



Accelerating Product Development

Agentic AI for Manufacturing Engineering Design

Made Smarter Technology Providers Directory | Supporting Document

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Supported by Innovate UK

The Challenge

Too Slow

Engineering design iterations that should take minutes consume days. Design exploration is limited to a handful of options.

Too Dependent

Critical engineering knowledge lives in the heads of one or two senior people. When they're unavailable, development stalls.

Too Expensive

Traditional simulation software costs £10k–50k/yr per seat. Implementation takes months. Most SMEs can't justify it.

The root cause: reliance on manual methods — spreadsheets, experience-based decisions, and hand-checked compliance.

The Product Development Bottleneck

THE PRODUCT DEVELOPMENT BOTTLENECK & THE AGENTIC AI SOLUTION

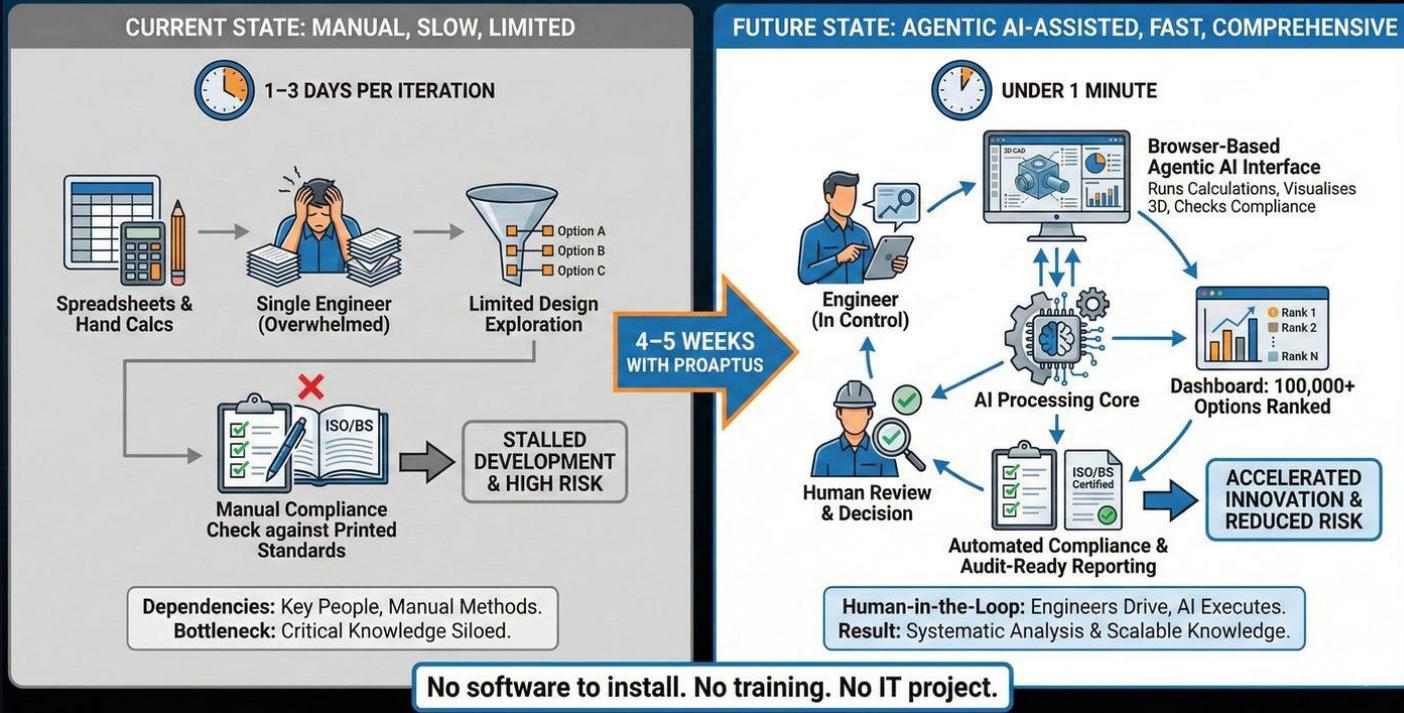


Figure 1: Current state vs. future state with Proaptus agentic AI

Our Solution

Bespoke Agentic AI for Your Engineering Processes

We take your specific engineering processes — the calculations your team runs, the standards you work to — and build a purpose-built AI system around them. Within weeks, your team goes from manual methods to a working AI-powered engineering design system.

