

# The Living Library

Industrial equipment that **recognises itself**, **guides the work**, and **builds new facilities** — not a catalog of parts, but a colleague that knows the plant.

50

EQUIPMENT CLASSES

350

SUBCOMPONENTS

ISO 14224

INDUSTRY  
TAXONOMY

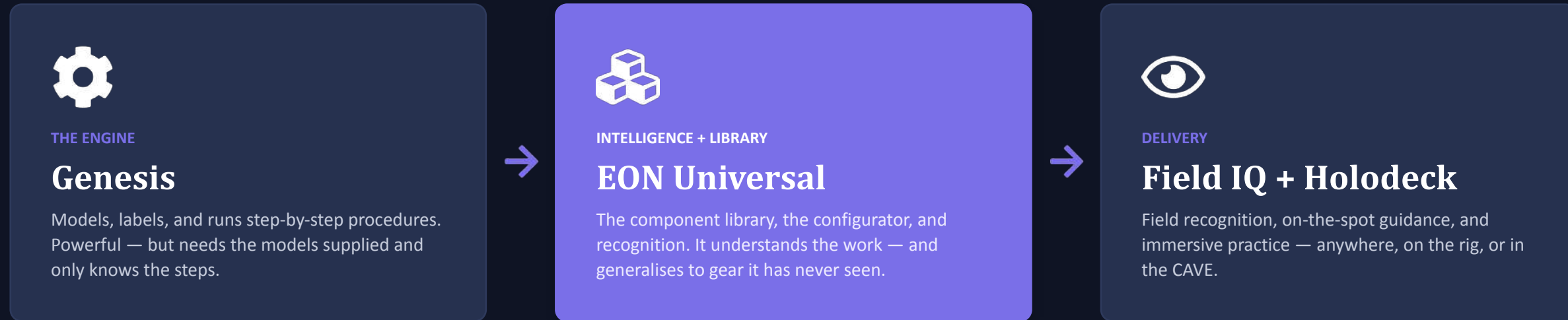
1st

OF A FAMILY OF  
LIBRARIES



# Where the library fits

*EON Universal is a three-part platform. The library is its heart — the bounded vocabulary every facility is composed from.*



**This deck is the heart of it — the Work Intelligence Library:** the finite vocabulary of understood components that Genesis runs, Universal composes, and Field IQ delivers in the field.

**Genesis shows the steps. EON Universal understands the work.**

## WHAT MAKES IT DIFFERENT

# A library that's alive

*Other libraries store things. This one does the work — it recognises equipment, tells you what to do, and builds facilities from a vocabulary it understands.*



## Recognise

Names every component on sight and links the real skid to its digital twin. The green worker points; the library identifies.



## Guide

Composes the correct procedure step by step — conditional SOPs that branch on live conditions, with safety gates that stop the line.



## Build

Drags understood parts onto a canvas to compose any facility — unlimited, engineering-valid skids from one bounded library.

*...and Escalate — when the library is unsure, it stops and hands off to a human. The worker is green; the guidance is not.*

### UNDER EVERY OBJECT — THE SIX-LAYER COMPETENCE RECORD

- 1 Identity**
- 2 Geometry**
- 3 Anatomy**
- 4 Function**
- 5 Behavior**
- 6 Procedure**

*Recognition keys on layers 1–2. Guidance composes from layers 3–6. The knowledge is authored and owned — independent of any single AI model.*

## THE COMPARISON

# Why the Universal Living Library is different

*Shape, courseware, dynamics — every existing library stops short of the work.*

	3-D / CAD library	LMS courseware	Process simulator	EON Work Intelligence Library
What it stores	A 3-D mesh or file	A course / SCORM module	A tuned plant model	A self-describing object: knowledge + 3D twin
Knows how it works & fails	X	≈ generic theory	≈ dynamics only	✓ six authored layers
Understands isolation & relationships	X	X	≈ implicit	✓ explicit, per component
Tells you what to do — live	X	≈ passive content	X	✓ branching SOPs
Recognises real equipment on sight	X	X	X	✓ feeds Field IQ + AR
Builds new facilities from it	X	X	X	✓ generative, valid
You own it — and it compounds	X vendor file	X vendor content	X one plant	✓ yours; better every job

*Only the Work Intelligence Library binds understood work to the component, recognises it in the field, and lets you own it — the step nobody else has taken, not even a simulator.*

ONE METHOD, EVERY HEAVY INDUSTRY

# The first of a family

*Because it understands components rather than memorising facilities, the same engine transfers to any industry built from a finite parts vocabulary. Learn the parts once; help every site built from them.*



BUILT NOW

## Petrochemical / Oil & Gas

ISO 14224 · 50 classes · 350 subcomponents



NEXT

## Mining & Heavy Equipment

~40–60 core classes · same bounded method



ON THE MAP

## Aerospace & MRO

High-regulation, high-value part taxonomy



ON THE MAP

## Healthcare

Devices & equipment · same composition logic

**Petrochemical is the proven, built library.** *Adjacent verticals are illustrative of the roadmap — each follows the same bounded-vocabulary method, so every new industry compounds on the last.*

# What's in the library

*Fifty Level-1 classes in nine equipment families, seven Level-2 subcomponents each — mapped to ISO 14224, the petroleum industry's own equipment taxonomy.*

## Rotating & Drivers

9

P- M- K- T- B- G-

## Valves

11

HV- CV- PSV- FV- SV-

## Actuation

2

ACT-

## Heat Transfer

4

E- CT-

## Fired

1

H-

## Vessels & Separation

8

V- C- TK- F- ST-

## Instruments

8

PI- PT- TI- TT- LG- LT- FT-  
SG-

## Electrical & Isolation

4

DS- MCC- LCS- JB-

## Piping & Isolation

3

SP- SB- RD-

# The 350 subcomponents

Seven per class. But the same parts keep reappearing — so the library composes a small kit of understood primitives rather than enumerating 350 unique things.

