ASFAN REALITY

Renewable Energy VR Training Catalog

Step into the future of technical training.
This catalog showcases a complete suite of advanced Virtual Reality experiences that teach learners how to build, install, and operate renewable energy systems with unmatched realism and precision.

Through immersive simulations and true-to-life tools, trainees can explore and practice the full workflow behind modern clean-energy technologies—including **Solar Energy Systems, Wind Turbine Installation, Geothermal Power Generation, Waste-to-Energy (WTE) Processes, and Green Hydrogen Production.**

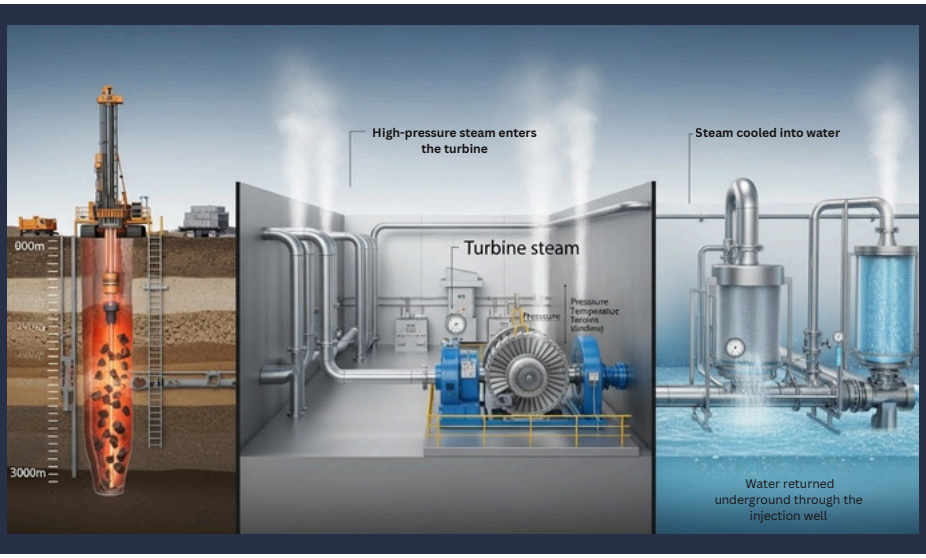
Each VR module transforms complex engineering tasks into clear, hands-on learning experiences, empowering learners to develop real technical skills in a safe, controlled, and highly engaging environment.

Train. Build. Innovate.
Experience renewable energy like never before

1. Geothermal Power Generation

Geothermal power generation harnesses the natural heat stored beneath the Earth's surface to produce clean, reliable electricity. By drilling deep into hot rock formations, water is heated and turns into high-pressure steam that drives turbines to generate power. This sustainable process delivers continuous energy with minimal carbon emissions.

To help learners fully understand how geothermal systems work, the workflow is divided into ***three immersive VR experiences***—each demonstrating a key stage of the energy cycle.



Experience 1: Geothermal Well Drilling

Experience 2: Steam Production & Turbine Operation

Experience 3: Condensation & Reinjection

1.1 Geothermal Well Drilling

Discover how naturally heated underground water becomes clean energy.

In this VR module, learners explore the drilling process used to reach underground hydrothermal reservoirs. They observe how the drilling rig operates, how the drill moves through soil and rock layers, and how temperature and pressure increase with depth.

Learner Tasks:

- Start the drilling sequence using virtual controls
- Explore geological layers with depth, temperature, and rock-type info
- Monitor pressure indicators as the drill nears the hot-water reservoir
- Activate the wellhead valve to release natural rising steam
- Follow guided voice instructions explaining each step

1.2 Steam Production & Turbine Operation

How natural geothermal steam becomes electricity.
Learners see how geothermal steam is turned into electricity by following three simple steps:

- Steam Collection: Steam rises from the well and moves through pipes.
- Turbine Operation: Steam spins the turbine blades.
- Power Generation: The turbine drives the generator to produce electricity.

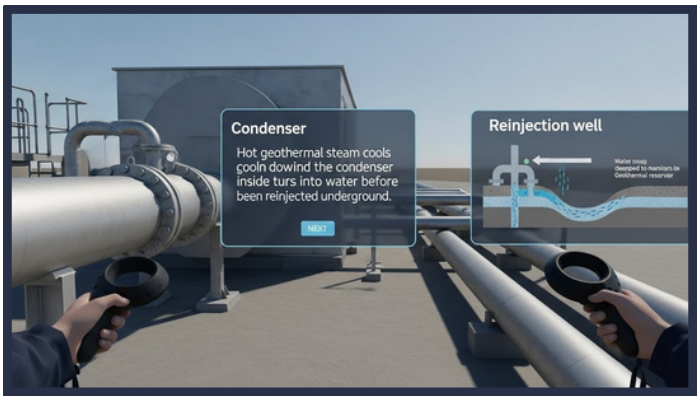
Learner Tasks:
Open the steam valve, monitor gauges, explore turbine parts, and watch how steam becomes electrical power.

