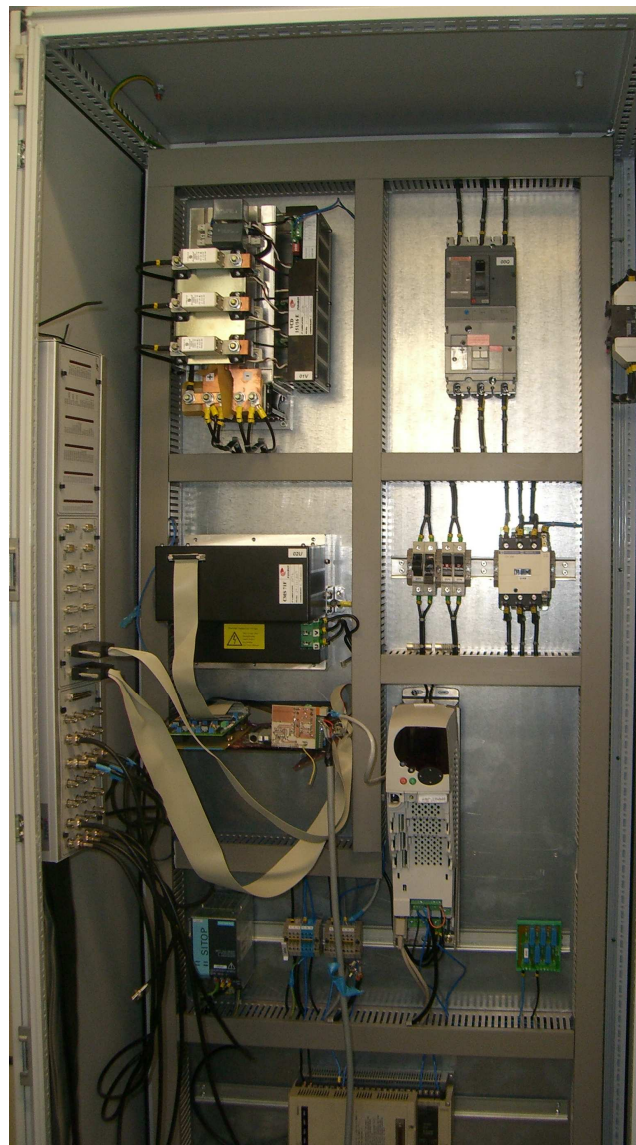
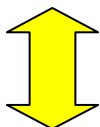
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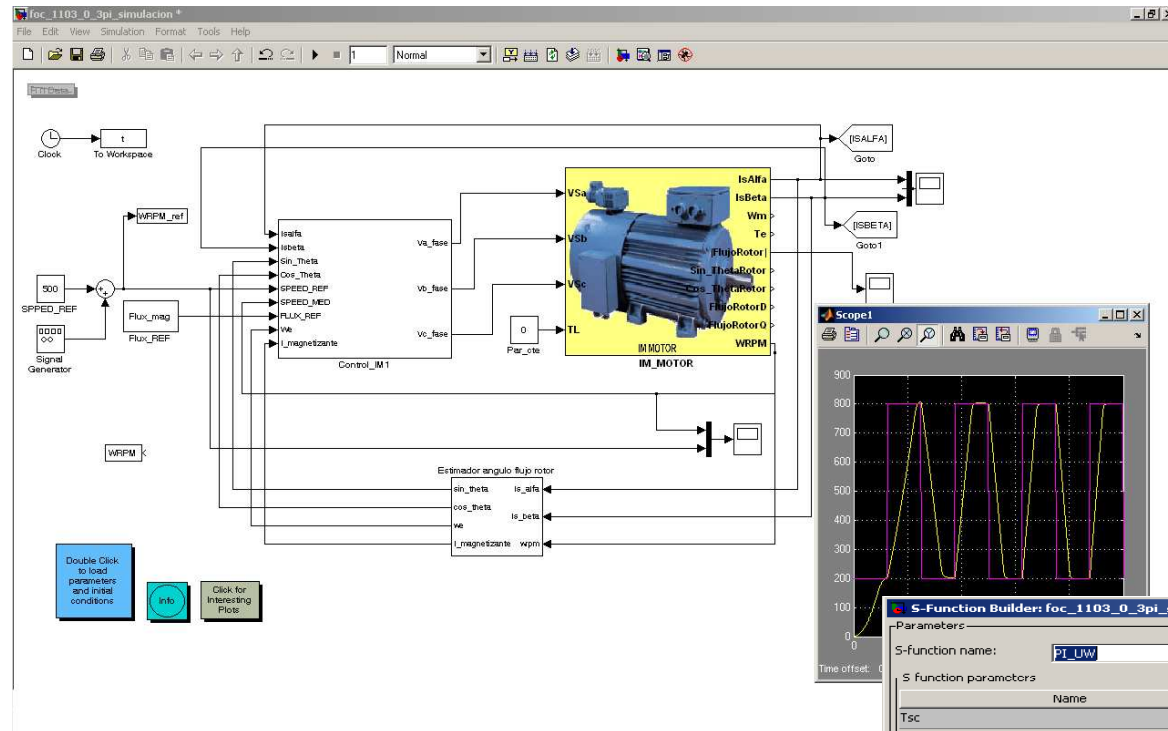
ERMUA 2009

INTRODUCCIÓN

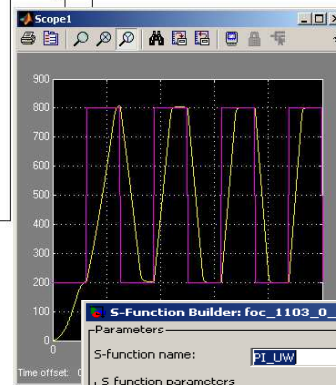
- Composición plataforma de trabajo
- Control Vectorial Motor de Inducción
- Control DTC del Motor de Inducción
- Control Sensorless del Motor de Inducción
- Comissioning (Obtención de parámetros del motor)
- Devolución de energía a la red eléctrica
- Desarrollo de hardware industrial para control de potencia
- Fuentes de alimentación conmutadas
- Medidas de ECM (Compatibilidad Electromagnética)

PLATAFORMA DE TRABAJO





Software de desarrollo basado en Matlab/Simulink



S-Function Builder: foc_1103_0_3pi_simulacion/Control_IM1/Control_IM1/PI_ID/S-Function Builder

Parameters

S-function name: **PI_UW** Build

S function parameters

Name	Data type	Value
Tsc	double	Tsc

Port/Parameter

- Input Ports: REF, FDB, KP, KI, OUTMAX, OUTMIN, START
- Output Ports: PI_OUT, I_OUT
- Parameters: Tsc

Initialization | Data Properties | Libraries | Outputs | Continuous Derivatives | Discrete I/O | Build Info