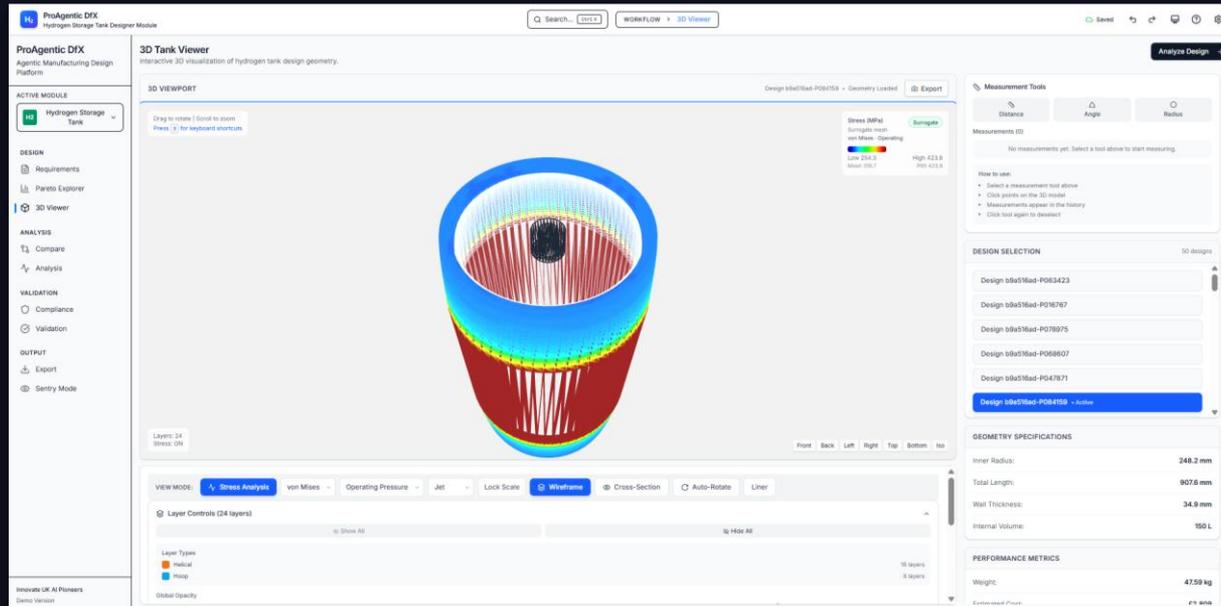


Figure 2: Live 3D viewer — Hydrogen Storage Tank with stress contour overlay

Compare Designs Side by Side

Performance radar charts and detailed metrics for up to three designs at once. Engineers see trade-offs at a glance and make informed decisions in minutes, not days.

