

MECHANICAL ENGINEERING SERVICE CATALOG

Tier-1 style capability statement for industrial design, product development, PPMP documentation, manufacturing optimization, reliability, and implementation support.

<p>What clients buy Structured engineering packages, not billable hours: defined scope, deliverables, pricing bands, and delivery steps.</p>	<p>What makes the offer different Every package includes mechanical engineering, 3D CAD, PPMP documentation, and implementation guidance.</p>
<p>Major industries served Mining, heavy equipment, OEM manufacturing, industrial services, energy, municipal fleets, and process operations.</p>	<p>Typical project value Entry assessments: CAD 10k-25k Core programs: CAD 30k-70k Full engineering programs: CAD 80k-150k+</p>

Flagship front-end offer: Engineering Risk & Compliance Program (#7) - the fastest way for a client to understand hidden risk, build the PPMP record, and prioritize larger design or reliability work.

1. Executive Overview

Why industrial companies buy these services and how the engagement is structured.

Industrial companies are not simply looking for an engineer; they are looking for a partner who can **design, validate, document, troubleshoot, and improve** critical mechanical systems with a clear delivery model.

Core capabilities offered

- Mechanical engineering design and redesign for industrial equipment and systems.
- 3D CAD modeling, assembly layout, interference review, and drawing packages.
- PPMP development including design basis, assumptions, calculations, inspection criteria, and traceability.
- Reliability engineering, root cause analysis, and engineering improvement plans.
- Manufacturing optimization, design-for-fabrication, and implementation support.

Core packages at a glance

Service family	Best fit	Typical value
Entry assessment - Engineering Risk & Compliance	Legacy equipment, undocumented modifications, compliance exposure	CAD 30k-70k
Design and redesign programs	OEMs, custom equipment, plant modifications	CAD 40k-120k
Product development programs	New industrial products and prototypes	CAD 60k-150k
Reliability and rescue programs	Recurring failures, downtime, weak engineering record	CAD 25k-80k

2. How the Engagement Is Delivered

Every package follows the same clear client journey so buyers understand scope, timing, and what they will receive.

Step	What you do	What the client receives
1. Discovery and scoping	Review the business problem, affected equipment, operating context, risk profile, and available drawings or records.	Scoped engagement summary, commercial fit check, and a clearly defined statement of work.
2. Engineering audit and data capture	Collect field observations, photos, measurements, maintenance history, failure records, and available 3D or drawing data.	Site notes, issue register, and required information list.
3. Analysis and concept development	Perform calculations, failure review, standards checks, concept development, and engineering options.	Shortlisted concepts or findings with business and technical rationale.
4. Detailed engineering	Develop the 3D model, manufacturing details, PPMP file, calculation pack, and implementation recommendations.	Design package, PPMP file, drawings, and engineering review deck.
5. Delivery and decision support	Present the results, prioritize next actions, answer technical questions, and support handover to fabrication or operations.	Final package, executive summary, and implementation roadmap.

Standard deliverables on most engagements

- Executive summary and scope confirmation.
- Engineering calculations and assumptions log.
- 3D CAD model and associated drawing package where design work is included.
- PPMP engineering record with traceability, inspection requirements, and maintenance notes.
- Prioritized improvement roadmap with business impact framing.

7. Engineering Risk & Compliance Program

Structured engineering package with defined scope, deliverables, timeline, and business outcome.

Front-end offer: best entry point for new clients because it reduces risk, creates the PPMP backbone, and naturally leads into larger redesign and reliability work.

Best fit industries

Mining, manufacturing, energy infrastructure, OEM equipment, municipal fleets, industrial service firms

What problem this solves

Many sites operate equipment that has been modified over time, lacks traceable calculations, or has incomplete engineering records. This program creates the engineering backbone: it identifies hidden risk, validates the design basis, checks compliance exposure, and builds the PPMP package that management and operations can rely on.

Typical investment

CAD 30,000-70,000

Typical duration

4-8 weeks

Delivery mode

Remote plus site visit as required

Primary deliverables

Deliverable	Purpose
Engineering compliance assessment	Provides a practical risk picture, key technical gaps, and immediate actions.
PPMP engineering file	Creates the formal engineering record required for traceability, internal approvals, and future design changes.
Calculation summary and verification pack	Shows how the system or structure was checked and where additional design margin is needed.
Improvement roadmap	Translates technical findings into sequenced engineering actions and capital priorities.

