GE
Grid Solutions

Virtual Reality Training

For Power Transformer Operation & Maintenance

Power transformers are a critical asset within electrical substations. The quality of operational and maintenance processes, along with the technical competencies of field staff, can affect the performance and lifetime of the asset.

Advantages of Using VR for Training

Virtual Reality training is one of the fastest and most efficient methods of providing field teams with full product training. After two weeks, trainees tend to remember 90% of what they did, vs. 20% of what they heard. Compared with other learning methods, VR training delivers distinct advantages when it comes to absorbing, retaining, and applying new competencies, all while reducing the overall required training overhead investment.

GE's Solution

GE's Virtual Reality (VR) training provides a unique, innovative, and cost-effective solution for teaching power transformer maintenance and operations to staff in a safe environment. The VR trainings are developed by electrical engineers and simulate real onsite experiences, thus enabling power transformer owners to keep assets in their best possible condition by anticipating all maintenance needs.

Overview of Solution

VR training modules can be utilized through:
- Licenses for an unlimited number of internal users at customer sites
- Training experiences delivered at GE Technical Institutes, as part of product courses

VR training packages include comprehensive content, including:
- A technical power transformer overview
- Operation and maintenance procedures
- Safety instructions

Additional options:
- Initial set-up of the VR training solution
- Services to develop customized modules and provide recommendations on the best possible learning path

Applications

Designed specifically to eliminate safety risks and provide hands-on experience, GE's VR technical training can be used in the following applications:
- Develop existing technical competencies and knowledge base
- Train new staff within a rapid timeframe

Imagination at work

Hands-on & Real

- Providing realistic scenarios encountered in the field
- Simulating a fully-accurate experience with actual equipment sizes, based on real 3D CAD files
- Focused on key tasks, as designed by GE's transformer and field technical experts

Safe

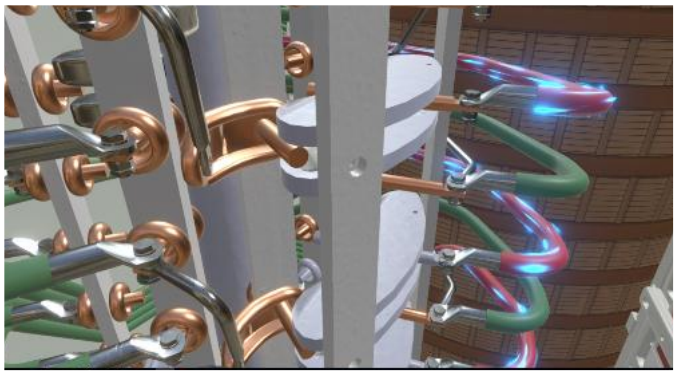
- Avoids 100% of all safety and environmental risks during training
- Controlled simulation environment
- Enables users to learn dangerous and complex tasks that are otherwise inaccessible for practice on real equipment

Engaging Experience

- Immersive experience with interactive activities facilitates deeper retention of information
- Realistic scenarios recreate accurate equipment condition interactions

Cost-Effective

- Reduced training time: from 1 to 2 days of typical onsite training, to instead now only 20 minutes within a VR module
- Rapid implementation with ease-of-use requiring standard equipment
- 1 license allows an unlimited number of learners and refresher courses
- No need to access to physical asset



Module 1: Power Transformer Discovery

Content includes:

- Start building the transformer!
- Avoid overheating
- Overload & thermal protection
- Buchholz
- On-load tap changer for voltage regulation
- Core earthing
- Total losses & their dissipation

Module 2: First Level of Maintenance

Content includes:

Power transformer - in service and loaded

- General visual inspection
- Oil levels
- Measure transformer temperature
- Check oil flow indicator
- Use thermography to search for abnormal hot spots
- Basic electrical tests of control cubicle(s)
- Auditory inspection
- OLTC basic inspection & check
- Safe condition requirements for sealing, surface, and servicing accessibility

Power transformer accessibility - during short outages or while grounded

- Thorough searching for leaks, sealing, and surface condition paint & rust
- OLTC control cabinet
- Checking service ability & conditional maintenance of transformer
- Inspection and maintenance of monitoring & protection equipment

Recommended Hardware Setup

Operating system	Windows 10 operating system 6, in English
Processor	Type AMD Ryzen 5 1400 processor/ Intel Core i5 7400
RAM	8 Go
Hard Drive	512 Go
Graphic card	Type NVIDIA GeForce GTX 1060, AMD Radeon RX 480
Ports	USB 3.0 (min 2) and HDMI
Software	Steam® account
VR devices	1 headset + 2 base stations + 2 controllers

For more information please contact
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email: technical.institute@ge.com
web: https://www.gegridsolutions.com/Services/hv-mv-training.htm

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