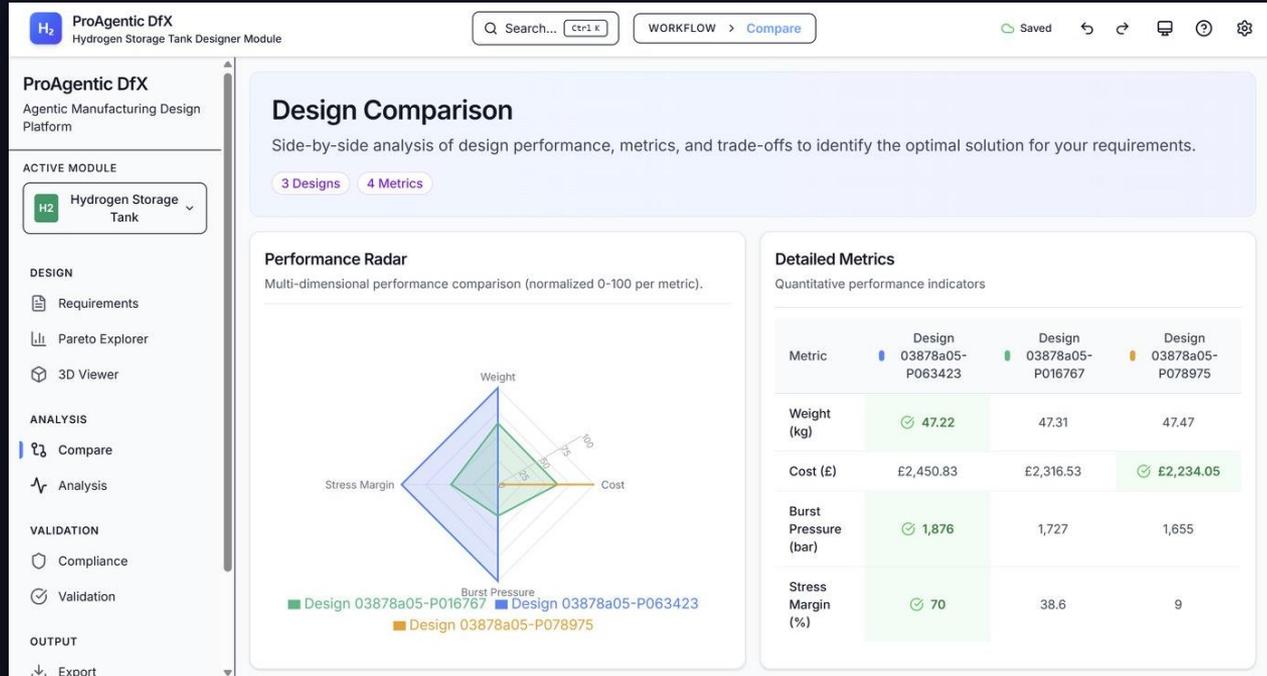


Figure 3: Design comparison — radar chart and metrics for three hydrogen tank candidates

Deep Engineering Analysis

100,000 Monte Carlo samples per design. Failure probability, burst pressure distributions, and confidence intervals — all computed automatically from design parameters.

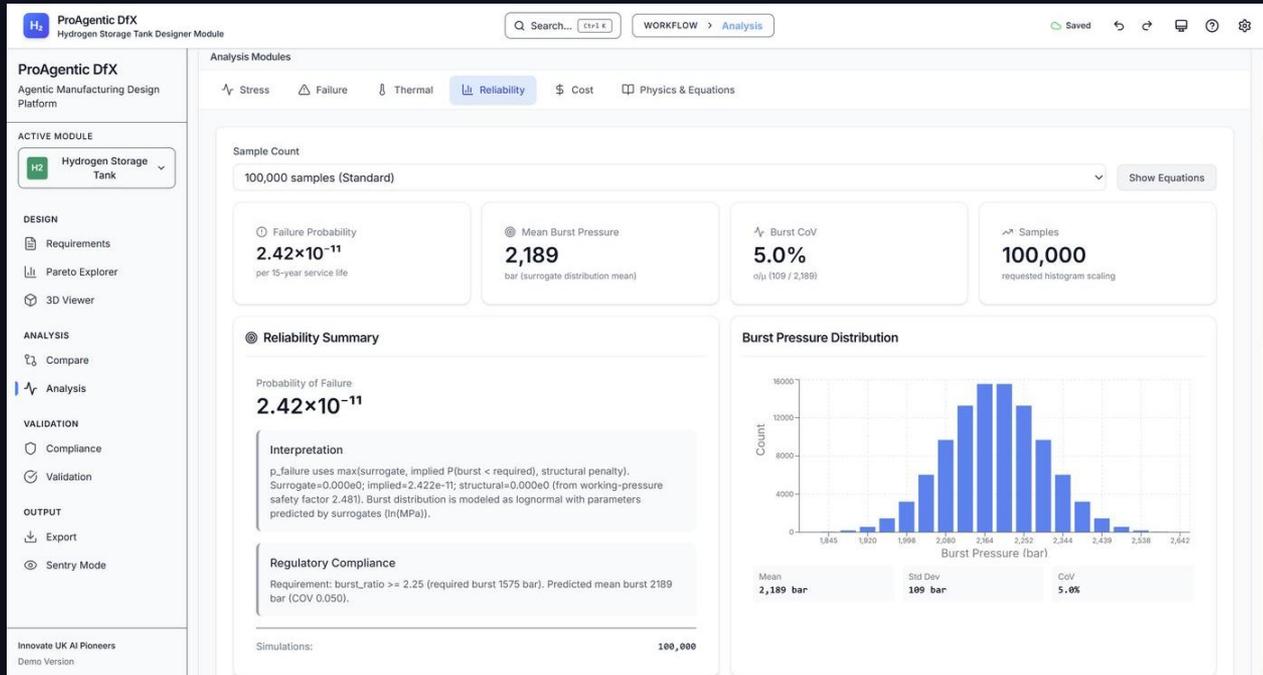


Figure 4: Reliability analysis — 100,000-sample burst pressure distribution with failure probability

Automatic Compliance & Standards

ProAgentic DFX
Hydrogen Storage Tank Designer Module

Design 03878a05-P084109 - Hydrogen Pressure Vessel Standards Verification
Standards-mapped compliance checks against ISO 11119-3, UN ECE R134, and SAE J2579