350

7

~24

## THE RECURRING PRIMITIVES · how many of the 350 contain each part-type



**Composition over enumeration.** Understand each primitive once — every assembly that uses it inherits the knowledge. These parts get generated next, the same Tripo way, as reusable 3D building blocks.

# Subcomponents by family

All 350 Level-2 parts, grouped under their parent classes.

## ROTATING & DRIVERS · 9

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### Centrifugal Pump

volute casing, impeller, shaft & bearing housing, mechanical seal, suction nozzle, discharge nozzle, coupling & guard

### Reciprocating (PD) Pump

crankcase / power frame, plunger, fluid-end block, suction valve, discharge valve, packing, crosshead

### Electric Motor

stator frame, rotor & shaft, bearing end-bells, cooling fan & cowl, terminal box, nameplate, mounting feet

### Centrifugal Compressor

casing / barrel, impellers, shaft & bearings, seals, suction nozzle, discharge nozzle, coupling

### Reciprocating Compressor

crankcase frame, cylinder, piston, suction valve, discharge valve, distance piece, flywheel

### Steam Turbine

casing, rotor wheel, nozzle ring, shaft & bearings, governor, trip-throttle valve, coupling

### Gas Turbine Driver

air inlet plenum, compressor section, combustor cans, turbine section, exhaust collector, accessory gearbox, coupling

### Industrial Fan / Blower

scroll housing, impeller wheel, inlet eye, discharge outlet, shaft & bearings, drive belt / coupling, base frame

### Gearbox / Coupling Assembly

housing, input shaft, output shaft, gear set, bearings, breather, oil sight glass

## VALVES · 11

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### Gate Valve

body, gate / wedge disc, seat rings, stem, bonnet, gland packing, handwheel

### Globe Valve

body, plug / disc, seat ring, stem, bonnet, gland packing, handwheel

### Ball Valve

body, ball, seats, stem, lever handle, body bolts, flanges

### Butterfly Valve

body, disc, shaft, seat liner, gear operator, position indicator, bushings

### Check Valve (NRV)

body, swing disc, hinge pin, seat, access cap, cap gasket, flow arrow

# Subcomponents by family

All 350 Level-2 parts, grouped under their parent classes.

## Plug Valve

body, tapered plug, sleeve / seat, stem, gland, wrench head, flanges

## Diaphragm Valve

body, weir, diaphragm, compressor, stem, bonnet, handwheel

## Needle Valve

body, needle stem, seat, gland, bonnet, handle, end ports

## Pressure Safety Valve (PSV)

nozzle / inlet, disc, spring, bonnet, adjusting screw, lifting lever, outlet

## Control Valve (actuated)

valve body, plug & cage, seat, stem, diaphragm actuator, positioner, yoke

## Solenoid Valve

body, ports, plunger / core, coil, spring, seat, connector

## ACTUATION · 2

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### Pneumatic Diaphragm Actuator

diaphragm casing, diaphragm, spring, stem, yoke, air port, travel indicator

### Valve Positioner

housing, gauges, feedback arm, I/P module, air ports, terminals, bracket

## HEAT TRANSFER · 4

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### Shell-and-Tube Heat Exchanger

shell, tube bundle, tubesheet, channel head, shell nozzles, channel nozzles, saddles

### Air-Cooled Cooler (fin-fan)

finned-tube bundle, header boxes, plenum, axial fan, fan ring, drive motor, structure

### Plate-and-Frame Exchanger

fixed frame plate, pressure plate, plate pack, gaskets, carrying bar, tie-bolts, nozzles

### Cooling Tower Cell

structure / casing, fill pack, fan & stack, drift eliminators, distribution basin, louvres, cold-water basin

## FIRED · 1

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### Fired Heater / Furnace

radiant firebox, convection section, burners, stack, process coils, refractory, platform

## VESSELS & SEPARATION · 8

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### Pressure Vessel / Drum

shell, heads, saddles, manway, nozzles, lifting lugs, nameplate

# Subcomponents by family

*All 350 Level-2 parts, grouped under their parent classes.*

## **Distillation Column**

shell, trays / packing, manways, nozzles, skirt, ladder & platforms, reflux nozzle

## **Three-Phase Separator**

shell, inlet diverter, mist extractor, weir plate, oil outlet, water outlet, gas outlet

## **Atmospheric Storage Tank**

shell courses, cone roof, stairway, manway, roof vent, nozzles, pad / bund

## **Cartridge Filter Housing**

housing shell, closure lid, swing bolts, filter cartridge, inlet nozzle, outlet nozzle, drain