Code description

This section is optional and use to update the discrete states. It is called only if the S-function has one or more discrete states. The states of the S-function are of type double and must be referenced as xD[0], xD[1], etc. respectively. Input ports, output ports and parameters should be referenced using the symbols specified in the Data Properties. These references appear directly in the generated S-function.

```

salida_p = KP[U]*error; /*Componente proporcional*/
xD[2] = KI[0]*error*Tsc[0]; /*Termino integral*/
//salida_i = xD[0] + KI[0]*error*Tsc[0]; /*Termino integral*/

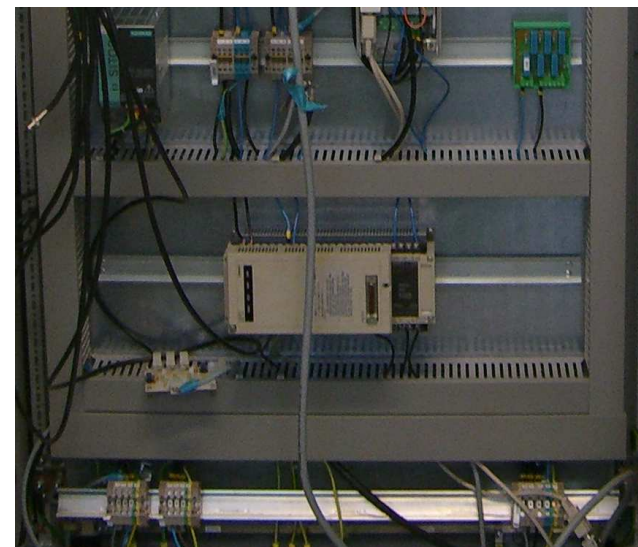
xD[3] = xD[3] + xD[2];

salida_sin_sat = salida_n + xD[3]; /*Salida sin limitacion de saturacion*/

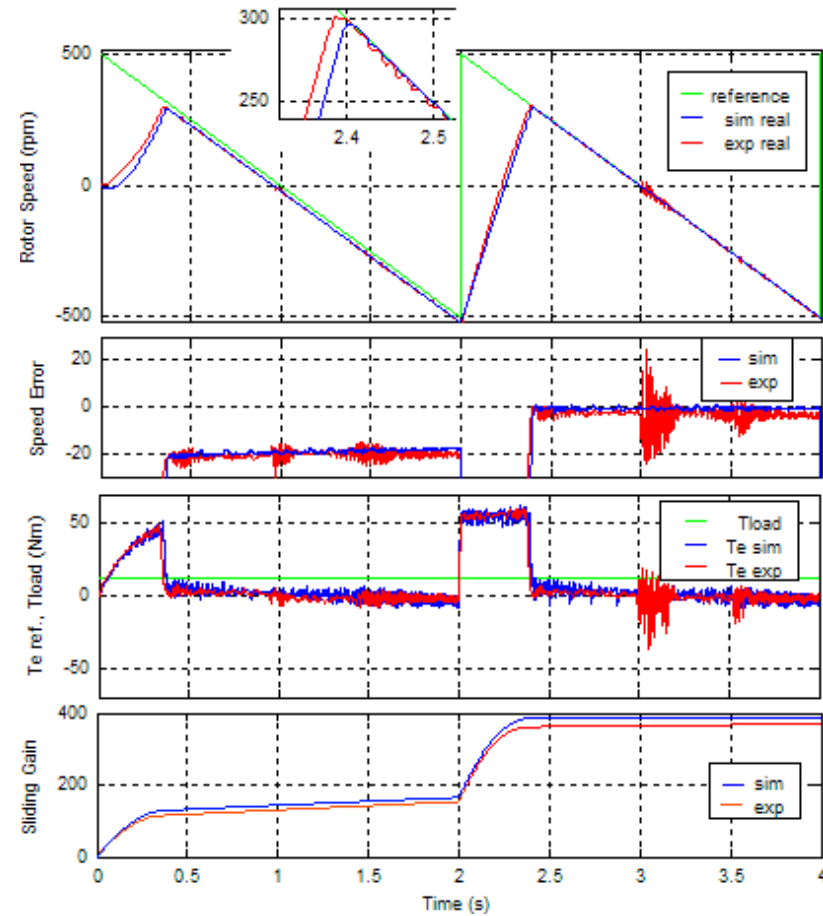
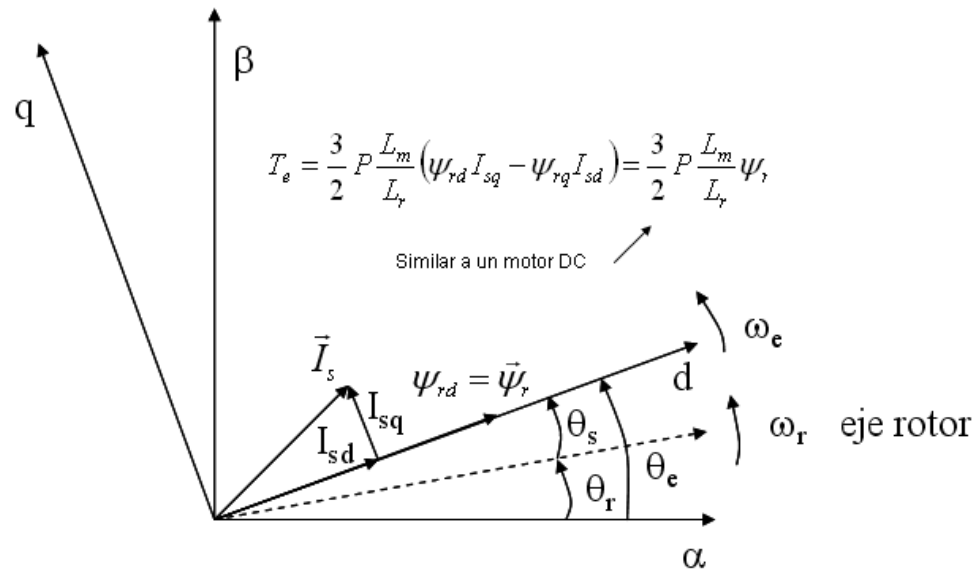
if (salida_sin_sat > OUTMAX[0])
{
    pi_out = OUTMAX[0]; /*xD[1] = Salida del PI*/
    xD[3] = xD[3] - xD[2];
}

else if (salida_sin_sat < OUTMIN[0])
{
    pi_out = OUTMIN[0];
}
    
```