Overall: PASS [WARNINGS]

15 Total Requirements
10 Passed (67%)
5 Verified (33%)
0 Critical Issues

ID	Standard / Clause	Description	Design Check	Test Required	Verified	Status	Priority
REQ-114-493	UN_R134 03/05_01/03.1	Minimum and maximum operating temperatures	✓	Yes	✓	Pass	Medium
REQ-114-492	UN_R134 03/05_01/03.1	Fire exposure test with PFD activation	✗	Yes	✗	Fail	High
REQ-114-491	UN_R134 03/05_01/03.1	Container must not catastrophically fail when pressurized	✗	Yes	✗	Fail	High
REQ-70260-495	EC_79_2009 03/04_02/09	Minimum ratio of actual burst pressure to working pressure	✓	Yes	✓	Pass	Medium
REQ-70260-492	EC_79_2009 03/04_02/09	Minimum number of pressure cycles to failure	✓	Yes	✓	Pass	Medium

Compliance dashboard — 15 requirements checked

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Hydrogen Storage Tank Designer Module

Standards Library
Browse and search all applicable standards, policies, and requirements

5 Regulatory Standards
0 Industry Standards
0 Internal Policies
0 Customer/CEM Requirements

Regulatory Standards (5)

- EC 79-2009 (active)
Type-approval of hydrogen-powered vehicles (superseded by R134)
- ISO 11119-3 (active)
Gas cylinders - Composite construction

Full Title: Part 3 Fully wrapped fibre reinforced composite gas cylinders and tubes up to 455 L with non-load-sharing metallic or non-metallic liners
Version: 2020

Scope: Part 3 Fully wrapped fibre reinforced composite gas cylinders and tubes up to 455 L with non-load-sharing metallic or non-metallic liners
Clauses: 4

Applicability: Type A1, Type A2, International

Key Requirements: burst_ratio_min: Minimum ratio of actual burst pressure to working pressure; cycles_min: Minimum number of pressure cycles to failure; permeation_test: Validation that permeation rate meets code; fire_test: Localized fire and engulfing tests

Standards library — searchable, linked, kept current

Every design is checked against ISO, UN ECE, SAE, BS, Eurocodes, or any other standard your industry requires. Full compliance matrix, audit-ready.

How It Works

Three Operating Modes — You Choose the Level of Automation

Human Mode

Engineers drive the workflow step by step. AI acts as a powerful calculation engine. Best for new processes or complex edge cases.

Hybrid Mode

AI handles routine analysis — calculations, compliance, ranking. Engineers review and approve. Best for day-to-day design work.

Autonomous Mode

AI agents run the complete workflow end-to-end, producing design packs and flagging exceptions. Best for high-volume batch processing.

The system learns and improves over time. Month 6 is measurably better than month 1 — without commissioning another project.

The Engagement

1 Discovery

We meet your engineers, map your processes, learn your methods and standards. You get a clear specification.

2 Build

Our agentic build system constructs your bespoke tool in 4–5 weeks. Regular walkthroughs throughout.

3 Go Live

Your team starts using the system on real problems. We validate results and tune with real-world data.

4 Evolve

The system continues to learn. Request changes in plain language. Optional ongoing support packages.

Weeks, not months | Scoped to your needs | You own it | Browser-based | Self-improving

Proven Results

<1 min

per design iteration
(was 1–3 days)

100,000+

design options evaluated
(was 3–5 per study)

87%

reduction in
engineering effort

None

specialist software
required

None

training required
(browser-based)

Auto

compliance checking
(audit-ready)

Live, deployed systems across three engineering domains: hydrogen storage vessels, thermal heat exchangers, and structural airframes.

Built on Years of Agentic AI Delivery

Autonomous Orchestration Tools | Inherent Safety & Quality Control | Multiple Grant Competition Wins

Sentry AI

Railway Infrastructure Monitoring

AI agents analyse acoustic and vibration data to detect safety threats in real time.

DocIntel

Document Intelligence

AI agents extract obligations, compliance terms, and risk from legal contracts.

ProAgentic

Multi-Agent Project Management

11 specialised AI agents coordinate to plan, schedule, and manage complex projects 3x faster.

Pricing Systems

Custom AI Pricing/Budgeting

Automated CAPEX/OPEX analysis and resource allocation with scenario planning.

Every system follows the same pattern: take specialist processes that depend on expert knowledge, and build agentic AI that can run them intelligently.



Get in touch to discuss your engineering challenge

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