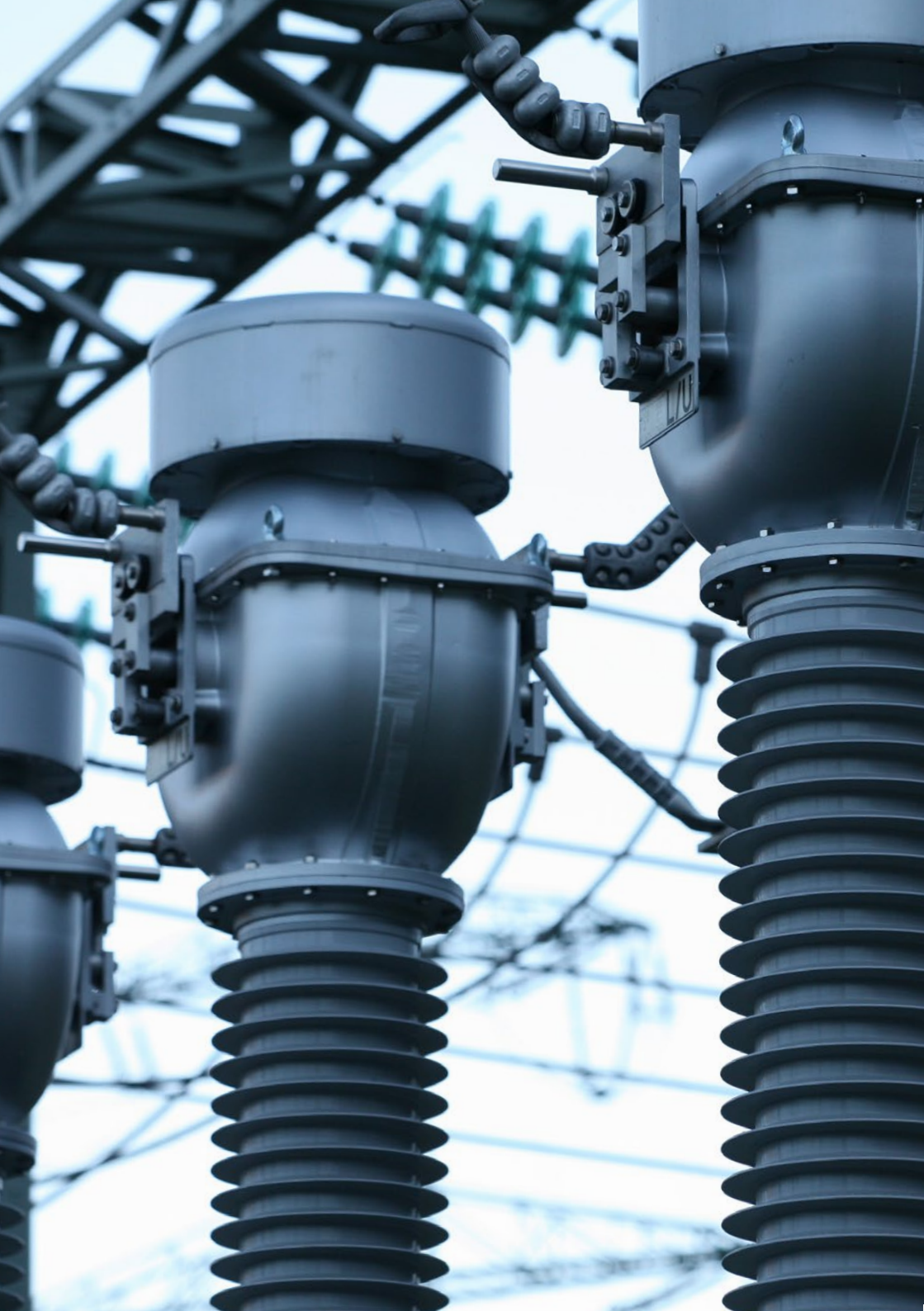
IEC 61869-2

Testing according to IEC 61869-2 with the CT Analyzer



IEC 61869-2:2012

Unified standard for current transformer testing

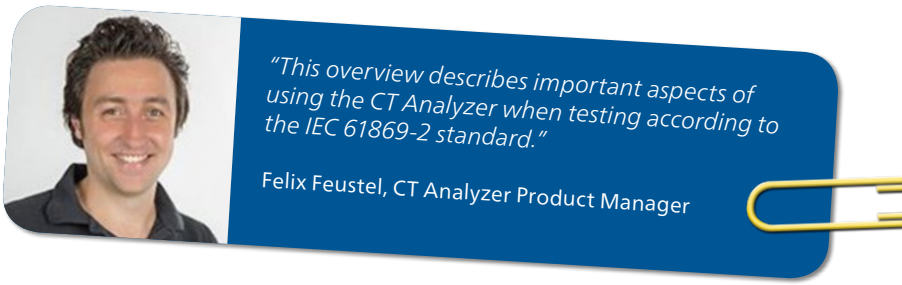
The IEC 61869-2 standard (Instrument transformers – Part 2: Additional requirements for current transformers) combines two former standards:

> IEC 60044-1
> Instrument transformers – Part 1: Current transformers

> IEC 60044-6
> Instrument transformers – Part 6: Requirements for protective current transformers for transient performance

This revision was initiated to reflect the technological advances and improvements in and around current transformers and their field of application. While the former standards are still valid, IEC 61869-2 should be used now.

The CT Analyzer incorporates this standard starting with software version 4.30.



Testing according to IEC 61869-2

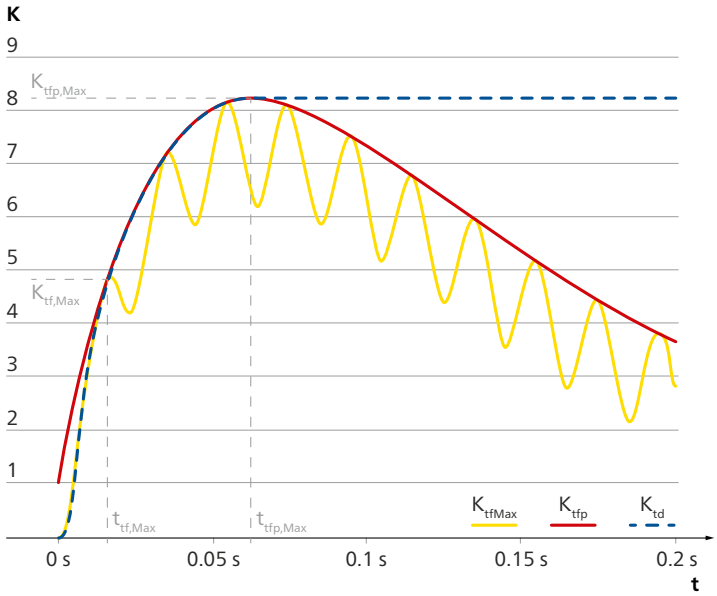
Method for calculating the transient dimensioning factor

The method for calculating the transient dimensioning factor (K_{td}) that is used from software version 4.30 onwards takes into account protective devices which can detect and react to faults more quickly.

For automatic reclosure (AR), special attention was focused on the transformer's saturation behavior and to remanence decay (see image below).

A more precise calculation of the current transformer's transient response in the overall system can contribute to significant optimization of the dimensioning. The size advantage resulting from this not only offers direct cost advantages for the transformer itself, it also simplifies deployments at locations where space is at a premium, for example, in gas-insulated switchgear (GIS).

IEC 61869-2 K_{td} curve



Extended load range for all measurement classes

The optional extendable load range up to 1 VA can be applied to all measurement classes with the new standard.

This results in greater consideration of the digital systems used, which present lower loads when compared with analog systems.

	IEC 60044-1 standard	IEC 61869-2 standard
Class 0.1	■	■
Class 0.2	■	■
Class 0.2S	■	■
Class 0.5	–	■
Class 0.5S	–	■
Class 1	–	■
Class 3	–	■
Class 5	–	■

Uniform measurement definitions

When recording the magnetization curve, RMS or peak values were measured, depending on the standard used. The new IEC 61869-2 standard combines these measurement definitions.