## **Basket / Y-Strainer**

body, screen / basket, cap, cap gasket, blow-down plug, flanges, drain

## **Coalescer / Scrubber**

shell, coalescer elements, inlet, gas outlet, sump / drain, level gauge, nozzles

## **Knockout Drum**

shell, inlet nozzle, demister pad, gas outlet, liquid outlet, drain, level bridle

## **INSTRUMENTS · 8**

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### **Pressure Gauge (PI)**

case, dial face, pointer, lens, bourdon tube, movement, process connection

### **Pressure Transmitter (PT)**

sensor module, electronics housing, LCD display, terminal block, conduit entry, process flange, bracket

### **Temperature Gauge + Thermowell (TI)**

case, dial, pointer, bimetal stem, thermowell, process connection, union

### **Temperature Transmitter (TT)**

thermowell, RTD / TC probe, connection head, transmitter module, display, conduit entry, terminals

### **Level Sight Glass / Gauge (LG)**

gauge body, glass, cover bars, top valve, bottom valve, vent / drain, gaskets

### **Level Transmitter (LT)**

process flange, probe rod / cable, electronics head, display, conduit entry, terminals, reference

### **Flow Meter (Coriolis)**

flow tubes, sensor housing, flanges, transmitter, display, pickoff coils, conduit entry

### **Sight Flow Indicator**

body, sight glasses, flapper / rotor, gaskets, end connections, guards, retainer

# Subcomponents by family

All 350 Level-2 parts, grouped under their parent classes.

## ELECTRICAL & ISOLATION · 4

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### Electrical Disconnect / Isolator

enclosure, switch mechanism, operating handle, lockout hasp, line / load lugs, door interlock, conduit entries

### Motor Starter / MCC Bucket

bucket enclosure, contactor, overload relay, disconnect, control transformer, pilot devices, stabs

### Local Control Station

enclosure, start button, stop button, e-stop, indicator light, terminals, conduit entries

### Junction Box

enclosure, cover, gasket, terminal strip, cable glands, earth stud, mounting feet

## PIPING & ISOLATION · 3

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### Flanged Pipe Spool / Header

pipe, flanges, branch tee, welds, bolt holes, gasket faces, supports

### Spectacle Blind / Spade

solid blind disc, open spacer disc, connecting web, bolt holes, gasket faces, handle tab, tag

### Pressure-Relief Rupture Disc

rupture disc, inlet holder, outlet holder, bolt holes, tag plate, gaskets, flow arrow

# From knowledge to a 3-D twin



## THE PROMPT FORMULA

**4 views** STYLE + Subject + Camera line + Negative

**cutaway** CUTAWAY style + internals + Negative

Locked photoreal studio style on a neutral mid-grey background; the object stays identical across all four views — only the camera angle changes.

**Filenames** centrifugal\_pump\_front.png ... \_cutaway.png

*Lined up for batch upload and the EON Ready agent.*

## WHERE THE 250 PROMPTS LIVE

- ✓ On each class slide — its hero prompt — copy & hand off
- ✓ In each slide's notes — the full 5-view set + filenames
- ✓ In the Build Pack .xlsx — all 250, copy-paste, batch-ready

*50 classes × 5 images = 250 — kept out of the slide body so the deck stays a presentation, not a wall of prompts.*

P-01

# Centrifugal Pump

ROTATING & DRIVERS

Rotating & Drivers Class 1 of 50

## WHAT IT IS

Adds energy to liquid via a spinning impeller; casing holds pressure after stop.

## SUBCOMPONENTS · LEVEL 2

- volute casing
- shaft & bearing housing
- suction nozzle
- coupling & guard
- impeller
- mechanical seal
- discharge nozzle

## CUTAWAY REVEALS

*the impeller vanes inside the volute, the shaft, mechanical seal and wear rings*



