



Preparing Students for the Real World

To equip the new generation of engineers for life in industry, universities need to give them more than just theory: Hands-on experience of state-of-the-art development technology is vital. As part of their studies, students at the University of Buenos Aires constructed their own test bench for 3-phase induction motors. Most of the components were funded by partners in industry, with additional support from the university's own development program and endowments. The test bench will also play a key role in the transfer of rapid prototyping technology between the university and industry.

Prof. Hernán Tacca's students use the test bench extensively for their studies and for orders from industry. From left to right: Prof. Hernán Tacca, Pablo Witis, Yaki Nachajón and Gustavo Bongiovanni.



Acknowledgements

The success of this work has been possible thanks to the research grants obtained for projects I022 and I003 from the UBACYT Scientific Program of Buenos Aires University and the YPF Foundation donations.

Two of our students in the faculty of engineering required an induction motor test bench for developing control functions as part of their work on their degree theses. They quickly set up the first version of the test bench, which other students developed further in subsequent semesters. The work of Marcelo Bruno, one of these students, was selected to start the joint graduation program agreed between the University of Buenos Aires and the University of Rome "La Sapienza". The test bench is now fitted with modern control technology equipment and has become an indispensable teaching aid. Moreover, it is an important link between the university and industry, and has proved invaluable in industry-related development projects and commissioned work. A joint project between the Argentine company Motortech S.A. and the faculty of engineering at the University of Buenos Aires is currently underway.

Uses of the Test Bench

The test bench for 3-phase induction motors has a wide range of uses: For project-related research, in work on degree & doctoral theses and in cooperation with industry. Our main aim in using the test bench is to ensure fast transfer from theory to practice, i.e., when students have learned something, they can put it into practice at once. The students

develop new control functions and can modify them continuously. They see the results of their work immediately without having to make time-consuming or expensive hardware modifications. This way, students acquire comprehensive knowledge and can familiarize themselves with the latest technology and developments in the field of embedded systems. The AADECA (Argentine Association of Automatic Control) awarded this work the first prize in the development contest for graduation projects carried out by undergraduate students in 2006.

A Worthwhile Investment

From the beginning, we opted to use components from dSPACE. We began with the DS1102 Controller Board. After positive experience with

the ControlDesk experiment software to create human-machine interfaces and control real-time simulations.

Why We Chose dSPACE

Advised by Prof. Carlos Godfrid, Professor of Control Engineering at

"We chose dSPACE because we want to prepare our students optimally for the standards used in industry."

Prof. Hernán E. Tacca, University of Buenos Aires

this, we continued with its successor, the DS1103 PPC Controller Board. Real-Time Interface lets us program the DS1103 straight from the block diagram environment in Simulink. This means that new control functions can be quickly implemented and evaluated on the board. We use

the University of Buenos Aires with many years of experience in using dSPACE tools, we chose these tools because we want to prepare our students optimally for the standards used in industry. The user-friendly handling of dSPACE tools was another factor, since we can easily connect any hardware to the test bench in plug & play mode to develop and test new control functions. The post-sales support we are given is also first-class. Funding from industry helps us purchase these reliable, high-performance tools. ■

The torque gauge helps the students check the efficiency of the algorithms developed.



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