

NeuralMesh™ for Energy AI Workloads: Built for Seismic Simulation Speed and Scale

Seismic surveys, grid interconnection studies, and fusion campaigns share one constraint: storage that can't keep pace. NeuralMesh eliminates that bottleneck and delivers sustained throughput, checkpoint reliability, and GPU saturation at petabyte scale for oil, gas, nuclear, fusion, and renewable energies.

Key Benefits of NeuralMesh

Compress Seismic Runtimes from Days to Hours

- Provide accurate seismic processing insights
- Accelerate drilling decisions
- Cut 3D migration cycle times

Feed GPUs Continuously Across Energy Simulations

- Maintain Full-Waveform Inversion (FWI) throughput
- Handle Reverse Time Migration (RTM) loads

Protect Long-Running Simulations from Outages

- Shield FWI campaigns from unexpected hardware failures
- Sustain checkpoint writes
- Eliminate job re-spins

Break Reservoir Model Memory Limits

- Extend GPU memory into blazing fast NVMe
- Run 10 billion cell models
- Remove reservoir partitioning

Eliminate CPU and I/O Overhead Costs

- Write via zero-copy paths
- Load at full hardware speeds
- Cut NFS I/O overhead by 40%

Deploy On-Premises, in the Cloud, on the Edge, or Hybrid

- Burst to cloud for peak loads
- Connect offshore sites to HQ
- Unify data in one namespace

Serve Geoscience Teams Seamlessly on Any Protocol

- Deliver POSIX, NFS, SMB, S3
- Provide a shared namespace
- Remove seismic data sync lag

Tier Data Automatically at Petabyte Scale

- Keep hot data on NVMe
- Recall cold archives instantly
- Automate seismic archiving

>95%

Drop in seismic runtime from >80 hours to <4

6x

Increased throughput on cloud infrastructure

>80%

Reduction in power grid study timelines

2x

Faster seismic processing performance vs. cloud

>90%

GPU utilization compared to 30% before NeuralMesh

Energy Industry Use Cases

Oil & Gas

NeuralMesh accelerates FWI, RTM, and reservoir simulation across petabyte-scale datasets, cutting runtimes from weeks to hours and tripling GPU utilization rates

Grid Operations

NeuralMesh cuts interconnection study timelines, accelerating construction approval and revenue generation for RTOs and ISOs across the US and EMEA

Nuclear, Fusion, & Power Generation

NeuralMesh sustains parallel I/O across continuous multi-physics simulation and multi-day thermal windows, no tolerance for failure

Renewables

NeuralMesh delivers AI-powered predictive maintenance models to keep turbines and arrays online, reduce outage risks, and lift energy trading margins

“By combining high-fidelity simulation with physics-informed AI to develop predictive digital twins, [we can] reduce the cost, risk, and time of learning that would otherwise require expensive and time-consuming physical testing.”

— Dr. Rob Akers, Director for Computing Programmes, UK Atomic Energy Authority