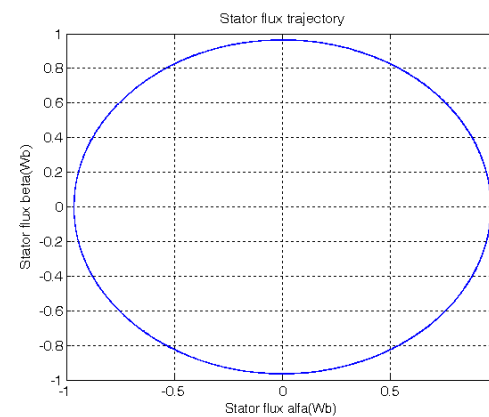
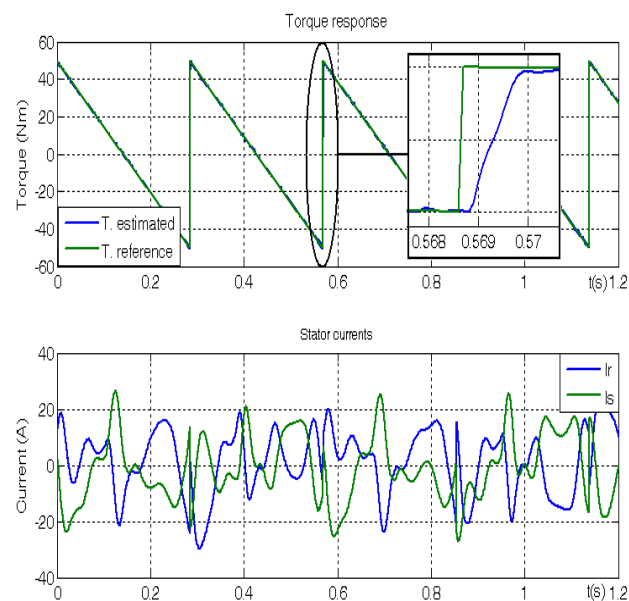
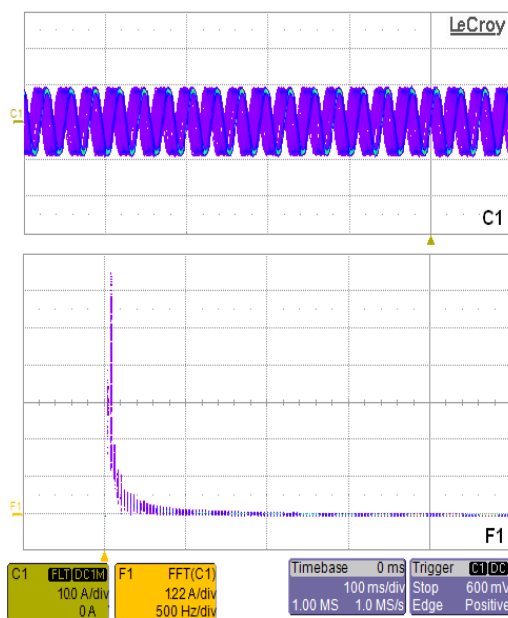
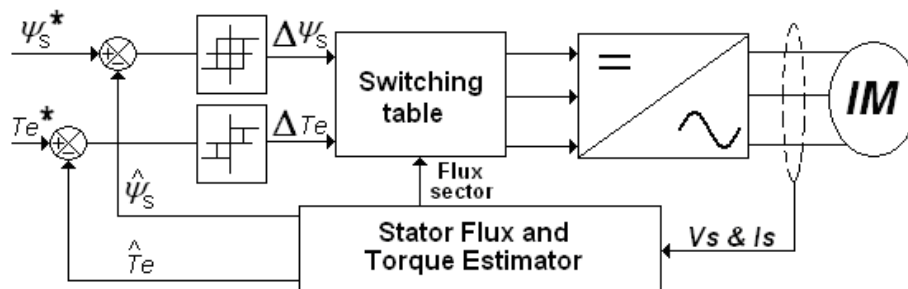
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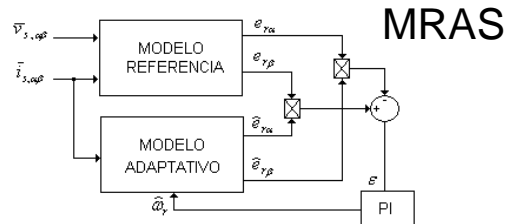
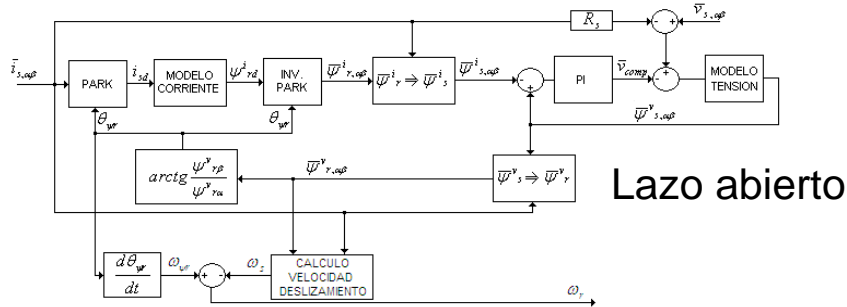
CONTROL DE LA VELOCIDAD DEL MOTOR MEDIANTE LAS TÉCNICAS DE CONTROL VECTORIAL (FOC)



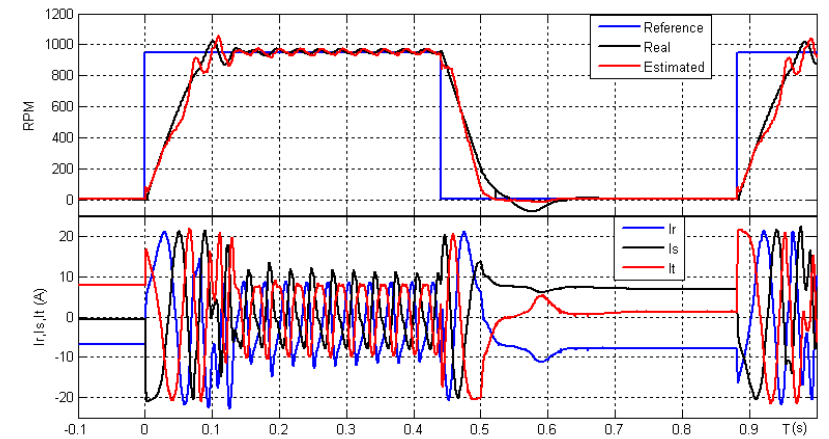
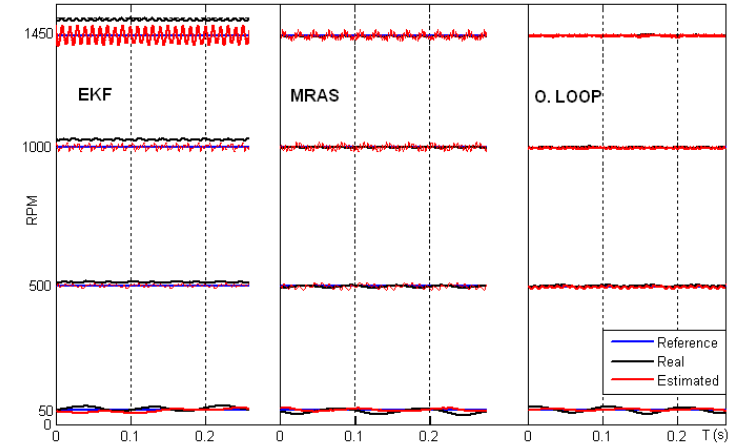
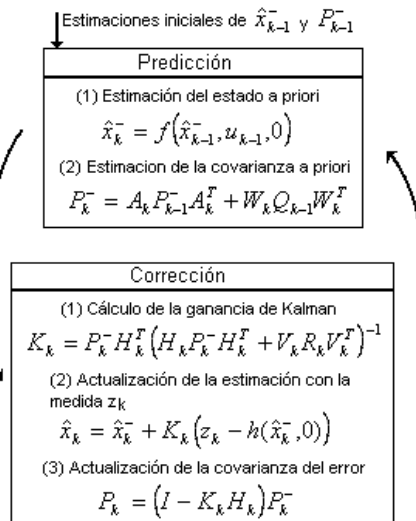
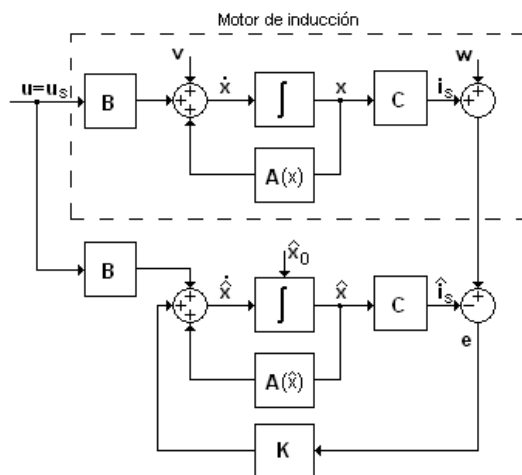
CONTROL DIRECTO DE PAR (DTC)