P-02

# Reciprocating (PD) Pump

ROTATING & DRIVERS

Rotating & Drivers Class 2 of 50

## WHAT IT IS

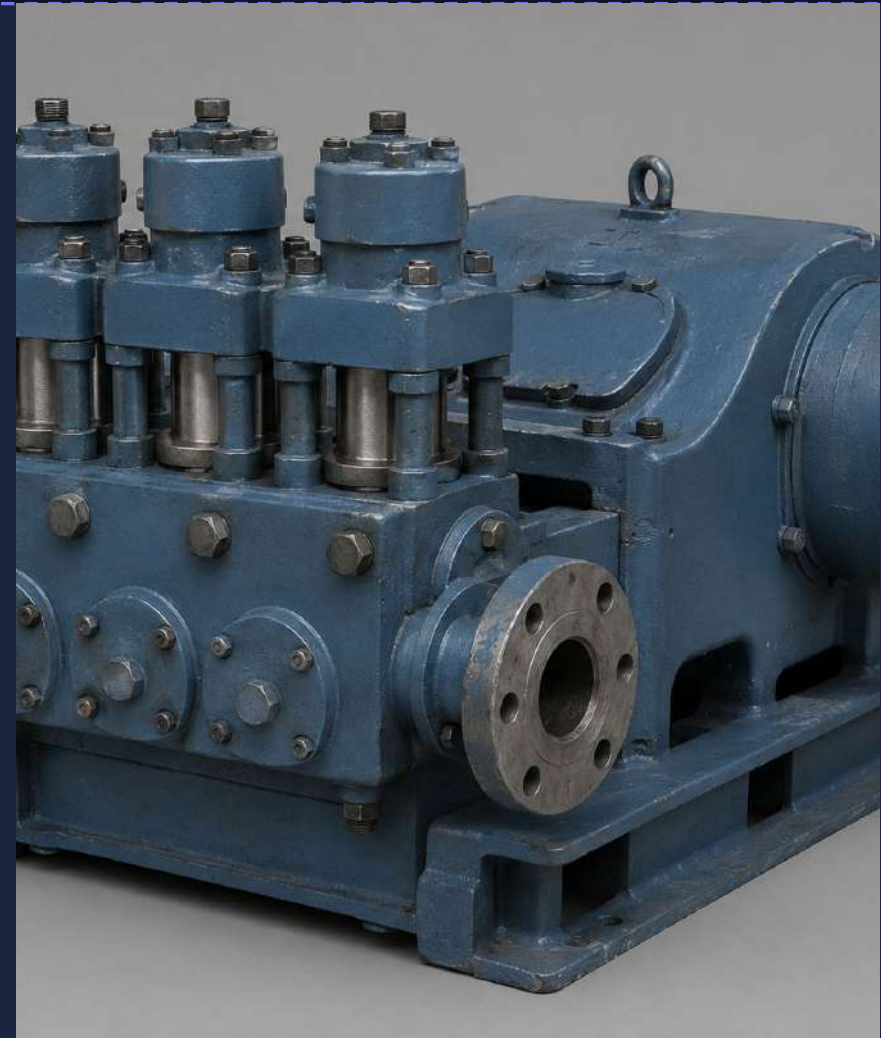
Positive-displacement pump; delivers fixed volume per stroke, high pressure.

## SUBCOMPONENTS · LEVEL 2

- crankcase / power frame
- fluid-end block
- discharge valve
- crosshead
- plunger
- suction valve
- packing

## CUTAWAY REVEALS

*the crankshaft, connecting rod, crosshead, plunger and the suction/discharge valves*



M-03

# Electric Motor

ROTATING & DRIVERS

Rotating & Drivers Class 3 of 50

## WHAT IT IS

Electrical driver for pumps/fans; rotational + electrical energy.

## SUBCOMPONENTS · LEVEL 2

- stator frame
- rotor & shaft
- bearing end-bells
- cooling fan & cowl
- terminal box
- nameplate
- mounting feet

## CUTAWAY REVEALS

*the stator windings, the rotor on the shaft, the bearings and the cooling fan*



K-04

# Centrifugal Compressor

ROTATING & DRIVERS

Rotating & Drivers Class 4 of 50

## WHAT IT IS

Raises gas pressure with high-speed impellers; large stored energy.

## SUBCOMPONENTS · LEVEL 2

- casing / barrel
- shaft & bearings
- suction nozzle
- coupling
- impellers
- seals
- discharge nozzle

## CUTAWAY REVEALS

*the stacked impellers on the shaft, the diffusers, seals and bearings*



K-05

# Reciprocating Compressor

ROTATING & DRIVERS

Rotating & Drivers Class 5 of 50

## WHAT IT IS

Piston compressor for high-pressure gas; pulsating duty.

## SUBCOMPONENTS · LEVEL 2

- crankcase frame
- piston
- discharge valve
- flywheel
- cylinder
- suction valve
- distance piece

## CUTAWAY REVEALS

*the crankshaft, connecting rod, crosshead, the piston in the cylinder and the compressor valves*



T-06

# Steam Turbine

ROTATING & DRIVERS

Rotating & Drivers Class 6 of 50

## WHAT IT IS

Expands steam to spin a driven machine; stored thermal/rotational energy.

## SUBCOMPONENTS · LEVEL 2

- casing
- rotor wheel
- nozzle ring
- shaft & bearings
- governor
- trip-throttle valve
- coupling

## CUTAWAY REVEALS

*the bladed rotor wheel, the nozzle ring, shaft and bearings*



T-07

# Gas Turbine Driver

ROTATING & DRIVERS

Rotating & Drivers Class 7 of 50

## WHAT IT IS

Combustion driver for compressors/generators; high temperature.

## SUBCOMPONENTS · LEVEL 2

- air inlet plenum
- combustor cans
- exhaust collector
- coupling
- compressor section
- turbine section
- accessory gearbox

## CUTAWAY REVEALS

*the axial compressor blades, the combustor cans, the turbine blades and shaft*



B-08

# Industrial Fan / Blower

ROTATING & DRIVERS

Rotating & Drivers Class 8 of 50

## WHAT IT IS

Moves air/gas; centrifugal scroll with motor drive.

## SUBCOMPONENTS · LEVEL 2

- scroll housing
- inlet eye
- shaft & bearings
- base frame
- impeller wheel
- discharge outlet
- drive belt / coupling

## CUTAWAY REVEALS

*the backward-curved impeller wheel inside the scroll and the shaft*



G-09

# Gearbox / Coupling Assembly

ROTATING & DRIVERS

Rotating & Drivers Class 9 of 50

## WHAT IT IS

Changes speed/torque between driver and driven machine.

## SUBCOMPONENTS · LEVEL 2

- housing
- output shaft
- bearings
- oil sight glass
- input shaft
- gear set
- breather

## CUTAWAY REVEALS

*the meshing helical gears, the shafts and bearings*



HV-10

# Gate Valve

VALVES

Valves Class 10 of 50

## WHAT IT IS

On/off isolation valve; rising stem, full-bore when open.