1.3 Condensation & Reinjection

Learners discover how geothermal plants stay sustainable by cooling used steam and sending the water back underground.

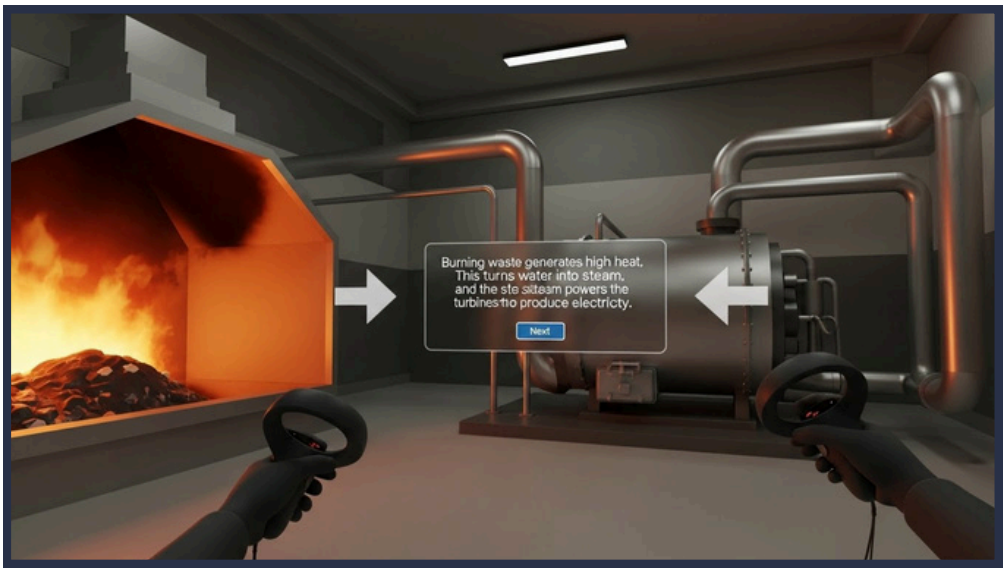
What Happens:

- Steam leaving the turbine enters the condenser and turns back into water.
- The cooled water travels through pipes to the reinjection well.
- Water is pumped deep underground to be naturally reheated and reused.



Learner Tasks:
Activate the condenser view, open the reinjection valve, follow the pipeline, and view a depth cross-section showing where water is returned underground.

2. Waste-to-Energy (WTE) VR Experience



This VR experience shows how solid waste can be converted into usable electrical power through a safe and interactive simulation.

What Learners Experience

1. Waste Feeding

Placing solid waste into a sealed high-pressure thermal chamber.

2. Thermal Conversion

Watching how heat and pressure break down the waste and release thermal energy.

3. Steam Generation

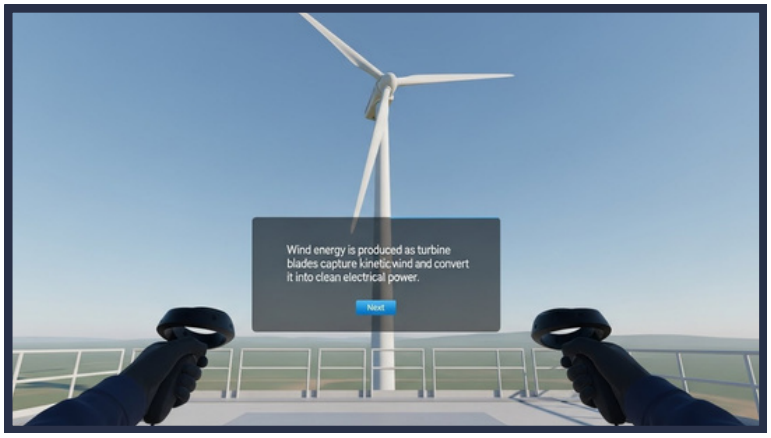
Using the produced heat to boil water and create high-pressure steam.

4. Electricity Production

Steam drives the turbine, generating clean electrical power.

Educational Value

- Clear understanding of the Waste-to-Energy process
- Visualizing heat, pressure, and steam flow
- Safe industrial simulation without real equipment
- Supports sustainability and environmental science learning



3. Wind Turbine Installation VR Experience

Overview
This VR module takes learners through the complete process of installing and operating a wind turbine, from assembling components to choosing the right location and running the control room.