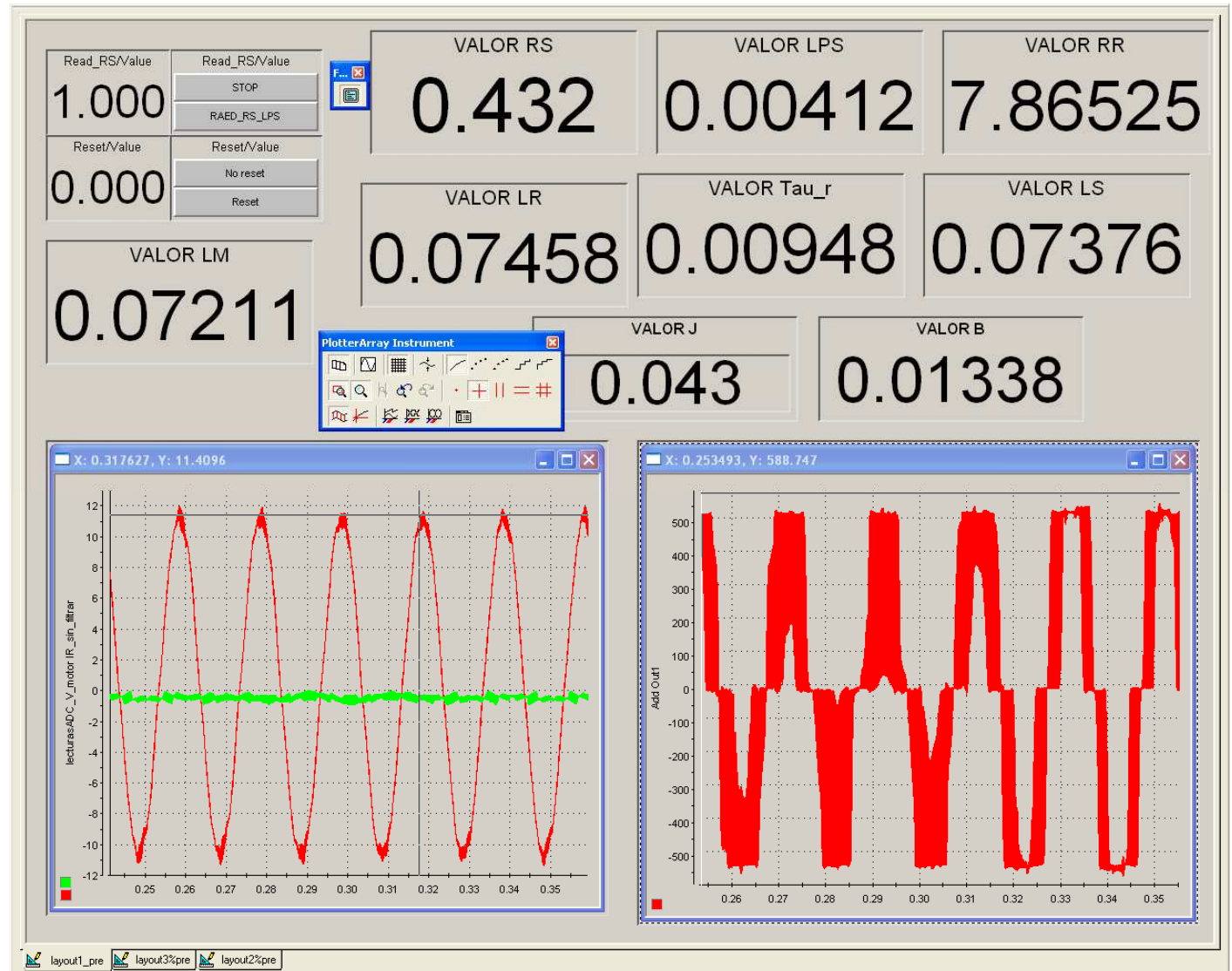
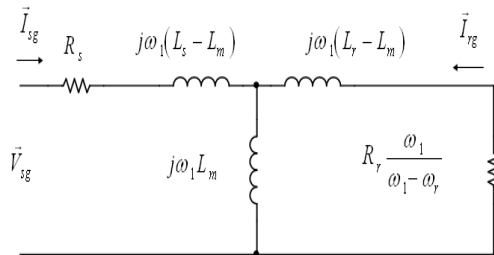
CONTROL DE VELOCIDAD SIN ENCODER (SENSORLESS)



