



GE HYpact-system with RITZ instrument transformers

Project overview

In 2025, RITZ Instrument Transformers GmbH received a request from GE Vernova for the supply of current transformers for the HYpact switchgear developed by GE. In cooperation with GE Vernova, the sales team and application engineering at RITZ developed current transformers that met the specific requirements of this system.

GE's HYpact switchgear offers a more compact alternative to conventional load and disconnect switches in switchgear. Its significantly reduced size allows the footprint of outdoor switchgear to be reduced to approximately one-third of its usual size. HYpact systems are currently in use in over 80 countries worldwide. Further information about this product is available on the GE website:

<https://www.gevernova.com/grid-solutions/equipment/air-insulated-switchgear-circuit-breakers/hypact>

For use in these systems, the current transformers must meet a multitude of requirements, the combination of which poses a particular challenge. A detailed description of these requirements follows in the next chapter.



Illustration 1: HYpact-System



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HYPact switchgear uses current transformers at the outputs of the switching devices to measure the currents flowing through them and forward them to measuring, protection and metering devices.

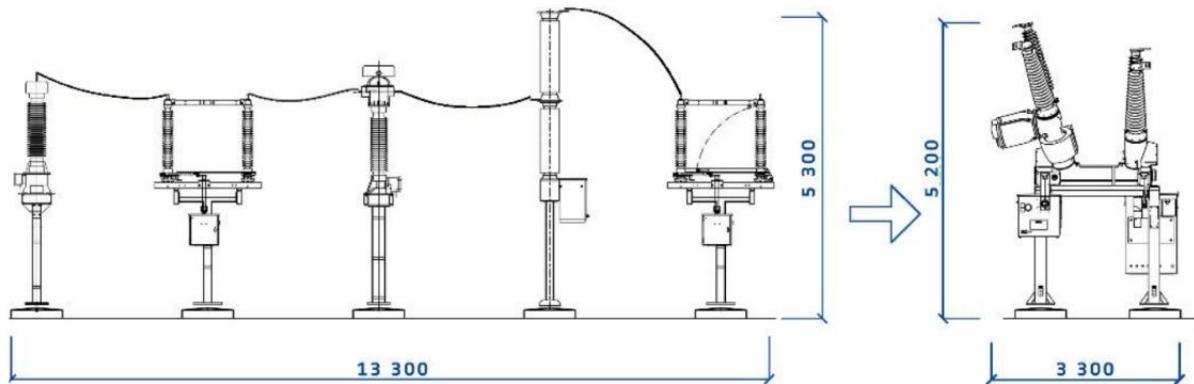


Illustration 2: Comparison between conventional switchgear and 110kV HYPact switchgear

Technical description of the current transformers

The current transformers were specifically developed for use in HYPact switchgear. Their dimensions are precisely matched to the system, allowing for direct mounting. The small distances between the primary conductors, dictated by the system's design, present a particular challenge for electrical and thermal design due to the high currents being measured.

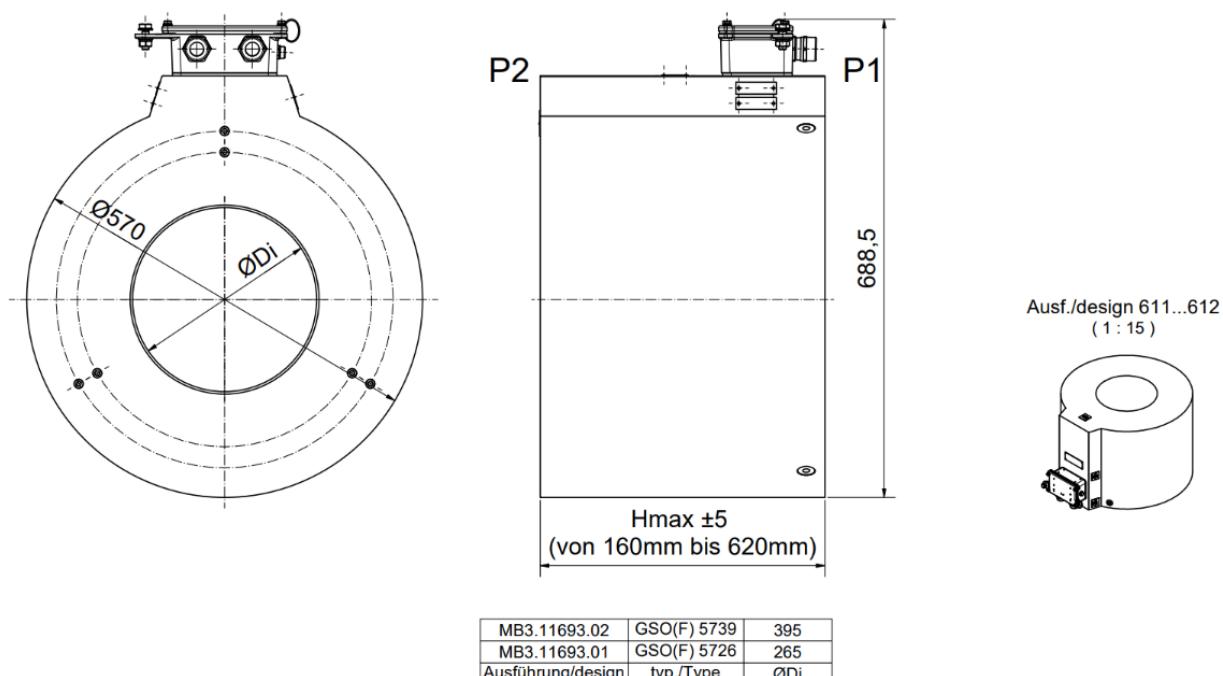
Key features of the transformers:

- Multiple cores (3–4, sometimes up to 6 cores)
- Suitable for outdoor applications due to resin-cast insulation
- Connections in the terminal box attached to the transformer, routed along the HYPact switchgear to the control cabinet
- Designed for insulation class E
- Rated continuous current (I_{cth}) often 200%, sometimes up to 250%
- High accuracy classes down to 0.2 s
- High burden: usually 10 VA, sometimes up to 30 VA
- Low turns ratios with taps (e.g., 400/200:1)
- Some cores are PTB-approved for billing purposes
- Protection cores with requirements such as 5P20, which must not saturate at 20 times the rated current



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Sketch of the converter for the Hypact switchgear:



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Example: Transformer for a HYpact system

- 5 Cores:
 - 1 Measuring core
 - 1 Differential protective core
 - 1 combined measuring-/protective core
 - 2 Cores for billing purposes (PTB-approved)
- ratio with tap:600/300:1
- Accuracy classes: 0,2 respectively 0,2s with FS5; protection core 0,5 with 5P20
- Burden: 10 VA
- Rated continuous current: 200 %



Illustration 3: integrated current transformer from RITZ on a HYPACT switchgear



Illustration 4: Cast resin current transformers for GE's gas-insulated hybrid switchgear

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