

CONNECTING INDUSTRY **Electronics**

Testing the way forward

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Terry Marrinan, Vice President for Test & Measurement at Yokogawa Europe explores how the complexities of advancing industry standards and regulations are driving demand for test & measurement across many applications



The electronics test & measurement industry has come a long way from its early deployment in the defence and aerospace sectors in the 1950s and 1960s. Over the intervening period, we have seen test & measurement instruments deployed in all areas of the electronics industry, from computers and telecommunications to more mundane areas such as the automotive industry and the consumer appliance market.

A key factor in the growth of the test & measurement sector has been the proliferation of standards and regulations, covering everything from the type of interconnections used in computers and industrial buses to the effects of electromagnetic radiation or power-quality variations on consumer, communications or automotive equipment.

Standards and regulations are assuming increasing importance because of the increased focus on energy efficiency and renewable or sustainable energy in all walks of life.

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With their use, however, come the potential problems of power quality, harmonics and electromagnetic interference: all areas in which standards and regulations now apply and which need test & measurement to ensure compliance is met.

New developments such as LED lighting, photovoltaic and wind generation and hybrid/electric vehicles are pointing the way to a sustainable, energy-efficient future. While buildings and domestic appliances are now 'energy rated' in a way that ensures that the general public are fully informed about the need for optimisation of the carbon footprint of everyday living.

The implication of these developments is that the way in which testing is carried out is changing. Electronics is permeating more and more into power applications and there is an increasing need to analyse the way in which energy is used in order to optimise the efficiency of energy usage.

The result is that traditional instruments such as power meters no longer suffice to provide all the information required to check compliance with regulations and standards. Engineers now need to understand waveforms - not just voltages, currents and power values.

Hence we are seeing the emergence of a new class of portable instruments, which use oscilloscope concepts to look at and store waveforms, but also add advanced storage, analysis and display tools along with signal-conditioning modules and isolation techniques. These look at basic power waveforms alongside physical signals from temperature and motion sensors, for example.

Alongside this relatively new class of 'ScopeCorder' instruments, the traditional power meter has been replaced by a new generation of sophisticated digital power analysers, which can provide highly-accurate measurements and integrate software that will automatically carry out compliance tests against the latest standards, covering areas like harmonic effects and standby power.

Whether the end product is an automated drive train for a car, a wind turbine, an industrial drive or a compact inverter for a consumer product, test & measurement plays its part in ensuring product quality, reliability and compliance at all stages of its design, development and manufacture.

At the investigation and prototype phases, where engineers are seeking proof of a principle prior to development, general-purpose test instruments are normally required. At the conformance phase, high-accuracy is vital, while at the manufacturing phase simple and robust tools are required.

From general-purpose oscilloscopes through to ScopeCorders, digital power meters and sophisticated power analysers, solutions providers in this sector are continuing to provide the tools that are helping the industry to achieve energy savings and efficiency, that will ultimately benefit the environment and above all, the planet.

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