Step by step client delivery

Step	What we do	What the client receives
1. Discover	Review the equipment history, business drivers, and available engineering information.	Scope memo and document request list.
2. Inspect	Inspect the asset or review the field evidence, interview stakeholders, and capture dimensions and conditions.	Field issue register and initial risk map.
3. Analyze	Complete calculations, standards checks, and engineering review of known modifications.	Assessment findings workshop.
4. Document	Build the PPMP file, compliance summary, and prioritized recommendation list.	Draft engineering package for review.
5. Deliver	Present the final package and	Final PPMP-backed risk and

	define next actions for redesign, repair, or implementation.	
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		compliance package.
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Scope typically includes

- Engineering review of existing equipment, modifications, operating loads, and available documents.
- Calculation package development for load verification, safety factors, and component suitability.
- Standards review aligned to the applicable CSA, ASME, API, or internal engineering criteria.
- PPMP development with design basis, assumptions, inspection points, maintenance notes, and traceability.
- Risk register with prioritized recommendations for redesign, maintenance action, or further engineering.

3. Mechanical System Design & Redesign Program

Structured engineering package with defined scope, deliverables, timeline, and business outcome.

Best fit industries

Heavy equipment, mining suppliers, OEMs, industrial plants, fabrication shops

What problem this solves

Used when equipment is underperforming, difficult to maintain, unsafe to operate as configured, or costly to manufacture. The program turns a design challenge into a validated, buildable engineering package.

Typical investment

CAD 40,000-120,000

Typical duration

6-12 weeks

Delivery mode

Remote plus site visit as required

Primary deliverables

Deliverable	Purpose
Design basis and requirement set	Aligns engineering work with duty, interfaces, risks, and operating conditions.
3D CAD assembly package	Provides the visual and technical backbone for coordination and fabrication.
Drawing package	Supports purchasing, fabrication, machining, and controlled field changes.
PPMP design record	Captures the approved engineering basis and future reference record.

Step by step client delivery

Step	What we do	What the client receives
1. Define	Confirm performance gap, duty, interfaces, and constraints.	Approved design brief.
2. Concept	Generate and compare feasible design concepts.	Concept review and preferred direction.
3. Analyze	Check loads, materials, components, and critical details.	Verified concept with calculation basis.
4. Detail	Produce 3D model, drawings, BOM, and PPMP file.	Draft production package.
5. Support	Answer build questions and close the loop during implementation.	Released package and issue log.

Scope typically includes

- Design calculations including loads, stiffness, safety factor, and component sizing.
- 3D CAD modeling of assemblies, interfaces, envelopes, and service clearances.
- Fabrication, machining, weldment, and assembly drawing development.
- PPMP record for design intent, calculations, assumptions, material selection, and inspection criteria.
- Implementation support during fabrication, installation, or commissioning.

4. Reliability & Failure Elimination Program

Structured engineering package with defined scope, deliverables, timeline, and business outcome.

Best fit industries

Mining, oil sands, manufacturing, process operations, fleet-intensive operations

What problem this solves

Built for sites experiencing recurring failures, repeat repairs, chronic downtime, or weak understanding of root causes. The focus is not just to explain the failure, but to engineer it out of the system.

Typical investment

CAD 30,000-80,000

Typical duration

4-8 weeks

Delivery mode

Remote plus site visit as required

Primary deliverables

Deliverable	Purpose
Reliability assessment report	Shows the highest-value failure risks and where to focus resources.
Root cause analysis pack	Documents the failure mechanism and the evidence supporting it.
Engineering upgrade actions	Provides specific design, maintenance, and operating changes.
Updated PPMP or modification record	Maintains traceability where changes are introduced.

Step by step client delivery

Step	What we do	What the client receives
1. Review	Analyze downtime data, work orders, and failure evidence.	Prioritized failure list.
2. Investigate	Inspect failed parts and operating context.	Failure mechanism findings.
3. Engineer	Develop design or operating changes to remove the driver.	Improvement options workshop.
4. Document	Prepare the report, actions, and PPMP updates.	Draft reliability package.
5. Deliver	Finalize the roadmap and discuss execution priorities.	Final improvement plan.