## SUBCOMPONENTS · LEVEL 2

- body
- gate / wedge disc
- seat rings
- stem
- bonnet
- gland packing
- handwheel

## CUTAWAY REVEALS

*the flat wedge gate between the two seats and the stem thread*



HV-11

# Globe Valve

VALVES

Valves Class 11 of 50

## WHAT IT IS

Throttling valve; plug-on-seat, good flow control.

## SUBCOMPONENTS · LEVEL 2

- body
- seat ring
- bonnet
- handwheel
- plug / disc
- stem
- gland packing

## CUTAWAY REVEALS

*the plug seating on the horizontal seat and the S-shaped flow path*



HV-12

# Ball Valve

VALVES

Valves Class 12 of 50

## WHAT IT IS

Quarter-turn isolation; lever handle, tight shut-off.

## SUBCOMPONENTS · LEVEL 2

- body
- seats
- lever handle
- flanges
- ball
- stem
- body bolts

## CUTAWAY REVEALS

*the bored spherical ball between the two PTFE seats*



HV-13

# Butterfly Valve

VALVES

Valves Class 13 of 50

## WHAT IT IS

Quarter-turn disc valve; compact, light isolation/throttle.

## SUBCOMPONENTS · LEVEL 2

- body
- shaft
- gear operator
- bushings
- disc
- seat liner
- position indicator

## CUTAWAY REVEALS

*the round disc on its central shaft within the elastomer seat*



CV-14

# Check Valve (NRV)

VALVES

Valves Class 14 of 50

## WHAT IT IS

Allows flow one way only; never an isolation point.

## SUBCOMPONENTS · LEVEL 2

- body
- hinge pin
- access cap
- flow arrow
- swing disc
- seat
- cap gasket

## CUTAWAY REVEALS

*the hinged swing disc resting on the seat and the hinge pin*



HV-15

# Plug Valve

VALVES

Valves Class 15 of 50

## WHAT IT IS

Quarter-turn tapered-plug isolation; quick shut-off.

## SUBCOMPONENTS · LEVEL 2

- body
- tapered plug
- sleeve / seat
- stem
- gland
- wrench head
- flanges

## CUTAWAY REVEALS

*the tapered plug with its through-port inside the body*



HV-16

# Diaphragm Valve

VALVES

Valves Class 16 of 50

## WHAT IT IS

Flexible-diaphragm valve for slurries/corrosives.

## SUBCOMPONENTS · LEVEL 2

- body
- diaphragm
- stem
- handwheel
- weir
- compressor
- bonnet

## CUTAWAY REVEALS

*the flexible diaphragm pressed down onto the weir*



HV-17

# Needle Valve

VALVES

Valves Class 17 of 50

## WHAT IT IS

Fine throttling for instruments; small bore.

## SUBCOMPONENTS · LEVEL 2

● body

● seat

● bonnet

● end ports

● needle stem

● gland

● handle

## CUTAWAY REVEALS

*the tapered needle point seating into the small orifice*



PSV-18

# Pressure Safety Valve (PSV)

Valves Class 18 of 50

## WHAT IT IS

Spring-loaded overpressure protection; lifts at set pressure.

## SUBCOMPONENTS · LEVEL 2

- nozzle / inlet
- spring
- adjusting screw
- outlet
- disc
- bonnet
- lifting lever

## CUTAWAY REVEALS

*the spring above the disc, the nozzle seat and the set-pressure adjusting screw*



FV-19

# Control Valve (actuated)

VALVES

Valves Class 19 of 50

## WHAT IT IS

Modulates flow on a signal; the workhorse of control loops.

## SUBCOMPONENTS · LEVEL 2

- valve body
- seat
- diaphragm actuator
- yoke
- plug & cage
- stem
- positioner

## CUTAWAY REVEALS

*the plug-and-cage trim on the seat and the actuator diaphragm and spring*



SV-20

# Solenoid Valve

VALVES

Valves Class 20 of 50

## WHAT IT IS

Electrically actuated on/off pilot valve.

## SUBCOMPONENTS · LEVEL 2

- body
- ports
- plunger / core
- coil
- spring
- seat
- connector

## CUTAWAY REVEALS

*the plunger core inside the coil, the spring and the orifice seat*



ACT-21

# Pneumatic Diaphragm Actuator

ACTUATION

Actuation Class 21 of 50

## WHAT IT IS

Converts air signal to valve stem travel; spring-return.

## SUBCOMPONENTS · LEVEL 2

- diaphragm casing
- diaphragm
- spring
- stem
- yoke
- air port
- travel indicator

## CUTAWAY REVEALS

*the rubber diaphragm over the large spring and the actuator stem*



## WHAT IT IS

Holds a control valve at the commanded position.

## SUBCOMPONENTS · LEVEL 2

- housing
- gauges
- feedback arm
- I/P module
- air ports
- terminals
- bracket

## CUTAWAY REVEALS

*the I/P converter, the pneumatic relay and the feedback cam*



E-23

# Shell-and-Tube Heat Exchanger

HEAT TRANSFER

Heat Transfer Class 23 of 50

## WHAT IT IS

Transfers heat between two fluids across tube walls.