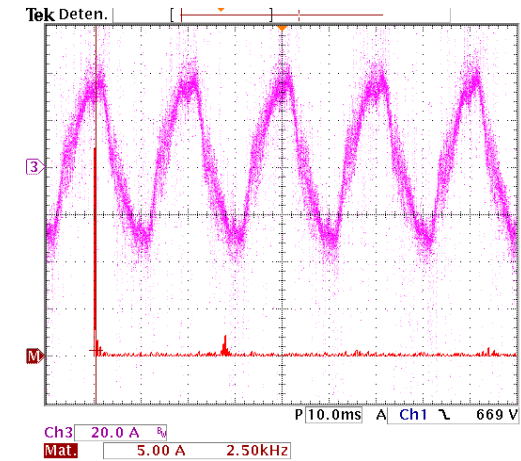
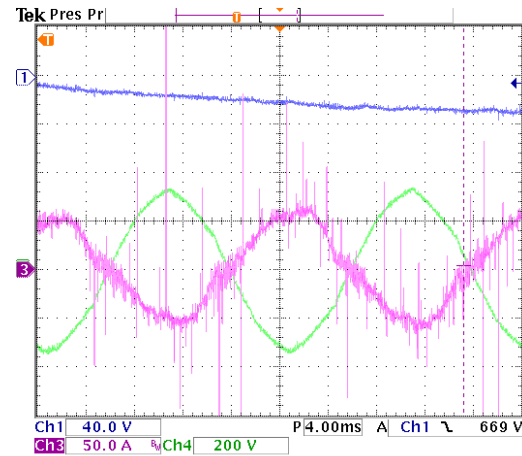
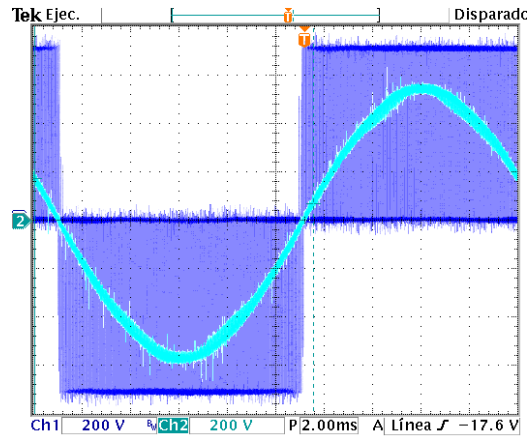
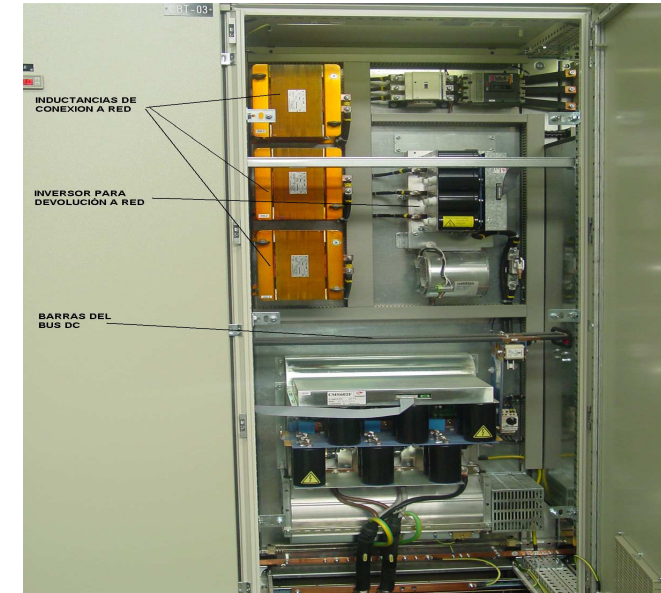
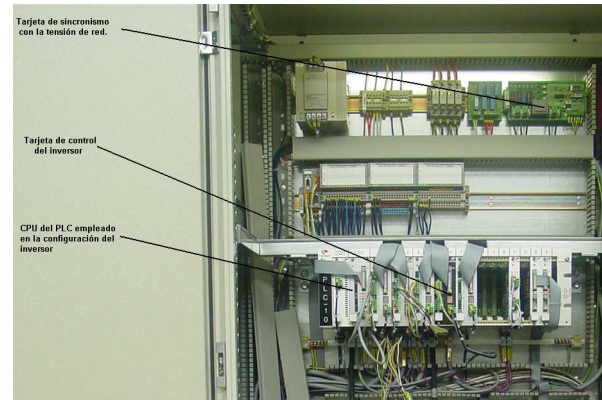
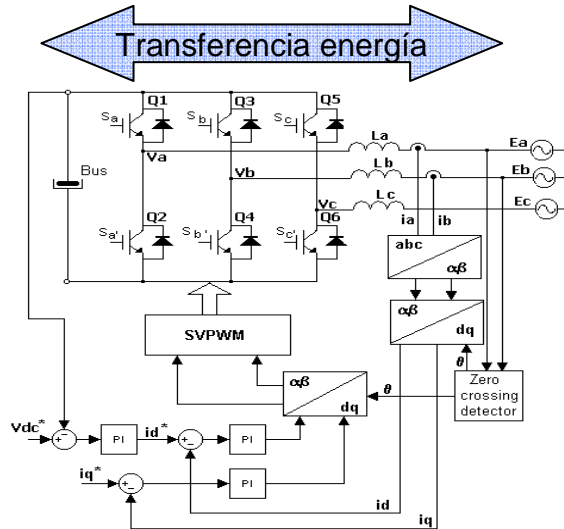
Filtro extendido de Kalman



OBTENCIÓN DE PARÁMETROS DE LOS MOTORES (COMISSIONING)

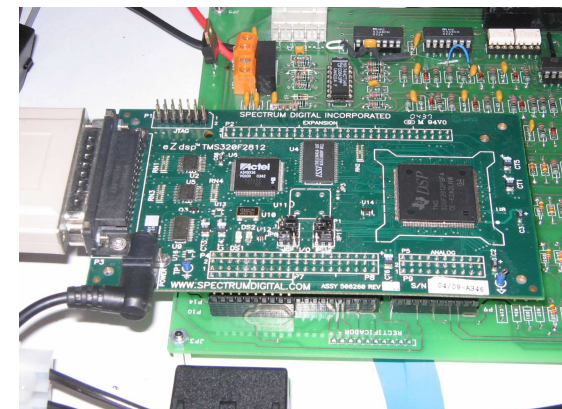
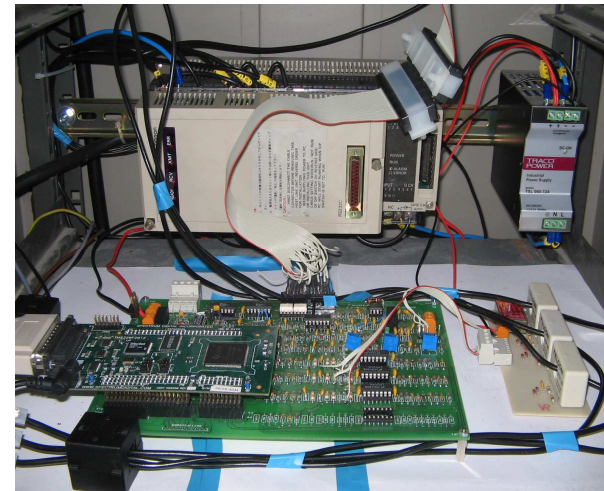
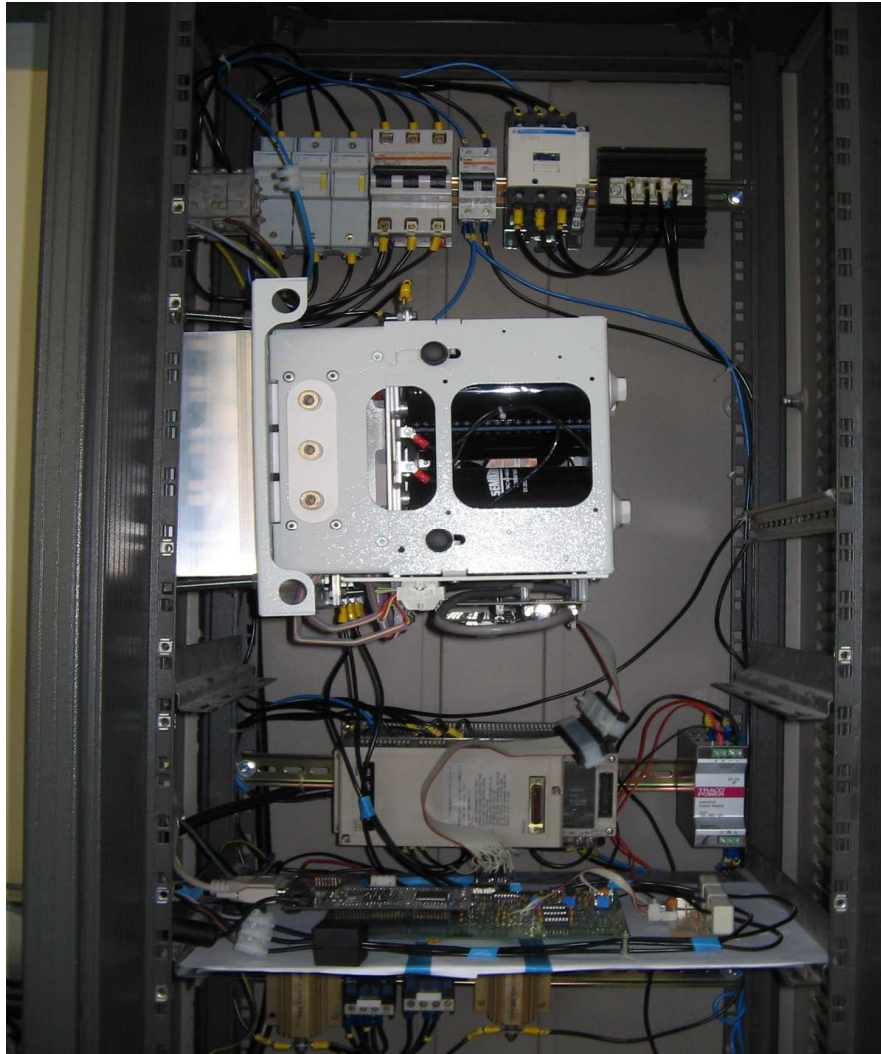


