

Faster Time to Market using Scilab/XCOS/X2C for motor control algorithm development

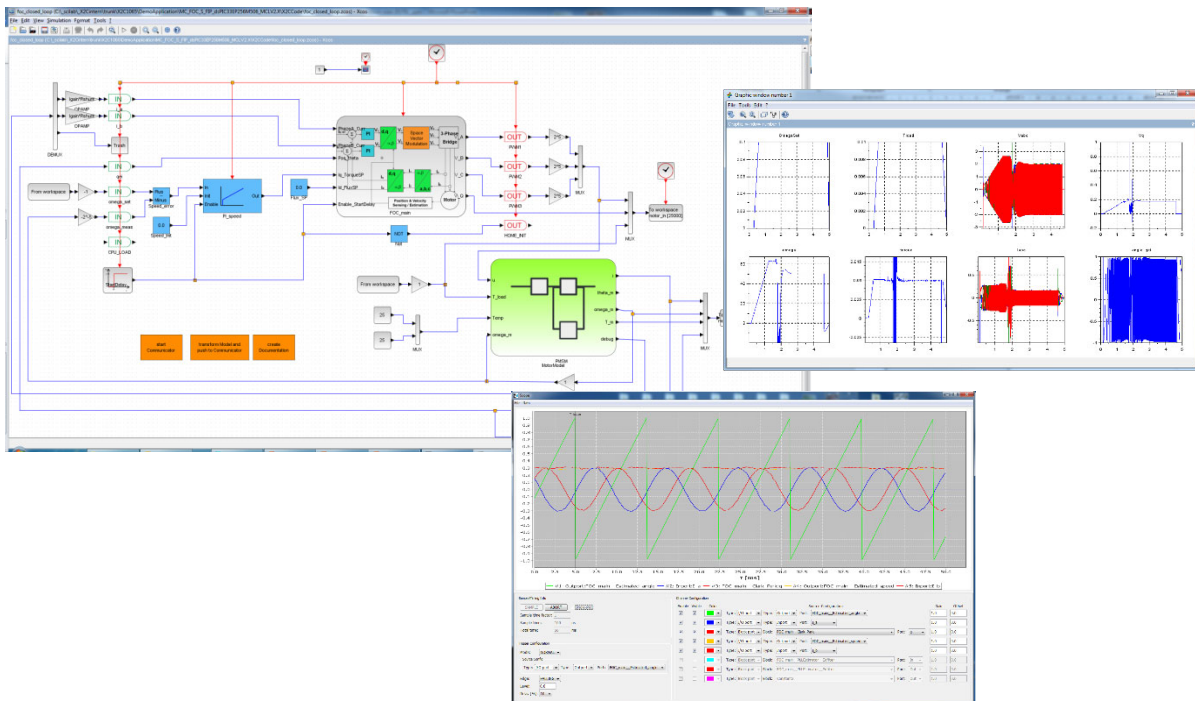
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Rapid Prototyping becomes very popular for faster algorithm development. With a graphical representation of the algorithm and the possibility to simulate complete designs, engineers can help to reduce the time to market. A tight integration with MPLAB-X IDE allows the combination with standard C-coding to easily get mass production code. This solution was used to optimise a sensorless field oriented controlled PMSM motor driven pump efficiency. A model for closed loop simulation was developed using X2C blocks [1][2] for the FOC algorithm based on the existing application note AN1292 [3]. Enhancements to the original version were implemented and verified with simulation. The X2C Communicator was used to generate code of the new algorithm. With the online debugging capabilities and the scope functionality the algorithm was further tuned and optimized to achieve the highest possible efficiency of the pump.



[1] x2c.lcm.at

[2] www.sim2tronic.com - extension to support Microchip MPLAB X IDE and 16/32 Microchip uC

[3] AN1292 Sensorless FOC for a PMSM Motor using a PLL Estimator
<https://www.microchip.com/wwwAppNotes/AppNotes.aspx?appnote=en544825>