

## With New Tektronix Equipment, Taiwan's Chung Hua University is Providing the "Best Possible Engineering Education"



### Solution Summary

Challenge	Upgrade Chung Hua University's electronic engineering research and teaching capabilities through the enhancement of four laboratories.
Solution	The Integrated Teaching Laboratory (ITL) project, which features modernized laboratories containing Tektronix AFG3000 arbitrary/function generators and other state of the art test and measurement equipment.
Benefits	With exceptional performance, a small footprint, intuitive interface and a large display, the AFG3000 enables university faculty to more effectively carry out teaching programs and experiments.

The Engineering College of Chung Hua University in Taiwan recently faced both opportunity and change. With a growing industry need for highly skilled engineers, the university realized that upgrading its electronic engineering research and teaching capabilities would deliver a twofold gain. First, an advanced technological environment would better prepare its students for the challenges they will face beyond academia. And second, it would bolster the school's standing in the engineering community and improve recruiting efforts.

To take advantage of the opportunity, the university initiated the Integrated Teaching Laboratory (ITL) project, which included the enhancement of four laboratories. The laboratories are used for engineering courses focused on electronics, microprocessors, very large-scale integration (VLSI) architectures and field programmable gate array (FPGAs) chips. As part of the ITL project, the laboratories now serve as the primary platform to deliver advanced instruction to all students, and are also utilized extensively for student research projects.

Key components of the upgraded laboratories are state of the art test and measurement equipment, including Tektronix AFG3000 Series arbitrary/function generators.

"The AFG3000 arbitrary/function generators are well suited to the needs of Chung Hua University," said James Alderton, Senior Marketing Director for Tektronix in the Asia Pacific region. "We designed the AFG3000 Series to meet the demanding requirements of today's electronic engineers. These new Tektronix signal source instruments enable Chung Hua University students and faculty members to significantly increase their productivity and expand their capacity for innovation."

**“By equipping our labs with Tektronix AFG3000 arbitrary/function generators, we are providing our students with the best possible engineering education.”**

-Professor J.H. Tarng, Dean of the Engineering College at Chung Hua University

Professor J.H. Tarng, Dean of the Engineering College at Chung Hua University, echoed this sentiment. “By equipping our laboratories with Tektronix AFG3000 arbitrary/function generators, we are providing our students with the best possible engineering education,” he said. With fast performance, a small footprint, an intuitive interface and the largest display available on the market, the AFG3000 enables the university’s faculty to more effectively carry out teaching programs and experiments.

“The AFG3021 user interface lets us easily see different types of parameters on its large display,” explained Professor Tarng. “This enables professors and students to see both detailed parametric values as well as gain an overall graphical appreciation for the waveform shape before connecting the AFG3000 to a device under test or to an oscilloscope. The new instrumentation and teaching approach has provided a significant improvement in classroom instruction and learning.”

### **Integrating Theory with Practical Application**

According to Professor Tarng, the new test and measurement equipment has enabled Chung Hua University to move beyond traditional teaching methods. Teachers at the Engineering College can now quickly and effectively integrate the theoretical curriculum with practical verification of electronic engineering topics and fields of study.

“After the explanation of theoretical curriculum, teachers and students can now immediately apply and verify the material using the AFG3000,” said Professor Tarng. “For example, when teaching the intricacies of small signal amplification, the AFG3000 is employed to produce a small signal of 10 mV to send to the amplifier. The students then use a Tektronix digital real-time oscilloscope to observe enlarged waveforms from the output terminal of the amplifier.”

Professor Tarng indicates this pioneering work—which delivers immediate, tangible demonstration and learning—deepens students’ understanding of electronic circuitry operation and significantly increases their interest in the subject matter.

The usability and functionality of the instruments are also improving the productivity of the Engineering College’s faculty. Professors can now record waveforms in advance of classroom or laboratory instruction and store them to a memory stick using the AFG3000’s USB ports. This allows faculty and students to focus less on instrument setup and waveform generation, which can waste valuable classroom and laboratory time, and more on the specific application of curriculum and experimentation.

Chung Hua University expects its new laboratories, featuring the AFG3000 and other Tektronix instruments, will help strengthen and develop the technical skills of its students. With usability that allows students and faculty to spend more time conducting research and less time manipulating the test equipment, combined with exceptional performance, functionality and interface, the instruments have successfully enhanced the school’s electronic engineering research and teaching capabilities.