## SUBCOMPONENTS · LEVEL 2

- shell
- tube bundle
- tubesheet
- channel head
- shell nozzles
- channel nozzles
- saddles

## CUTAWAY REVEALS

*the bundle of straight tubes, the baffles and the tubesheet*



E-24

# Air-Cooled Cooler (fin-fan)

HEAT TRANSFER

Heat Transfer Class 24 of 50

## WHAT IT IS

Rejects heat to ambient air with finned tubes and fans.

## SUBCOMPONENTS · LEVEL 2

- finned-tube bundle
- plenum
- fan ring
- structure
- header boxes
- axial fan
- drive motor

## CUTAWAY REVEALS

*the finned tubes in the header boxes and the fan blades*



E-25

# Plate-and-Frame Exchanger

HEAT TRANSFER

Heat Transfer Class 25 of 50

## WHAT IT IS

Compact high-efficiency exchanger of gasketed plates.

## SUBCOMPONENTS · LEVEL 2

- fixed frame plate
- plate pack
- carrying bar
- nozzles
- pressure plate
- gaskets
- tie-bolts

## CUTAWAY REVEALS

*the corrugated plate channels that alternate hot and cold fluid*



H-26

# Fired Heater / Furnace

FIRED

Fired Class 26 of 50

## WHAT IT IS

Heats process fluid by direct firing; high-temperature hazard.

## SUBCOMPONENTS · LEVEL 2

- radiant firebox
- burners
- process coils
- platform
- convection section
- stack
- refractory

## CUTAWAY REVEALS

*the vertical radiant tube coils lining the firebox and the floor burners*



CT-27

# Cooling Tower Cell

HEAT TRANSFER

Heat Transfer Class 27 of 50

## WHAT IT IS

Evaporative cooling of water; induced-draft fan on top.

## SUBCOMPONENTS · LEVEL 2

- structure / casing
- fan & stack
- distribution basin
- cold-water basin
- fill pack
- drift eliminators
- louvres

## CUTAWAY REVEALS

*the fill pack, the spray distribution headers and the fan*



V-28

# Pressure Vessel / Drum

VESSELS & SEPARATION

Vessels & Separation Class 28 of 50

## WHAT IT IS

Holds process fluid under pressure; stored energy.

## SUBCOMPONENTS · LEVEL 2

● shell

● heads

● saddles

● manway

● nozzles

● lifting lugs

● nameplate

## CUTAWAY REVEALS

*the internal volume with a vortex breaker or demister*



## WHAT IT IS

Separates mixtures by boiling point over stacked trays.

## SUBCOMPONENTS · LEVEL 2

- shell
- trays / packing
- manways
- nozzles
- skirt
- ladder & platforms
- reflux nozzle

## CUTAWAY REVEALS

*the stacked distillation trays with downcomers (or packing beds)*



V-30

# Three-Phase Separator

VESSELS & SEPARATION

Vessels & Separation Class 30 of 50

## WHAT IT IS

Splits gas, oil and water; internals do the work.

## SUBCOMPONENTS · LEVEL 2

- shell
- inlet diverter
- mist extractor
- weir plate
- oil outlet
- water outlet
- gas outlet

## CUTAWAY REVEALS

*the inlet diverter, the weir, the mist-extractor pad and the liquid levels*



TK-31

# Atmospheric Storage Tank

VESSELS & SEPARATION

Vessels & Separation Class 31 of 50

## WHAT IT IS

Bulk liquid storage at near-atmospheric pressure.

## SUBCOMPONENTS · LEVEL 2

- shell courses
- cone roof
- stairway
- manway
- roof vent
- nozzles
- pad / bund

## CUTAWAY REVEALS

*the open internal volume and the roof support rafters*



F-32

# Cartridge Filter Housing

VESSELS & SEPARATION

Vessels & Separation Class 32 of 50

## WHAT IT IS

Removes particulates; cartridges in a pressure housing.

## SUBCOMPONENTS · LEVEL 2

- housing shell
- swing bolts
- inlet nozzle
- drain
- closure lid
- filter cartridge
- outlet nozzle

## CUTAWAY REVEALS

*the pleated filter cartridges on the central core*



ST-33

# Basket / Y-Strainer

VESSELS & SEPARATION

Vessels & Separation Class 33 of 50

## WHAT IT IS

Catches debris in a line; cleanable screen.

## SUBCOMPONENTS · LEVEL 2

- body
- screen / basket
- cap
- cap gasket
- blow-down plug
- flanges
- drain

## CUTAWAY REVEALS

*the perforated mesh screen basket in the diagonal leg*



V-34

# Coalescer / Scrubber

VESSELS & SEPARATION

Vessels & Separation Class 34 of 50

## WHAT IT IS

Merges fine droplets/mist out of gas; protects downstream.

## SUBCOMPONENTS · LEVEL 2

- shell
- inlet
- sump / drain
- nozzles
- coalescer elements
- gas outlet
- level gauge

## CUTAWAY REVEALS

*the vertical coalescing filter elements and the liquid sump*



V-35

# Knockout Drum

VESSELS & SEPARATION

Vessels & Separation Class 35 of 50

## WHAT IT IS

Separates entrained liquid from gas ahead of equipment.

