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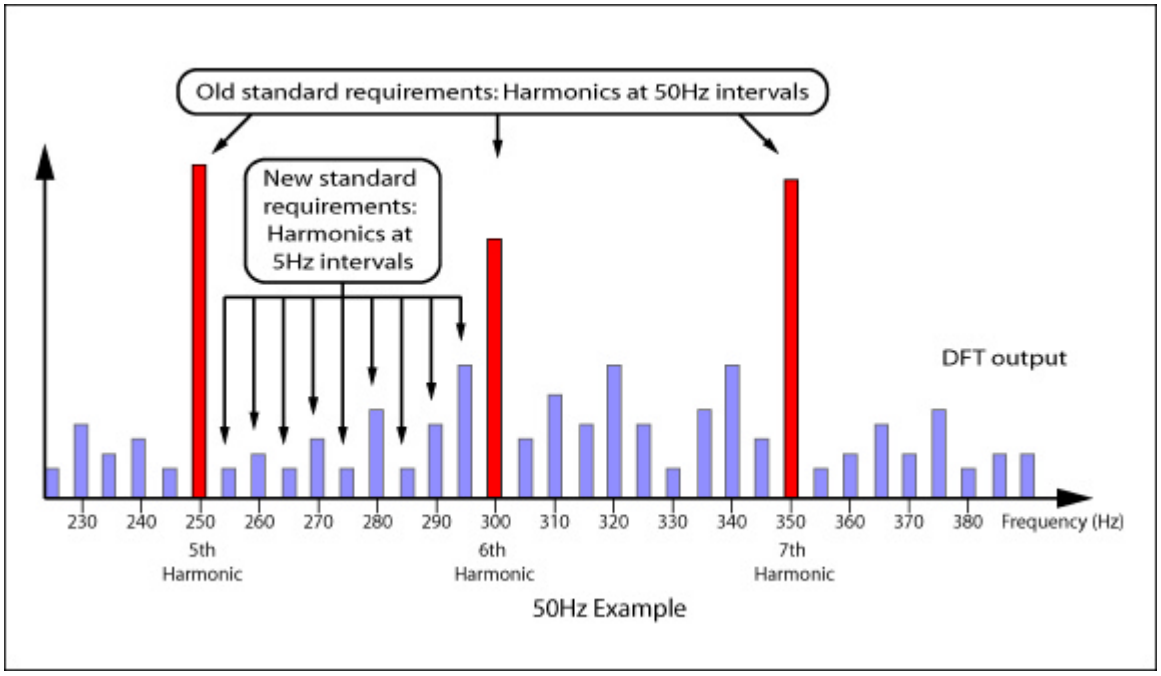
Certified accuracy for 'CE' mark inter-harmonics measurements.

The PM6000 power analyzer from Voltech is the world's first to gain independent certification of accuracy for inter-harmonics measurements to IEC61000-3-2, the international product compliance standard for current harmonic emissions. Working with the National Physical Laboratory (NPL) in Teddington UK, Voltech devised a test regime to show that the PM6000 meets all the requirements of the standard, including accuracy, measurement methods and limit checking for the different product classes A, B C and D. Until now, certification has only been available for normal harmonics at multiples of the fundamental frequency: 100Hz, 150Hz, 200Hz up to 2000Hz. The latest version of IEC61000-4-7 requires measurements of inter-harmonic amplitudes and specifies the precise method of analysis.



The PM6000's use of discrete fourier transforms (DFT) as opposed to the conventional fast fourier transform (FTT) means that it can achieve the required accuracy with ease. In this way, the Voltech PM6000 power analyser provides design

and EMC engineers with a foolproof yet easy-to-use solution for testing to the IEC Standards IEC61000-3-2 (harmonics) and IEC61000-3-3 (flicker and manual switching) that avoids the uncertainties of alternative methods.