1. Components & Assembly
Learners interact with a full 3D turbine model and practice assembling it step by step.
Key Actions:

- Explore turbine parts (tower, nacelle, rotor, blades)
- Learn foundation basics
- Use VR tools to lift and connect components

2. Site Selection
Inside VR, learners evaluate different terrains and environmental conditions to choose the most efficient and safe installation site.
Key Actions:

- Analyze wind maps & topography
- Compare multiple locations
- Select the optimal site

3. Control Room Operation (SCADA)
A realistic VR control room simulates how turbines are monitored and managed.
Key Actions:

- Start and stop the turbine
- Monitor wind speed & power output
- Respond to basic operational alerts

Training Value

- Clear understanding of wind turbine systems
- Safe, hands-on learning without real-world risk
- Ideal for engineering & renewable-energy training programs

4. Green Hydrogen VR Experience

Turning Water Into Clean, Renewable Energy

Overview

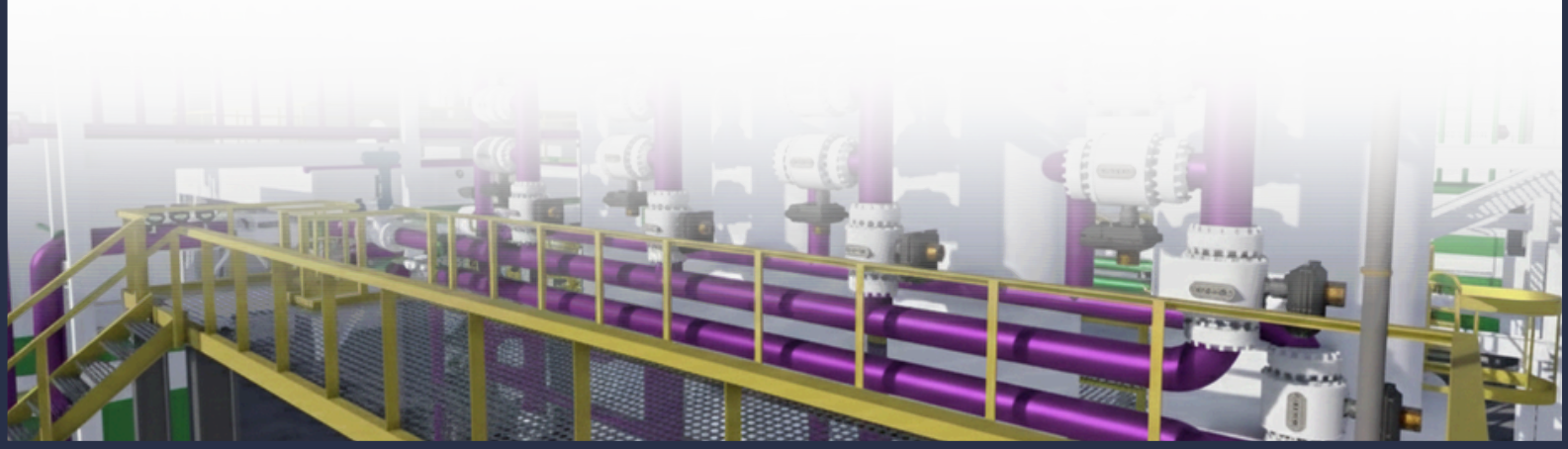
In this immersive Virtual Reality experience, learners explore how renewable energy is used to power the electrolysis process — splitting water into hydrogen (H_2) and oxygen (O_2) without producing emissions.

What the Learner Does

- Enters a realistic outdoor VR environment with large electrolysis tanks.
- Watches how electricity from renewable sources (such as solar or wind) separates water into H_2 (–) and O_2 (+).
- Learns how clean hydrogen is collected, stored, and prepared for use as an energy source.

Why It Matters

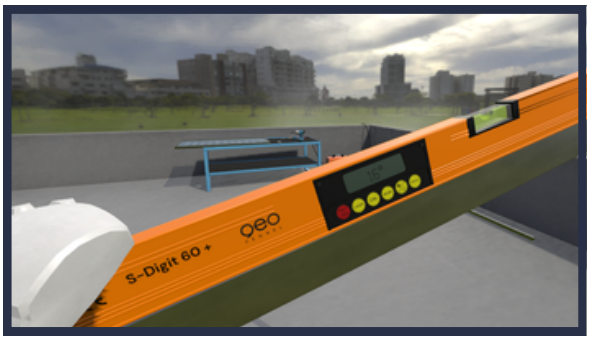
This VR module demonstrates how green hydrogen is produced using fully renewable energy, providing a safe, sustainable method to generate hydrogen fuel — and helping learners understand one of the clean energy solutions of the future.