DEVOLUCIÓN A RED DEL EXCEDENTE DE ENERGÍA

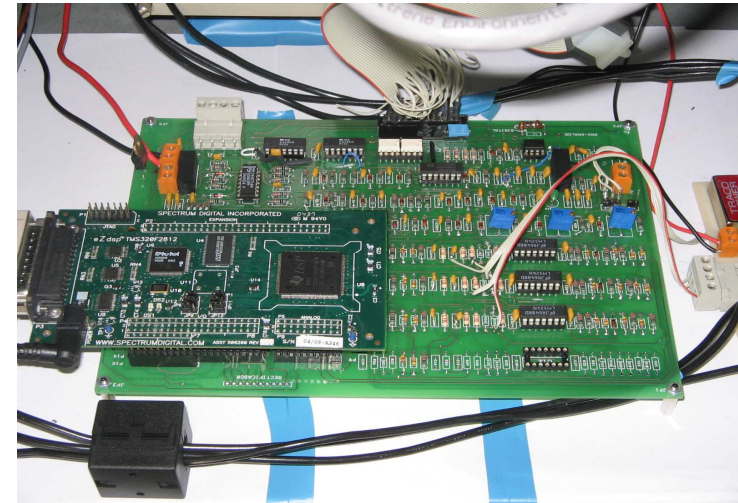
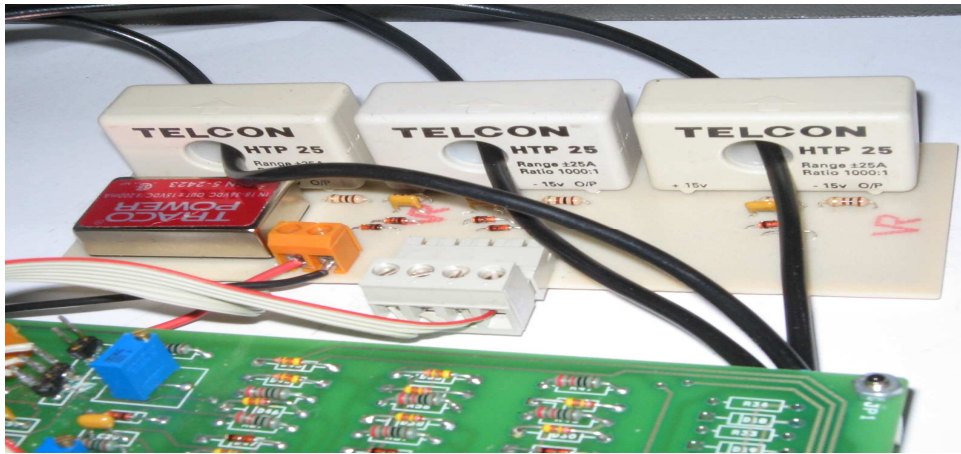