Since these standards became compulsory requirements for all electrical equipment (rated up to 16A) sold in Europe 10 years ago, Voltech has always led the field to provide traceable measurement solutions for design and EMC engineers. This new and unique implementation of the standards uses DFT to provide a measurement reliability and accuracy that is not possible with a fast fourier transform (FFT). This is because the DFT does not suffer the problems of frequency synchronization and the resulting harmonic leakage that are inherent in an FFT analyzer.
The superior DFT method has not been used before now in a commercial analyzer for IEC harmonics testing because it requires considerably more signal processing power than FFT. The PM6000 was designed with these requirements in mind and uses powerful digital signal processing techniques to generate 1000s of harmonic measurements every second.

The PM6000's pc software is used to set up tests, to compare the results with the limits for classes A , B, C & D and to provide diagnostic information as well as clear pass / fail reports suitable for inclusion in product technical construction files.
As well as forming the heart of a full compliance IEC harmonics and flicker test system (when used with a suitable ac source and impedance), the PM6000 is ideal for making pre-compliance measurements when used on its own.

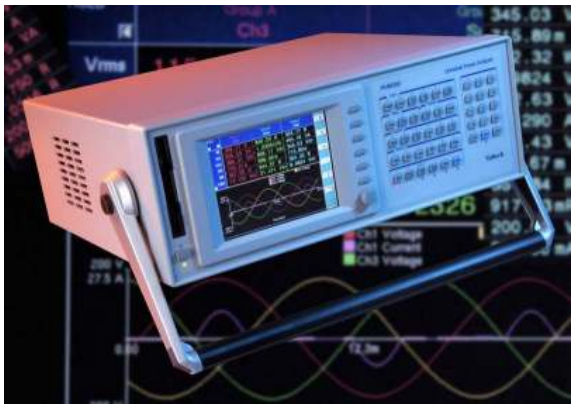
Further Information:

NPL harmonics and flicker calibration:
www.npl.co.uk/electromagnetic/dclf/harmonics_flicker_learn.html

IEC Standards:
www.iec.ch

Interharmonics measurements
www.voltech.com/support/articles/190/IEC Harmonics & Flicker.ppt

Discrete Vs Fast Fourier Transforms:
www.voltech.com/support/kbarticle.asp?q=141



The PM6000 power analyzer is available with 1 to 6 temperature compensated measurement channels and a range of current shunts and transducers suitable for all applications. The fully isolated measurement channels (with optional plug-in current shunts) sample and process the power waveforms at 5MSPS up to 1MHz and 40 MSPS to provide alias free measurements above 1MHz up to 10MHz. The sample rate is maintained independent of the measured frequency due to the parallel processing capabilities of the PM6000.

Measurement set-up is via the easy-to-use front panel keyboard and menu system, or one of the remote interfaces. A color VGA display is used to show results and waveforms. The PM6000 chassis is designed around a LINUX based PC and PCI bus for maximum flexibility of the user interface and speed of data transfer.

PM6000 Power Analyser

- Developed from concept to production by Voltech Instruments
- Designed to lead the world in power analysis
- High performance, versatile architecture for rapid future development to meet market requirements.
- State of the art technology
- Highest performance analyser currently available
- Huge parallel processing power available
- Highest sample rate and bandwidth, 40MSPS at 10MHz
- Versatile system to cope with future demands
- Built in full VGA LCD display with ultra bright CCFL backlight
- External VGA port
- Measurement Channels temperature compensated
- Isolated EXT shunt inputs
- CMRR, 140dB @60Hz and 95dB @1MHz

- ±12V supply for powering hall effect current transducers
- 1A and 30A shunt modules are available with EEPROM containing calibration constants

Notes

Voltech Instruments is a world leader in the fields of precision power analysis and the automatic testing of transformers and wound components. Founded in 1986, the company has offices in the UK, USA and China which support a world-wide network of distributors who provide local sales, support and service.

Power analyzers are high-accuracy, precision bench instruments designed to significantly simplify a variety of common power measurements, while automatic transformer and wound component testers integrate a number of key measurements such as winding resistance, turns ratio, Hipot AC and DC and magnetizing current into a single instrument.

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