



YOUR PARTNER IN VACUUM  
TECHNOLOGY



## **TIDO® Series**

### Online Transformer Insulation Drying & Degassing Systems

Hering - VPT GmbH  
[www.hering-vpt.com](http://www.hering-vpt.com)

# HERING – Vacuum Process Technology

## Invaluable experience and customized solutions powered by German Engineering

HERING VPT has specialized in improving the life cycle of transformers. Already in 1909 the first HERING oil purification plant was built and gave the possibility to carry out an internal and external insulating oil treatment by the use of a vapour-oil boiler. This was the starting point for a number of inventions like Transformer Drying ovens, Impregnating Plants and other vacuum products for the transformer industry. With this **experience collected in over 100 years of successful operation**, continuous efficiency improvements of our plants are carried out.

Hering Systems are remarkable for their efficient and robust design, as well as their ease of operation and maintenance. We install **only high quality components from Germany**, respected West European brand manufacturers. Our systems are designed for **long lifetime, reliability** and effective operation. Each plant is **custom-made** and delivered with all required aggregates to leave nothing to be desired.

Together, we will develop the perfect solution for you and your company. We are looking forward to serving you!



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## Continuous online removal of moisture and dissolved gasses from transformer insulation

The **HERING TIDO®** Series of online transformer insulation dry out systems **dry and degasify oil filled transformers** of all sizes while the transformers remain energized. TIDO® is the **ideal long-term maintenance solution** after an initial oil purification using **HERING EOK®** has been performed. This way the **HERING TIDO®** extracts moisture and dissolved gasses from the online transformer continuously without causing any downtime in the transformer's operation. The **HERING TIDO®** online transformer drying and degassing system **avoids equipment failures** by **stopping the underlying causes of transformer failure**.

The paper insulation of a transformer will degrade with time through various chemical processes leading to equipment failure & explosion risks. The main factors influencing this **decay** are the **moisture, temperature, and oxygen** inside the transformer. A replacement or repair of the

paper insulation is very costly and requires a decommissioning of the transformer as part of the overhaul. Instead, the **HERING TIDO®** is a **non-intrusive solution** which takes out both moisture and gases from the insulation to **immediately prevent the deterioration processes** in the transformer.



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## Vacuum process steadily decreases water and gas content in cellulose insulation material

The molecular hydrocarbon chains of the cellulose in the transformer's insulation paper decompose more quickly when moisture and oxygen are present in the system. This in turn speeds up the overall deterioration process of the transformer's overall insulation leading to adverse effects on the tensile strength and dielectric properties of the insulation.

Traditional transformer dehydration and gas removal methods like **oil purification**

plants rely on very fast processes to return the transformer oil to its ideal working conditions. This is an **excellent solution if done regularly** depending on transformer ageing. If the oil is **not regularly purified**, however, the **transformer insulation paper draws in moisture**. Then 98% of the overall water content is stored in the paper insulation and only 2% in the transformer oil itself. Thus, it is too late for just a standard oil purification because it can only remove the moisture from the transformer oil. The moisture in the insulation still remains inside. Therefore, we suggest to always **use an online dryer for cellulose moisture levels above 2%**.

The **HERING TIDO®** online transformer dryer uses a vacuum process to continually remove moisture and gas from the transformer oil. This creates a **water content gradient** from the wet insulation to the dry transformer oil that causes a **steady removal of water** from the insulation paper.



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## TIDO® Series safety features and modular design ensure flexibility and reliability

The TIDO® Series allows for customization of the online transformer dry out system depending on the customer requirements.



Available system add-ons:

- Remote control and monitoring
- Selection of inline instrumentation
- SMART SCADA and HMI interfaces
- Anti-foam Molecular sieve material module for dehydration w/o degassing
- Regeneration module for acidity removal
- Gas storage for gas analysis functionality

HERING TIDO® Series key features:

- Continuous online removal of moisture and gas from solid insulation and oil
- Based on **extensively proven technology**
- Easily installed on energized transformer
- Temperature, moisture and transformer condition monitoring available
- **Robust design for long lifetime** – only high quality steel piping
- All components from **Western brand manufacturers**
- **Numerous safety features** for protection
- Highest product quality **made in Germany**

# HERING – Vacuum Process Technology

## Economic and operational benefits make our HERING TIDO® Series your perfect choice

Online drying and degassing your transformers with the TIDO® Series grants:

- **Benefits for new transformers** – moisture content and gas content can be kept below the original factory level, thus protecting the transformer from day 1
- **Benefits for older or wet transformers** – Continuous drying over several months brings down moisture & gas content to acceptable levels for extended lifetime
- **Effective moisture and gas removal for oil & paper** – TIDO® ensures lowest possible moisture and gas levels within transformer oil and insulation material
- **Insulation drying for vacuum-rated and non-vacuum-rated transformers** – The moisture removal takes place within the vacuum tight TIDO® equipment without affecting the transformer operation
- **No downtime due to transformer overhaul** – TIDO® units can be operated on energized transformers as effectively as on un-energized transformers



# HERING – Vacuum Process Technology

## Provides complementary training services for your benefit

HERING VPT offers its costumers in the context of the order fulfillment a **free training** for a safe operation of your plant in our company's facility. Furthermore, on costumer's demand an **on-site training** can be offered.

To ensure a proper operation of your system HERING VPT recommends an **on-site service**. This will be coordinated directly by HERING VPT and partly carried out with qualified partners.

Plants older than 30 years fall naturally under the plant service.



We are available for you **24 hours** a day, **7 days a week** in order to help you with your plant problems.

# HERING – Vacuum Process Technology

## The standard in oil purification and insulation treatment solutions



- ◆ Vacuum Oil Purifying Plants
- ◆ Transformer Oil Regeneration Systems
- ◆ PCB Removal Systems
- ◆ Vacuum Drying Plants
- ◆ Waste/Lube Oil Re-refining Plants (Front-end & Back-end Solutions)
- ◆ Base Oil/Recycled Oil Polishing Systems
- ◆ Vacuum Pumping Stations
- ◆ Bushing Dryers
- ◆ Oil Storing and Filling Plants
- ◆ Hot Oil Spraying Systems
- ◆ Vacuum Pressure Impregnation Plants



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