

## Technical Information

# VRDT Voltage Regulating Distribution Transformer

Reliable answer to voltage variations

### Hitachi Energy offers an oil distribution transformers with OLTC (On Load Tap Changer)

Hitachi Energy Voltage Regulating Distribution Transformer – a transformer equipped with an On-Load Tap Changer (OLTC) from Maschinenfabrik Reinhausen (MR), featuring their leading vacuum technology solution: ECOTAP VPD. This dependable and efficient solution serves as a cost-effective alternative to traditional network expansion.

### Proven solution

The increasing amount of power generated by renewable resources, especially wind and photovoltaics, causes changes to the structure of the energy supply. A traditionally centralized system with only a few central producers has changed into a system with many distributed suppliers, who feed directly into the local distribution net. At the same time, sudden increase in daily energy consumption (Heat Pumps, EV charges) takes place. These can cause large voltage variations with an increased risk of the voltage exceeding the allowed voltage range. Often the renewable power generation must be limited or even interrupted.

VRDT is designed to meet these new challenging network conditions by detecting LV voltage out of defined bandwidth and automatically adjust the voltage ratio: dynamically and on-load.

The tap changer employs proven electro-mechanical MR vacuum technology, guaranteeing maintenance-free operation of primary equipment for decades.

VRDT enables the individual control of each specific low-voltage part of the grid, thereby ensuring the highest level of precision in voltage regulation.



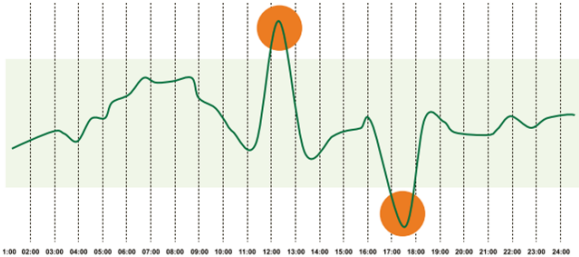
### Key features and Advantages:

- Part of Hitachi Energy portfolio of voltage regulator solutions, VRDT is dedicated for precise and independent regulation of individual LV part of the grid.
- Similar dimension to standard off-load tap changer transformer. In Simplification for 315kVA and bigger size there is no impact on transformer footprint.
- Retrofittable- replaceable old off-load DTR in existing substations.
- Available additional extension for advanced monitor and remote control functions.
- Enables a higher utilization of the existing infrastructure especially in density populated areas and/or grid with DTRs over 315kVA.
- VRDT at basic level does not require any special adaptation to the network infrastructure.
- Cost effective alternative to the expensive option of strengthening the network to overcome the voltage fluctuation issues and increase the hosting capacity of distribution networks for renewable generation.

Standard DT:



**RMS Voltage**  
+/-10% voltage bandwidth as per DIN EN 50160



**Max Infeed/No Load**

Voltage regulation problems

**No infeed/Max Load**

**Max Infeed/No Load**

Voltage is automatically regulated by VRDT

**No infeed/Max Load**

Voltage regulating DT:



+/-10% voltage bandwidth as per DIN EN 50160

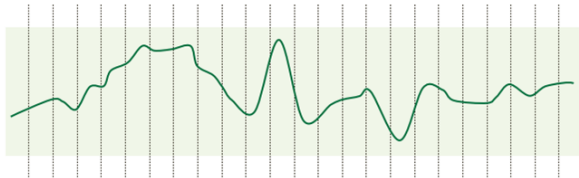


Illustration of the operation principle

Technical characteristics of the VRDT

ECO Tap Variant:	ECOTAP VPD III 30D-24	ECOTAP VPD III 30	Product Number
DTR power *	Up to 1000 kVA	Up to 1000kVA	Up to 3150 kVA
Max. rated through current	30 A	30 A	100 A
Max. rated step voltage	550 V	825 V	825 V
Max. number of tap positions	9	9 (17 with change-over selector)	9 (17 with change-over selector)
Frequency / Phases	50 Hz / 3		
Max. voltage	24 kV	36 kV	36 kV
Number of switching operations	> 500.000		
Insulation liquid	Mineral oil, synthetic and natural esters		
Dimension L x W x H	For transformer over 315 kVA same L x W comparing to adequate standard unit. H increased by approx. 100-200mm		
Operation temperature	-25 OC - +40 OC		

Contact your Hitachi Energy representative for other requirements

Hitachi Energy

Hitachi Energy Poland Sp. z o.o.  
Distribution Transformers Division  
Branch Office in Lodz  
Aleksandrowska 67/93 Street  
91-205 Lodz, Poland  
hitachienergy.com

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