Scope typically includes

- Failure history review, criticality ranking, and asset boundary definition.
- Root cause analysis using evidence review, interviews, and engineering checks.
- Design or operating recommendations to eliminate repeat failure drivers.
- Updated PPMP or modification record where engineering changes are recommended.
- Reliability roadmap covering monitoring, inspections, operating window, and redesign priorities.

5. Industrial Product Development Program

Structured engineering package with defined scope, deliverables, timeline, and business outcome.

Best fit industries

OEM manufacturers, machine shops, industrial startups, custom equipment builders

What problem this solves

For companies building a new industrial product or major product variant but lacking an internal engineering team with enough capacity or industrial field depth.

Typical investment

CAD 60,000-150,000

Typical duration

8-16 weeks

Delivery mode

Remote plus site visit as required

Primary deliverables

Deliverable	Purpose
Requirements and concept pack	Creates alignment before design time is spent.
3D CAD product model	Provides the engineering foundation for prototype and review.
Prototype or production drawings	Lets the client move into fabrication or sourcing.
PPMP product record	Maintains traceability from concept through release.

Step by step client delivery

Step	What we do	What the client receives
1. Scope	Define user need, operating duty, and interfaces.	Requirements summary.
2. Concept	Generate concepts and down-select the best path.	Concept selection record.
3. Model	Build and iterate the 3D design.	Design review model.
4. Validate	Check fit, loads, basic manufacturability, and risk.	Engineering review findings.
5. Release	Issue drawings, PPMP file, and next-step recommendations.	Release package.

Scope typically includes

- Requirement definition, performance targets, constraints, and interface mapping.
- Concept development and screening with early risk review.
- 3D CAD product design, tolerance thinking, and manufacturability integration.
- Drawing package for prototype or production release.
- PPMP file covering design basis, calculations, standards, and validation notes.

6. Design for Manufacturing Optimization Program

Structured engineering package with defined scope, deliverables, timeline, and business outcome.

Best fit industries

Industrial manufacturers, machine builders, fabrication shops, OEMs

What problem this solves

Used when a product or assembly is technically acceptable but expensive to build, over-complicated, or difficult to scale. The objective is lower cost with no loss of function or compliance.

Typical investment

CAD 30,000-90,000

Typical duration

6-10 weeks

Delivery mode

Remote plus site visit as required

Primary deliverables

Deliverable	Purpose
Manufacturing cost-reduction review	Identifies where time, waste, and complexity are created.
Optimized CAD and drawing package	Supports a cleaner production method.
PPMP design change record	Maintains engineering control over the revised design.
Implementation notes	Helps production teams adopt the new design with less friction.

Step by step client delivery

Step	What we do	What the client receives
1. Assess	Review the current build route and cost drivers.	Baseline map.
2. Diagnose	Identify the biggest manufacturability losses.	Improvement shortlist.
3. Redesign	Update product geometry and interfaces.	Revised engineering model.
4. Update	Issue drawings and PPMP change record.	Controlled design release.
5. Support	Assist first build, validate assumptions, and close issues.	Implementation feedback pack.

Scope typically includes

- Manufacturing route review covering fabrication, machining, assembly, and service steps.
- Redesign of parts or interfaces to reduce part count, setup time, or complexity.
- Updated 3D model and drawings aligned to the preferred build method.
- PPMP update reflecting design changes, assumptions, and approved controls.
- Implementation support during pilot build or first-run production.

1. Mechanical Infrastructure Engineering Program

Structured engineering package with defined scope, deliverables, timeline, and business outcome.

Best fit industries

EPC contractors, energy infrastructure, plants, municipal utilities, process facilities

What problem this solves

For facilities that need mechanical system integration, equipment modification packages, support design, layout checks, or brownfield engineering without adding permanent headcount.

Typical investment

CAD 40,000-120,000

Typical duration

8-14 weeks

Delivery mode

Remote plus site visit as required

Primary deliverables

Deliverable	Purpose
Calculation and support package	Provides engineering basis for field installation and review.
Layout model or arrangement set	Improves coordination and reduces surprises before construction.
Interface drawing set	Supports fabrication and site execution.
PPMP infrastructure record	Creates traceability for approved plant modifications.