## SUBCOMPONENTS · LEVEL 2

- shell
- inlet nozzle
- demister pad
- gas outlet
- liquid outlet
- drain
- level bridle

## CUTAWAY REVEALS

*the mesh demister pad below the gas outlet and the liquid pool*



## WHAT IT IS

Local pressure reading; the stored-energy check for LOTO.

## SUBCOMPONENTS · LEVEL 2

- case
- dial face
- pointer
- lens
- bourdon tube
- movement
- process connection

## CUTAWAY REVEALS

*the curved bourdon tube linked to the geared pointer movement*



PT-37

# Pressure Transmitter (PT)

INSTRUMENTS

Instruments Class 37 of 50

## WHAT IT IS

Sends a pressure signal to the control system.

## SUBCOMPONENTS · LEVEL 2

- sensor module
- electronics housing
- LCD display
- terminal block
- conduit entry
- process flange
- bracket

## CUTAWAY REVEALS

*the sensing diaphragm capsule and the electronics board*



TI-38

# Temperature Gauge + Thermowell (TI)

INSTRUMENTS

Instruments Class 38 of 50

## WHAT IT IS

Local temperature reading via a protective well.

## SUBCOMPONENTS · LEVEL 2

- case
- dial
- pointer
- bimetal stem
- thermowell
- process connection
- union

## CUTAWAY REVEALS

*the coiled bimetal element in the stem inside the thermowell*



TT-39

# Temperature Transmitter (TT)

INSTRUMENTS

Instruments Class 39 of 50

## WHAT IT IS

Sends a temperature signal from an RTD/thermocouple.

## SUBCOMPONENTS · LEVEL 2

- thermowell
- connection head
- display
- terminals
- RTD / TC probe
- transmitter module
- conduit entry

## CUTAWAY REVEALS

*the RTD/thermocouple sensor and the transmitter board in the head*



LG-40

# Level Sight Glass / Gauge (LG)

INSTRUMENTS

Instruments Class 40 of 50

## WHAT IT IS

Direct visual level reading on a vessel.

## SUBCOMPONENTS · LEVEL 2

- gauge body
- cover bars
- bottom valve
- gaskets
- glass
- top valve
- vent / drain

## CUTAWAY REVEALS

*the liquid column visible behind the reflex glass*



LT-41

# Level Transmitter (LT)

INSTRUMENTS

Instruments Class 41 of 50

## WHAT IT IS

Sends a level signal; guided-wave radar type.

## SUBCOMPONENTS · LEVEL 2

- process flange
- electronics head
- conduit entry
- reference
- probe rod / cable
- display
- terminals

## CUTAWAY REVEALS

*the electronics module above the flange and the probe*



FT-42

# Flow Meter (Coriolis)

INSTRUMENTS

Instruments Class 42 of 50

## WHAT IT IS

Mass-flow measurement; vibrating tubes.

## SUBCOMPONENTS · LEVEL 2

- flow tubes
- sensor housing
- flanges
- transmitter
- display
- pickoff coils
- conduit entry

## CUTAWAY REVEALS

*the curved vibrating measuring tubes and the pickoff coils*



SG-43

# Sight Flow Indicator

INSTRUMENTS

Instruments Class 43 of 50

## WHAT IT IS

Confirms flow visually; spinner behind glass.

## SUBCOMPONENTS · LEVEL 2

- body
- sight glasses
- flapper / rotor
- gaskets
- end connections
- guards
- retainer

## CUTAWAY REVEALS

*the rotating flapper visible through the windows*



DS-44

# Electrical Disconnect / Isolator

ELECTRICAL & ISOLATION

Electrical & Isolation Class 44 of 50

## WHAT IT IS

Primary electrical isolation point for LOTO; lockable.

## SUBCOMPONENTS · LEVEL 2

- enclosure
- operating handle
- line / load lugs
- conduit entries
- switch mechanism
- lockout hasp
- door interlock

## CUTAWAY REVEALS

*the switch blades and the line/load terminals inside the box*



MCC-45

# Motor Starter / MCC Bucket

ELECTRICAL & ISOLATION

Electrical & Isolation Class 45 of 50

## WHAT IT IS

Starts/protects a motor; a control device, not isolation.

## SUBCOMPONENTS · LEVEL 2

- bucket enclosure

- overload relay

- control transformer

- stabs

- contactor

- disconnect

- pilot devices

## CUTAWAY REVEALS

*the contactor, overload relay and breaker on the back panel*



LCS-46

# Local Control Station

ELECTRICAL & ISOLATION

Electrical & Isolation Class 46 of 50

## WHAT IT IS

Local start/stop/e-stop; control only.

## SUBCOMPONENTS · LEVEL 2

- enclosure
- stop button
- indicator light
- conduit entries
- start button
- e-stop
- terminals

## CUTAWAY REVEALS

*the push-button contact blocks and the terminal strip*



JB-47

# Junction Box

ELECTRICAL & ISOLATION

Electrical & Isolation Class 47 of 50

## WHAT IT IS

Field wiring terminations in a protected enclosure.