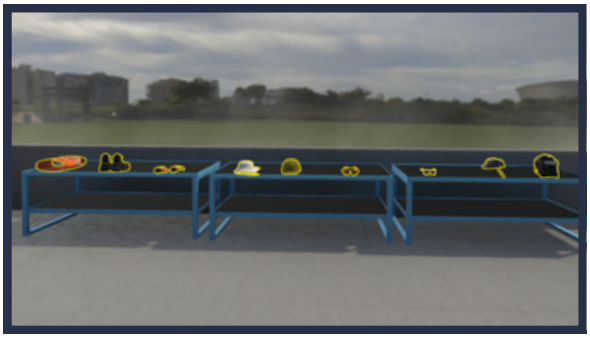


5. Solar Energy System Installation

Experience a complete, hands-on journey into solar energy through six immersive VR modules. Each experience guides learners step-by-step, from basic construction to advanced system configurations, using realistic tools, safety procedures, and interactive simulations.

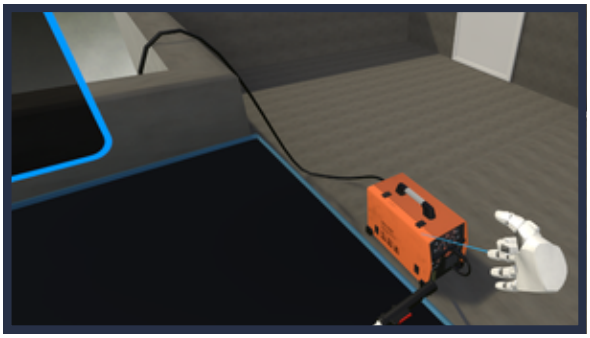
5.1 Structural Base Construction
Build the foundation of a solar installation.
Learners assemble the mounting base that supports the solar panels, using cutting, welding, and fastening tools. This module focuses on correct measurements, alignment, and tool handling to ensure a stable and durable structure.

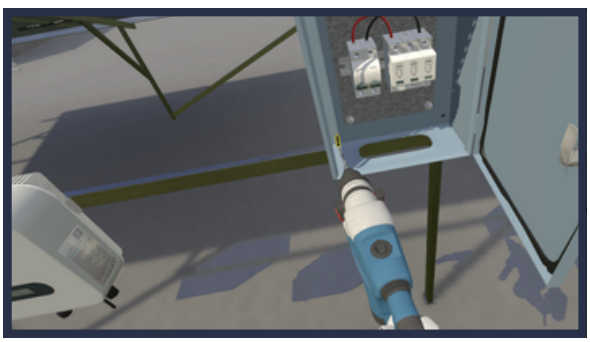




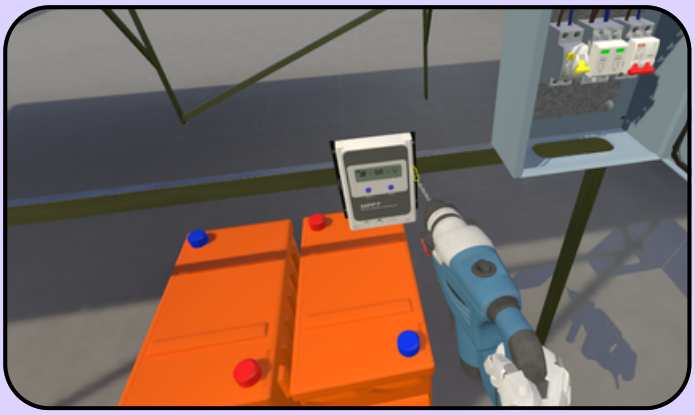
5.2 Safety & Personal Protective Equipment (PPE)
Master essential safety procedures.
This experience introduces all required protective gear—helmets, gloves, goggles, harnesses, and electrical safety tools. Interactive info panels and voice guidance explain the purpose of each item and how to use it before any installation work begins.

5.3 System Components & Tool Tutorials
Understand every component before installation.
Learners explore all solar system parts and the tools needed. A short interactive tutorial teaches basic tool skills such as welding small metal pieces or cutting test material. This prepares the trainee for the full installation process.





5.4 On-Grid System Installation
Learners complete the installation of all components needed to connect the solar system directly to the national power grid. In this module, the entire energy produced by the system is delivered to the government through the grid connection.



5.5 Off-Grid System Installation

Build an independent solar power solution.

Here, learners install the components needed to operate the system without any grid connection. The module focuses on batteries, charge controllers, and load management for private or remote applications.

5.6 Hybrid System Installation

Combine grid and off-grid functionality.

Trainees complete the installation of additional components to create a hybrid system—powering private loads while sending excess energy back to the grid. This module highlights flexibility, energy balancing, and dual-mode operation.

Why Learn Renewable Energy Through Virtual Reality?

Safe Training

Risk-free environment for practicing technical skills.

Cost-Effective Learning

Realistic training without expensive equipment costs.

Controlled Environment

Complete control over learning pace and environment.

Simplified Systems

Clear visualizations simplify complex renewable energy systems.

Immersive Learning

Interactive tasks enhance knowledge retention effectively.

Accessibility

Technical education available anytime, anywhere.

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