

From Prompt to Plant

Generating realistic, interactive 3D equipment libraries for the EON ecosystem

How a written description becomes an interactive 3D training model — and how one model feeds Genesis, Field IQ, EON Live, the Control Room and Brainy.



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Executive summary

EON AI Ventures can now generate realistic, interactive 3D equipment from a written description, and build whole libraries of it in batches. A short specification becomes a 3D model in which every valve, gauge and switch is a separate part carrying its own tag. The model is finished in worn steel, castings and paint, and is built without anyone clicking through the software.

This removes the bottleneck that has held immersive industrial training back: the time and cost of making the equipment. Before, each realistic machine took weeks of specialist modelling or a visit to real equipment. Now, a library of machines can be generated in days.

The second shift is reuse. Because every part keeps the same name everywhere, one model can feed five EON products:

- Genesis gets ready-made equipment libraries for courses.
- Field IQ recognises the machine and guides step-by-step procedures on it.
- EON Live runs physics simulations on it.
- Control Room runs control simulations against it.
- Brainy uses it as the setting for soft-skills practice, role play and interviews.

The approach is proven on two finished machines, a pump skid (187 parts) and a three-phase separator (117 parts), which anyone can open in 3D today. Twelve machines are designed for the EON Situation Room, covering 107 of its 120 oil and gas incident cases, with 144 drafted procedures. The aim is the equipment library for all 211 Situation Room use cases next week, and then customers' own plants, described in their own words.

The problem: training has never been short of scenarios, only of equipment

Immersive training works when the trainee stands in front of the actual equipment and does the actual task. Headsets, phones and AI tutors are ready for that. The equipment is not.

- Every scenario needs its own machine. An incident case about a pump seal leak needs that pump, with its seal pot, its valves and its gauges, connected the way a real plant connects them.
- The details carry the lesson. A procedure says "close HV-101A, then open the casing vent". If the model has no separate HV-101A, the step cannot be taught, checked or simulated.

- Hand modelling does not scale. A realistic skid has 100 to 200 parts. Built by hand, it takes weeks of a 3D specialist's time, so libraries stay thin and expensive.
- Capture needs access. Scanning or photographing real equipment requires a site visit, permission and a plant that already exists. New designs, rare equipment and dangerous areas are out of reach.
- Content ends up locked in one product. A model built for one course rarely works in a second one, because parts are named differently or not at all.

The result is a familiar pattern: strong delivery technology, a handful of showcase models, and a long queue of training needs that never get content.

Three generations: components, mirror copies, prompts

EON's 3D equipment has moved through three generations, and each removed one dependency.

Components

EON's library holds about 8,000 3D industrial parts. Specialists assemble them into equipment. Quality is high, but every machine needs a 3D specialist and weeks of work.

Mirror copies

EON Universal Mirror Direct turns photos of real equipment into a segmented 3D model. On 28 September 2026, 16 phone photos of a pool pump room became a model with 130 separate parts in 34 minutes. The specialist is no longer needed, but the real equipment is: someone has to be on site with a camera.

From a prompt

Now neither is needed. A written description becomes a layout drawing, the drawing becomes realistic photos, and Mirror Direct builds from those photos as if they had been taken on site. Equipment that does not exist yet, sites nobody can visit, and whole libraries for new industries are all within reach.

How the pipeline works

Six steps take a machine from a description to a finished library model. A person writes the description and an expert signs off the result; software does everything in between.

- 1 · Describe — a specification names the machine, its size, parts, tags, connections and operator side. An engineer reviews the layout, routing and tags.

- 2 · Draw — the specification becomes a simple 3D layout drawing, seen from nine fixed angles, with every tagged part visible.
- 3 · Photograph — generative AI turns the nine drawings into nine realistic photos of the same machine, keeping every part in place.
- 4 · Build — EON Universal Mirror Direct builds a segmented 3D model with named parts, headless and in batch; the model reports its own verified parts and tags.
- 5 · Check and finish — the model is measured and corrected into realistic worn materials, with no floating parts, no flickering surfaces and no duplicates.
- 6 · Library — one shared model for every EON product, with procedures and hazards reviewed by an expert.

What the first builds taught us

Each lesson is now a rule written into every new build, so later machines start where the first ones finished: use realistic photos (not diagrams); nothing floats or overlaps; mind the viewer's shadow floor (skids stand on 5 cm runners); realistic materials can be transferred between models; and machines are built one at a time first, then safely in batches.

