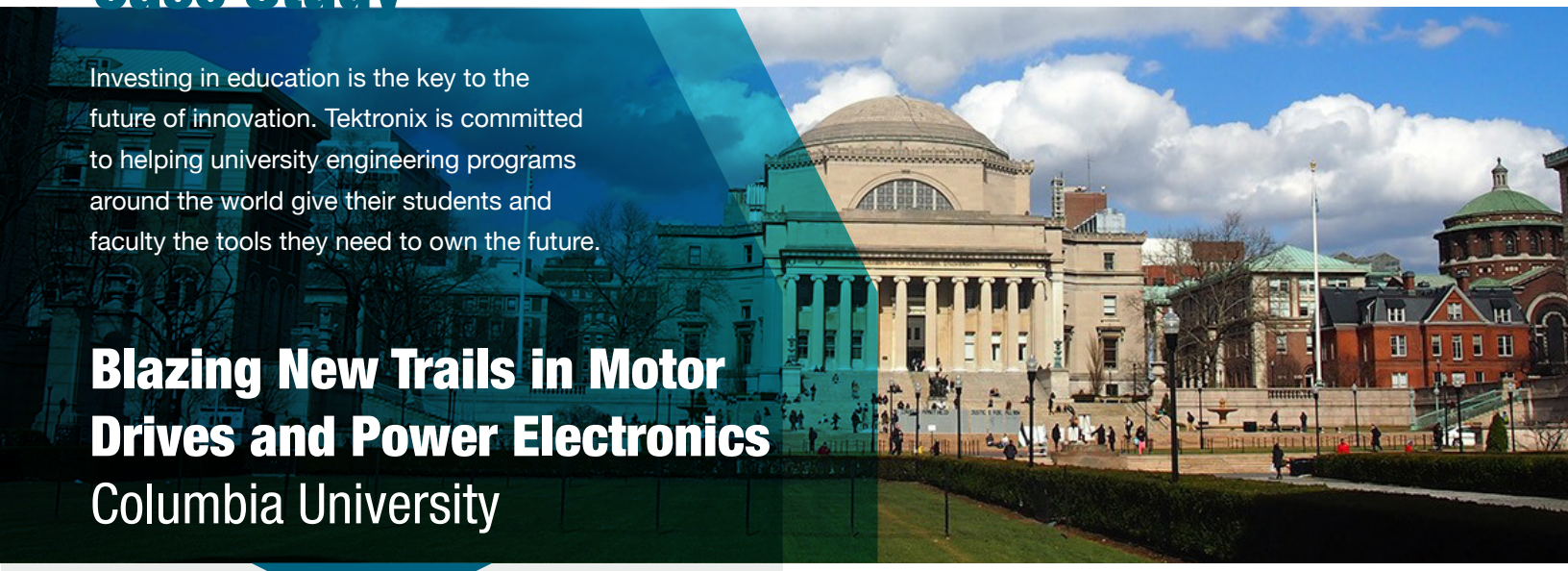
Tektronix®

Case Study



Investing in education is the key to the future of innovation. Tektronix is committed to helping university engineering programs around the world give their students and faculty the tools they need to own the future.

Blazing New Trails in Motor Drives and Power Electronics

Columbia University

THE CUSTOMER CHALLENGE

The goal of the Motor Drives and Power Electronics Lab (MPlab) at Columbia University's Electrical Engineering program is to develop technologies that lead to higher performance and higher efficiency at a lower cost for electrified transportation and renewable energy.

But with the relevant technologies advancing rapidly in the last decade, they realized that the test and measurement equipment they had was insufficient for the task. They needed a faster oscilloscope capable of advanced waveform analysis, high-bandwidth measurements, three-phase circuit efficiency analysis, and measuring switching waveforms of transistors.

A scope that could measure more than four quantities at the same time would also open a range of possibilities in researching multi-phase systems like three-phase motors and three-phase grid interfaces.

THE SOLUTION

Tektronix provided Columbia's MPlab with our 5 Series Mixed Signal Oscilloscope, which included all the features they were looking for.

8 analog channels allow for multi-phase system analysis. Combining the 5 Series with high bandwidth current and voltage probes enables high-frequency signal analysis up to 120 MHz current waveforms as well as switching transient analysis on wide bandgap semiconductors with fast turn on/off characteristics.

And with premier-quality test equipment on-hand, Columbia students using the lab can go dive deeper in their projects and gain experience with tools that they'll use in the real world.

"The 8-channel scope helps me monitor all desired voltages and currents with high-bandwidth."

THOUGHTS FROM THE CUSTOMER

"The MSO58 8 channel oscilloscope has meaningfully expanded our laboratory capabilities. We can now analyze three-phase motor drives and multiphase power electronic systems, as well as characterize individual power transistors and the circuits they go into. This permits us to fully characterize and validate our designs."

– Dr. Matthias Preindl
Professor of Electrical Engineering at Columbia University

PRODUCTS PROVIDED

Hardware	Description	Qty
	**MSO58 8-channel oscilloscope ››** View On Tek.com Whether you're measuring switching loss and safe operating area, bode plots, power supply rejection ratios, or in-circuit inductor and transformers and more, the 5 Series MSO is an integral component in power supply measurement, design, and analysis.	1
	**TCP0030A current probes ››** View On Tek.com The high-performance TCP0030A AC/DC current measurement probes provide greater than 120 MHz of bandwidth and exceptional low-current measurement and accuracy as low as 1 mA to meet the requirements for today's challenging current measurements.	4
	**THDP0200 differential voltage probe ››** View On Tek.com THDP0200 active differential probes are effective for making measurements in IGBT circuits such as motor drives and power converters. They safely measure differential voltages up to 1500 V and support bandwidths up to 200 MHz and slew rates up to 650 V/ns at 1/500 gain.	4

If you want to learn more about solutions for the education lab or this project, visit tek.com/education or give our team a call at 1-800-833-9200.

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