DESARROLLO DE HARDWARE PARA CONTROL DE POTENCIA

Control de potencia con DSP de Texas Instrument TMS2812



DESARROLLO DE HARDWARE PARA CONTROL DE POTENCIA

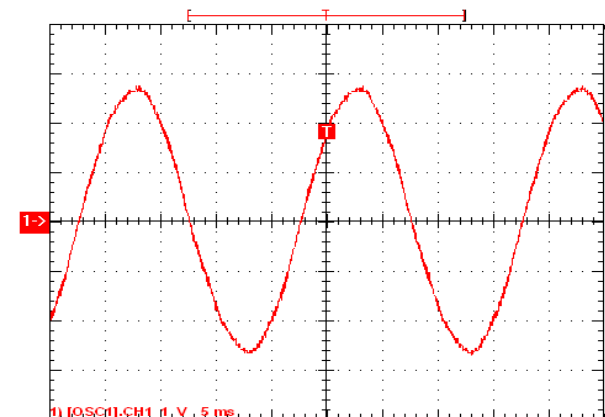
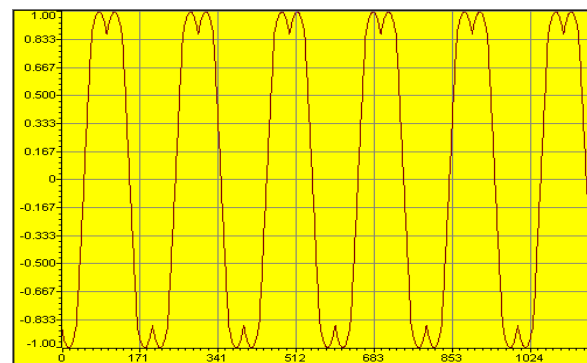
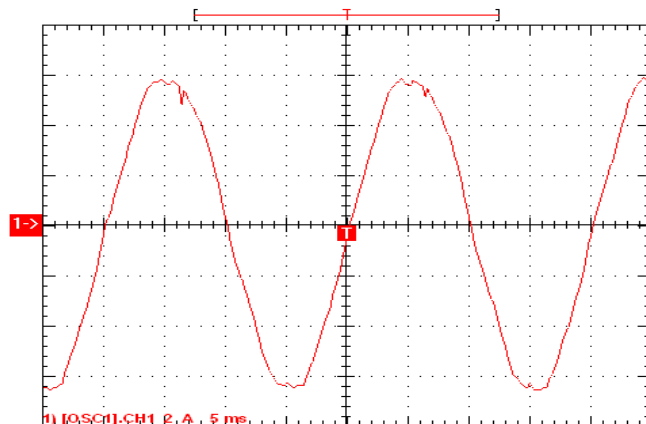
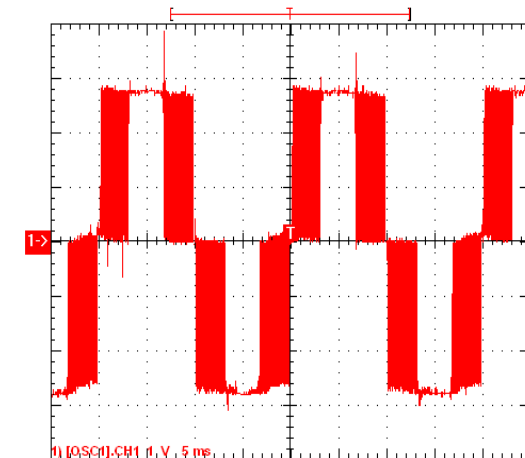
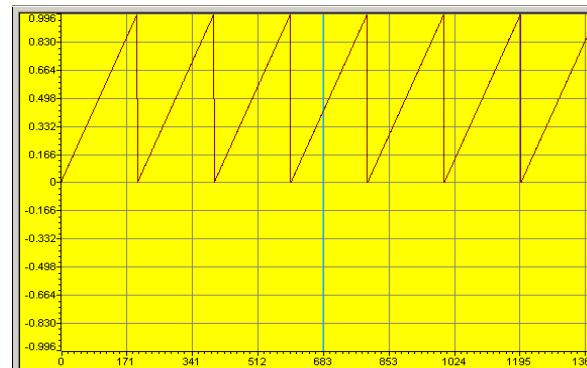
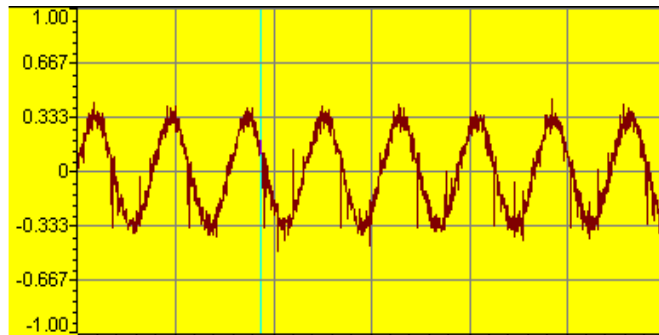


Inversor de Semikron y DSPTMS2812 de Texas Instrument.

DESARROLLO DE HARDWARE PARA CONTROL DE POTENCIA

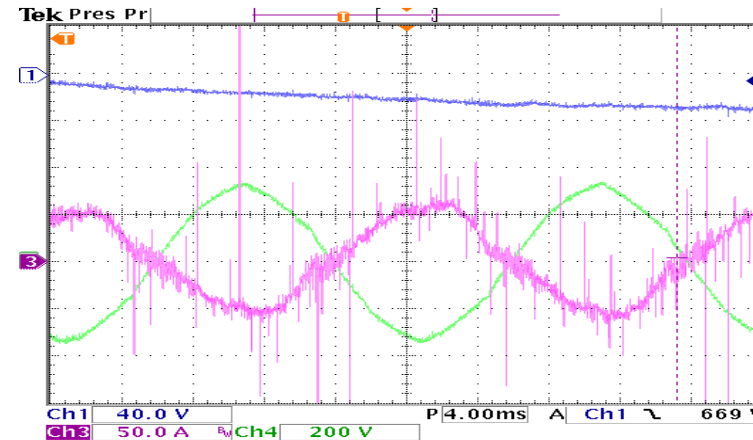
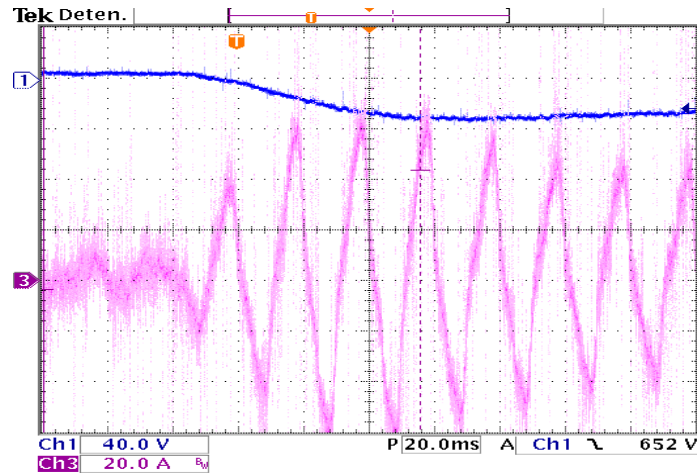
Corriente medida por el DSP
y con osciloscopio en el
control de motor

Modulación, tensión a la salida del inversor y su
componente fundamental en el control del motor