Proof: two finished machines, and twelve on the way

Two machines have gone all the way from a description to a finished, realistic 3D model. Anyone can open them on a phone or a computer, with no sign-in, turn them, zoom in, or place them in the room with AR.

- OG-01 Duty/standby centrifugal pump skid — 187 parts, 25 operator-tagged (e.g. HV-101A, PSV-101, HS-102).
- OG-02 Three-phase production separator — 117 parts, 15 operator-tagged (e.g. LCV-201A, PSV-201, M-201).

The two machines are part of a set of twelve, chosen to cover the EON Situation Room's oil and gas incident cases. Two are built and finished; the heat exchanger and storage tank are approved to build next; and the ESD valve station, relief valve station, condensate stabiliser column, gas compressor, batch reactor, LPG bullet, E-house and fired heater are drawn and photographed, ready to build.

Around the twelve machines, the rest of the training content is already drafted: 107 of 120 Situation Room oil and gas cases are covered; 144 step-by-step procedures (twelve per machine) with 958 steps, each naming the exact part to touch; 12 hazard pictures for spot-the-hazard training; and a public Field IQ picture kit with a QR code per procedure.

One model, five products

The same model is designed to serve five EON products without being rebuilt, because each part carries the same name everywhere. A procedure step in Field IQ, a valve in an EON Live simulation and an alarm in the Control Room all point at the same HV-101A.

Genesis: libraries

Generated libraries give course designers a shelf of ready, realistic equipment for each industry, so a new course starts from the right machine instead of a request to a 3D artist.

Field IQ: recognition and procedures

Field IQ recognises a machine, or its picture, through a phone and guides the worker through a procedure, highlighting each part to touch and recording what was done. For the twelve oil and gas machines, 144 procedures are already drafted.

EON Live: physics simulations

Separate, named parts are what make a valve turnable and a pump startable, so generated models are built ready for simulation.

Control Room: control simulations

The same tags tie each alarm, setpoint and interlock on the screen to a physical part in the 3D model, so an operator can see which valve a reading belongs to.

Brainy: soft skills, role play and interviews

In front of the 3D equipment, a trainee can rehearse a shift handover, a permit-to-work talk or an incident debrief, or be interviewed about a real task on the machine they will run.

Use cases by industry

The pipeline is not tied to oil and gas: anything that can be described can be built. Planned libraries span five industries.

Oil and gas

Pump skids, separators, valve stations, heat exchangers, tanks, columns, compressors, reactors, LPG storage, E-houses and fired heaters — for process-safety courses, phone-guided isolation, relief-valve simulations, console operations and permit-to-work role play.

Healthcare

Operating rooms, anaesthesia workstations, intensive-care bed spaces, ventilators, infusion pumps and patient monitors — for readiness courses, machine checks, pre-use leak tests, central monitoring and team briefings.

Mining

Haul trucks, grinding mills, conveyors, crushers and their lockout stations — for maintenance courses, lockout and make-safe guidance, inching-drive inspections, overload response and pre-shift safety talks.

Aerospace

Engines and stands, landing gear, avionics bays and spacecraft integration equipment — for inspection courses, borescope guidance, fan-blade inspection, engine test cells and clean-room briefings.

Defence

Armoured vehicles and power packs, ship machinery spaces, fire mains and damage-control stations — for vehicle-maintenance courses, power-pack removal, fire-pump operation, machinery control rooms and damage-control briefings.

Quality, safety and governance

Speed only matters if the result can be trusted. Five safeguards are built into the pipeline:

- The specification is the source of truth. Where a generated photo disagrees with the written specification, the specification wins.
- Every model is measured. Software checks for floating parts, flickering surfaces, hidden duplicates and missing tags, and fixes them with targeted edits.
- Experts sign off what matters. Procedures are drafts until a process-safety engineer approves them.
- Everything is synthetic and labelled. Machines are generic, unbranded training equipment that represent no real site, with fictitious tags and no manufacturer logos.
- Every change is a version. Each edit creates a new version; any earlier version can be restored in one step.

What comes next, and how to try it

The next target is the equipment library for all 211 incident cases of the EON Situation Room, which EON AI Ventures aims to complete next week, spanning oil and gas, mining, aerospace and healthcare. After that, the same pipeline turns to customers' own plants, described in their own words, and to new industries such as defence.

Two finished machines — the pump skid and the three-phase separator — can be explored today on any phone or computer, with no sign-in: turn them, zoom in, or place them in the room with AR.