

In-House Transformer Testing Good For Customers And Standards

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The recent installation of an impulse voltage generator at Zest WEG's transformer manufacturing facility in Heidelberg will allow in-house testing of transformers, saving time and money for customers.

According to Ronaldo Bertoldi, engineering manager at the facility, the substantial investment in this specialised equipment positions Zest WEG well for growth within South Africa and the rest of the continent.

"The impulse generator is strategic equipment for us, providing an important service, especially for our larger customers," Bertoldi says. Where the transformer size is larger than the 72,5 kV Voltage class, impulse testing is a routine test as per IEC 60076-3. Customers have an option to do an impulse test in lower Voltage classes as a type test.

An impulse generator produces short, high-voltage surges to test the strength of electric power equipment against lightning and switching surges. It comprises multiple capacitors that are first charged in parallel through charging resistors by a high-voltage, direct-current source. These are then connected in series and discharged through a test object by a simultaneous spark-over of the spark gaps.

Sales team leader Stuart Brown highlights that the acquisition makes the Zest WEG transformer manufacturing facility one of only a handful of local Original Equipment Manufacturers (OEM) with this testing facility in-house. This enhances local engineering capacity and entrenches global standards.

“Major energy utilities will often require that suppliers have this capability,” Brown says. “It is therefore a valuable resource as we expand the range of our transformers up to 50 MVA, 132 kV units.”

Zest WEG has been manufacturing transformers locally since 2013, with significant growth in its range since 2016. Impulse testing had previously been outsourced and added to the lead time for completing units, he says.

Bertoldi emphasises that impulse testing is important to establish that transformers can withstand waves on the network induced by lightning faults.

“In particular, it tests whether the transformer’s insulation is capable of withstanding such faults,” he says. “In a country like South Africa, where lightning flash density is high, this is a vital exercise.”

Impulse tests are also required by the global IEC 60076 series of standards, he says. These include full wave lightning impulse tests for line terminals and chopped wave lightning impulse tests for line terminals for power and distribution transformers.

“For instance, IEC 60076-3 requires that - for transformers with a rating of more than 72,5 kV Voltage class – the lightning impulse test on the line terminals becomes a routine test,” he says. “This means that it has to be performed at the factory by the manufacturer on every unit leaving the factory.”

The impulse generator will also allow Zest WEG’s transformer facility to test its own new product prototypes. These are continuously developed with the technical support and shared resources of WEG’s research and development facilities in Brazil.

Captions

IMPULSE TESTING PIC 01 : Impulse voltage generator consisting of a doubling, voltage divider and chopping gap.

IMPULSE TESTING PIC 02 : Putting a charging resistor in (to increase or decrease stages).

IMPULSE TESTING PIC 03 : Transformer being tested with the impulse voltage generator.

IMPULSE TESTING PIC 04 : Control panel to operate the impulse voltage generator seen in background.

Hashtags

#transformers

#electricalengineers

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