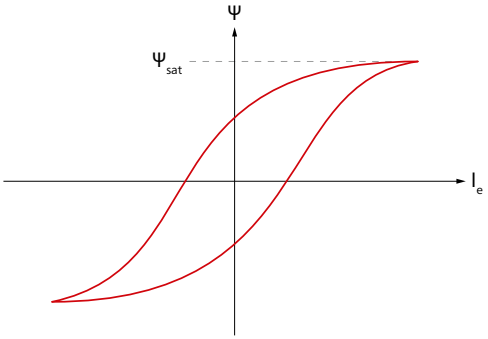
As such, measurements are now easier to perform and the risk of faults due to confusion has been reduced.

Axis	IEC 60044-1 standard	IEC 60044-6 standard	IEC 61869-2 standard
x	RMS (I_e)	Peak (I_e)	RMS (I_e)
y	RMS (U_{ct})	Avg. cal. in RMS (E.M.F.)	Avg. cal. in RMS (E.M.F.)

Definition of the maximum saturation flow

In the previous definition, the maximum saturation flow Ψ_{sat} had been defined by the transition from the unsaturated to the saturated area of the magnetization characteristic curve.

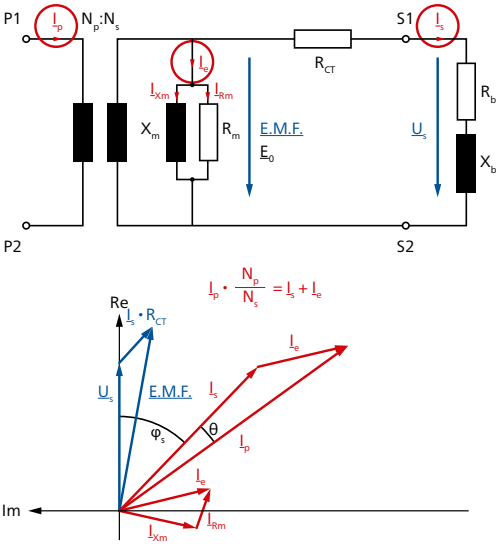
IEC 61869-2 redefines this value shifting the reference into the saturated area. The saturation flow value, which was previously defined as too low, has therefore been corrected.



Alternative measurement method

IEC 61869-2 defines an alternative method for measuring the ratio error in compliance with the measuring principle employed by the CT Analyzer.

In contrast to the direct method, this reduces the measurement time and the measuring technology required. As a result, it greatly simplifies routine measurements performed during production and maintenance work in the field.



Working with IEC 61869-2

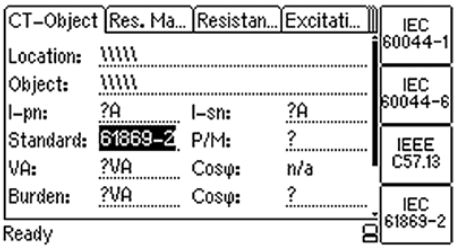
Use the latest software version ...

IEC 61869-2 is supported from software version 4.30 onwards . You can download the current software version free-of-charge in the Customer area at www.omicronenergy.com.

A detailed description of the installation process and further details on taking measurements with the CT Analyzer according to IEC 61869-2 can be found in the CT Analyzer user manual.

... and activate the standard on the CT Analyzer

Once the CT Analyzer software has been downloaded, you can activate the IEC 61869-2 standard in the menu.



Activating the standard

OMICRON is an international company serving the electrical power industry with innovative testing and diagnostic solutions. The application of OMICRON products allows users to assess the condition of the primary and secondary equipment on their systems with complete confidence. Services offered in the area of consulting, commissioning, testing, diagnosis and training make the product range complete.

Customers in more than 160 countries rely on the company's ability to supply leading edge technology of excellent quality. Service centers on all continents provide a broad base of knowledge and extraordinary customer support. All of this together with our strong network of sales partners is what has made our company a market leader in the electrical power industry.

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