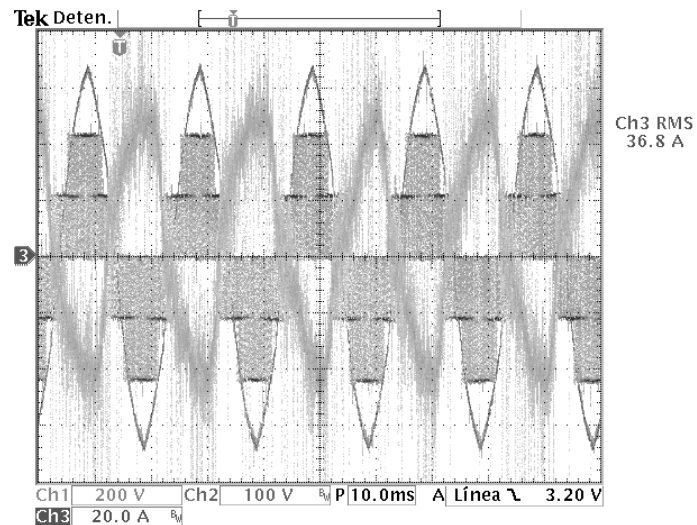
DESARROLLO DE HARDWARE PARA CONTROL DE POTENCIA

Señales en la devolución de energía a la red

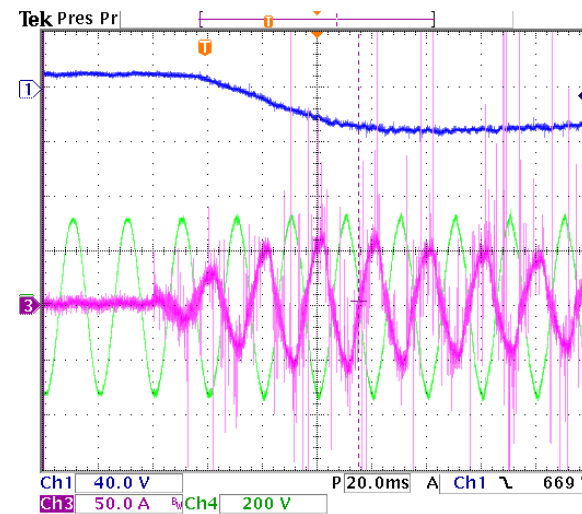


Tensión de Bus y corriente de fase tras un escalón en el BUS

Ampliación de la figura e inclusión de la tensión de fase

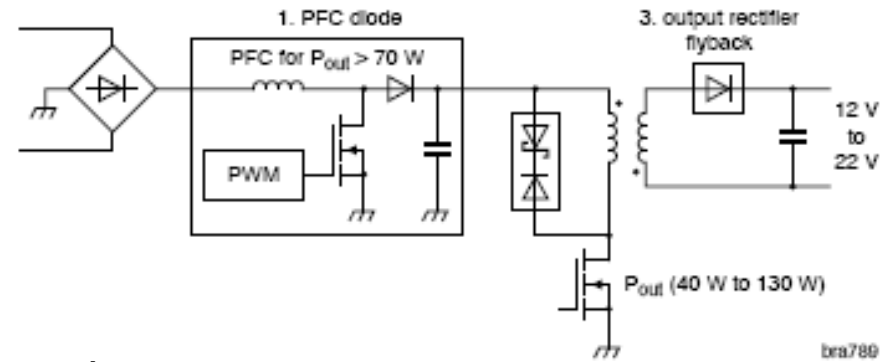
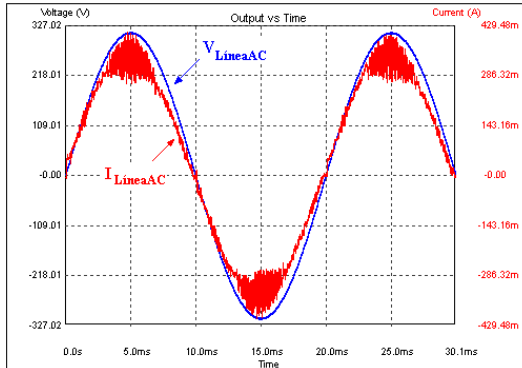


Tensión y corriente en la fase R



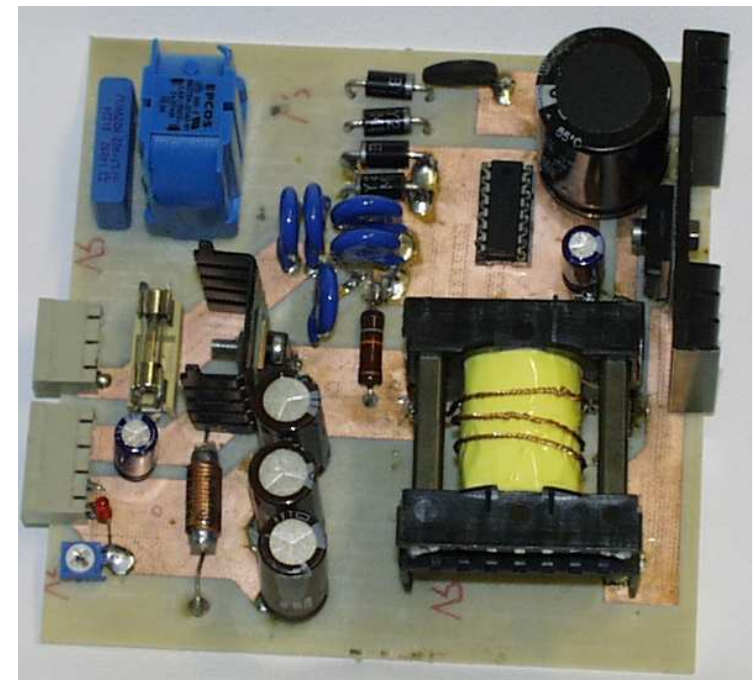
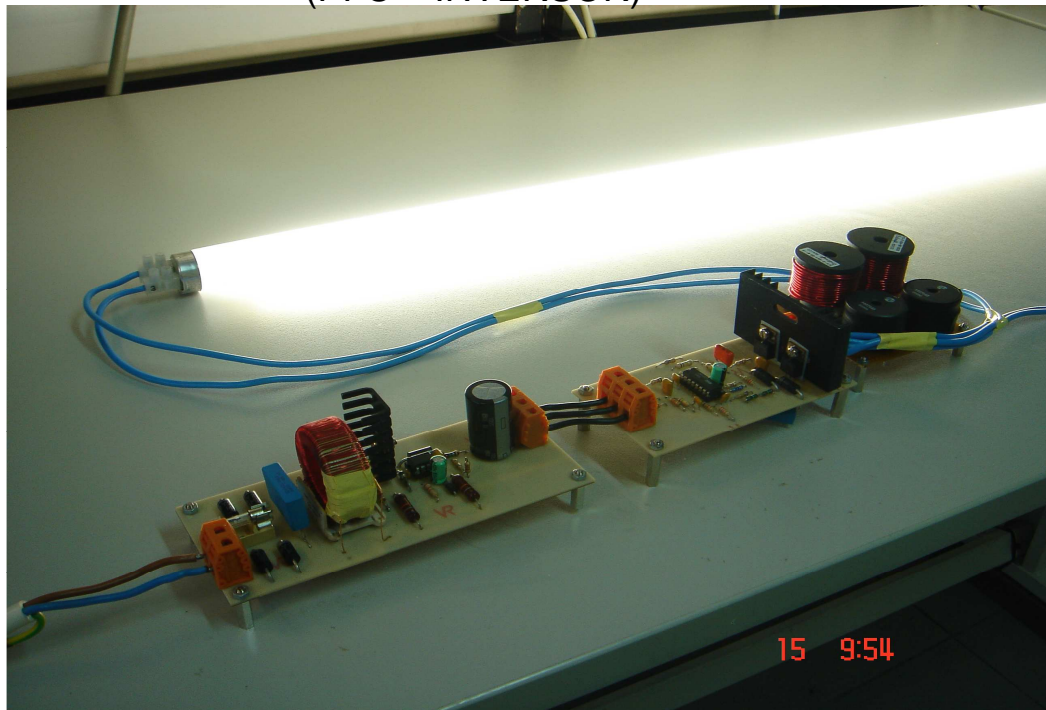
Tensión y corriente en la fase S al aplicar un escalón al Bus dc

FUENTES DE ALIMENTACIÓN CONMUTADAS



BALLASTO ELECTRÓNICO (CONTROL ILUMINACIÓN)
(PFC + INVERSOR)

FUENTE CONMUTADA (FLYBACK)



MEDIDAS DE EMC (COMPATIBILIDAD ELECTROMAGNÉTICA)



Ensayos de emisión e inmunidad a interferencias