## SUBCOMPONENTS · LEVEL 2

- enclosure
- cover
- gasket
- terminal strip
- cable glands
- earth stud
- mounting feet

## CUTAWAY REVEALS

*the DIN-rail terminal blocks and the field wiring*



SP-48

# Flanged Pipe Spool / Header

PIPING & ISOLATION

Piping & Isolation Class 48 of 50

## WHAT IT IS

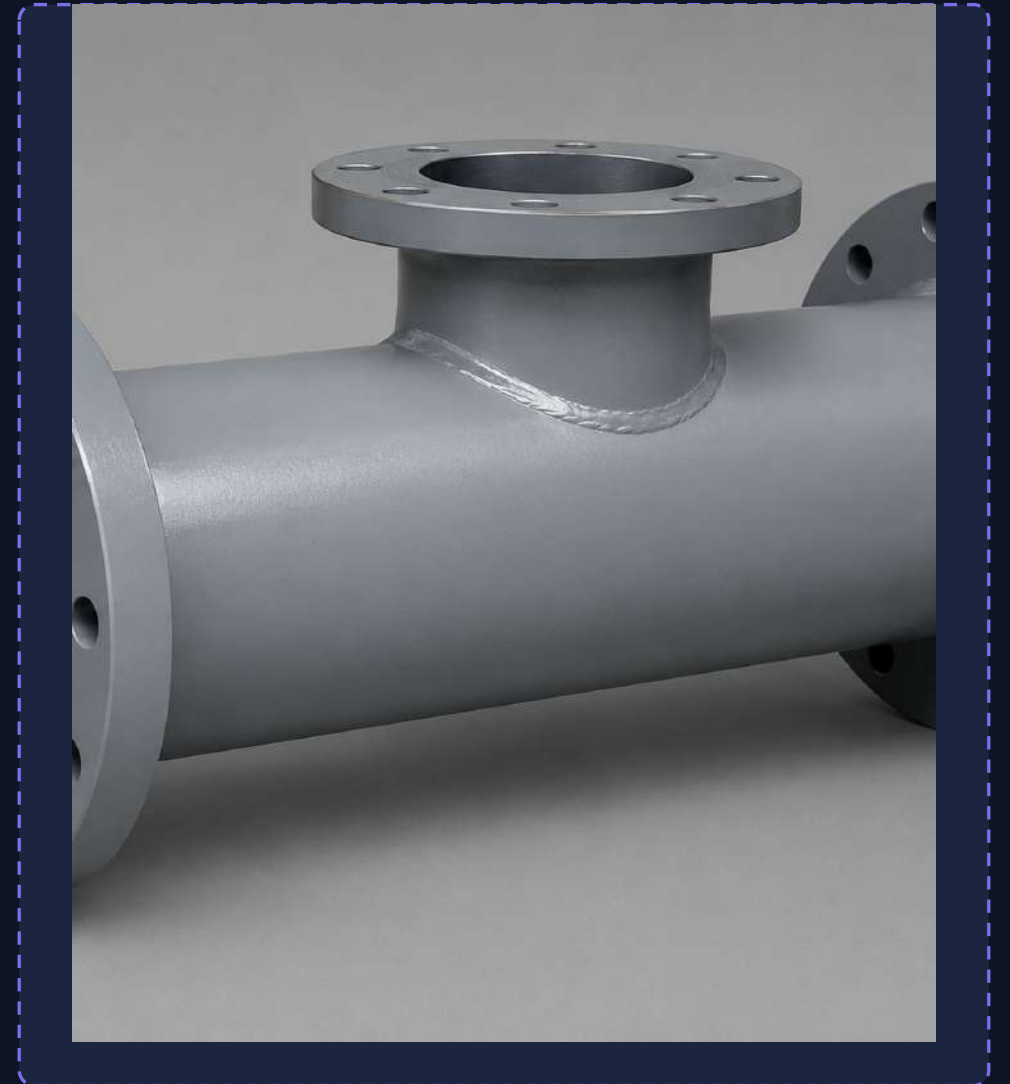
A fabricated pipe section; the line itself.

## SUBCOMPONENTS · LEVEL 2

- pipe
- flanges
- branch tee
- welds
- bolt holes
- gasket faces
- supports

## CUTAWAY REVEALS

*the bore and wall thickness and the weld profile*



SB-49

# Spectacle Blind / Spade

PIPING & ISOLATION

Piping & Isolation Class 49 of 50

## WHAT IT IS

Positive isolation between flanges; figure-8 plate.

## SUBCOMPONENTS · LEVEL 2

- solid blind disc
- connecting web
- gasket faces
- tag
- open spacer disc
- bolt holes
- handle tab

## CUTAWAY REVEALS

*the contrast between the solid blind disc and the open ring, and the bolt-hole pattern*



RD-50

# Pressure-Relief Rupture Disc

PIPING & ISOLATION

Piping & Isolation Class 50 of 50

## WHAT IT IS

One-time overpressure protection; bursts at set pressure.

## SUBCOMPONENTS · LEVEL 2

- rupture disc
- inlet holder
- outlet holder
- bolt holes
- tag plate
- gaskets
- flow arrow

## CUTAWAY REVEALS

*the thin domed disc with score lines clamped in the holder*



THE FIRST LIVING LIBRARY, BUILT

# Oil & gas is built. The method is universal.

Fifty objects that recognise themselves, guide the work, and compose new facilities — authored, owned, and compounding. The same engine carries to mining, aerospace MRO, and healthcare next.

## 1 Generate

50 hero + 250 production images

## 2 Reconstruct

Tripo multiview → 50 GLB twins

## 3 Bind & Browse

drop into slots → living library