Implementation of virtual instruments as a power quality analysis tool

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ABSTRACT

Virtual instruments (VI) offer flexibility to engineers in the tasks of measurement and monitoring in many fields of study and various industries. The use of graphical programming in VI helps create a user-defined solution that caters to specific needs. VI increases productivity and decreases costs for test, control and design applications by integrating software, such as the National Instrument Laboratory VI Engineering Workbench (LabVIEW), modular measurement and control hardware with different connections, such as PXI, PCI, USB and Ethernet. The harmonic components need to be measured to analyze power quality. The electrical supply that flows through non-linear loads produces harmonics that disturb the functions of other equipment connected to the same supply. The harmonic, voltage and current VIs that are available in the LabVIEW software are used to analyze power quality, so that appropriate actions can be taken to reduce disturbances. The power equipment is remotely monitored using the VIs. The data are analyzed at the low power side, in contrast to traditional power quality analysis tools, which analyze data at the captured side. This approach can provide a safer operation for system users.

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