Step by step client delivery

Step	What we do	What the client receives
1. Trigger	Confirm the plant need, tie-in boundaries, and shutdown constraints.	Engagement summary.
2. Inspect	Gather dimensions, photos, and existing record information.	Field capture pack.
3. Analyze	Check loads, interfaces, and layout impacts.	Engineering review notes.
4. Coordinate	Issue draft package for stakeholder review.	Review package.
5. Release	Finalize approved package and implementation notes.	Released engineering package.

Scope typically includes

- Equipment support and layout design with constructability awareness.
- Interface and tie-in engineering for mechanical modifications.
- 3D layout checks and clash review where geometry is available.
- Calculation package for supports, interfaces, and structural loading assumptions.
- PPMP-backed documentation for approved changes and design basis.

2. Critical Equipment Recovery Program

Structured engineering package with defined scope, deliverables, timeline, and business outcome.

Best fit industries

Plants, mining operations, OEM service groups, industrial service companies

What problem this solves

When a machine, structure, or mechanical system is already failing and the client needs an engineering-led path to stabilize the issue, document the fix, and prevent recurrence.

Typical investment

CAD 25,000-60,000

Typical duration

2-6 weeks

Delivery mode

Remote plus site visit as required

Primary deliverables

Deliverable	Purpose
Rapid issue assessment	Gives leadership an immediate engineering view of exposure and options.
Corrective action package	Provides the repair or modification path.
Updated documentation	Ensures the fix is not left as tribal knowledge.
PPMP modification record	Creates traceability for the final engineering solution.

Step by step client delivery

Step	What we do	What the client receives
1. Triage	Review urgency, failure mode, and safe operating boundaries.	Initial engineering opinion.
2. Investigate	Capture evidence and narrow the mechanism.	Diagnosis summary.
3. Correct	Develop repair or redesign options.	Corrective action review.
4. Document	Update drawings and PPMP file.	Controlled engineering record.
5. Handover	Support repair execution and close-out.	Final recovery package.

Scope typically includes

- Rapid engineering review of the failed condition and immediate operating risk.
- Field troubleshooting, dimensional review, and evidence-based diagnosis.
- Short-term containment options and longer-term engineered correction.
- Updated drawings, 3D markups, or redesign details where required.
- PPMP-supported modification record after the repair solution is chosen.

9. Industry Packages and Commercial Architecture

How the same engineering platform is packaged by client type.

Industry	Common trigger	Best-fit package	Upsell path
Mining and heavy equipment	Recurring wear, structural problems, uptime losses	Reliability Program or Recovery Program	Redesign + implementation support
OEM manufacturing	Need for a new product, redesign, or cost reduction	Product Development or DFM Optimization	Release support + compliance documentation
Energy and EPC	Brownfield modification, supports, tie-ins, layout issues	Infrastructure Engineering	Compliance + follow-on detailed design
Industrial services and fleets	Legacy equipment with weak records or hidden risk	Engineering Risk & Compliance (#7)	Recovery or redesign program

Recommended front-end sales sequence

- Lead with Service #7 for clients who have legacy assets, undocumented modifications, or uncertain compliance exposure.
- Use the findings to justify the next package: redesign, reliability improvement, product development, or recovery work.
- Keep PPMP and 3D model deliverables visible in every offer so the client sees lasting engineering value, not only advice.

10. Scope Template and Proposal Structure

Exactly how the work is sold so clients understand what is included and how it will be delivered.

Every proposal should include

Section	What to include
1. Project background	Business context, affected equipment or product, known risks, and reason for action now.
2. Objectives	What must be validated, improved, documented, or delivered.
3. Scope of work	Phased activities with field, design, analysis, PPMP, and support tasks clearly listed.
4. Deliverables	Named outputs: reports, CAD model, drawings, PPMP file, roadmap, workshop.
5. Timeline	Start assumptions, target duration, review points, and client dependencies.
6. Commercials	Fee, payment schedule, assumptions, exclusions, and change management.
7. Next steps	Approval path, kickoff, document request list, and initial workshop date.

Suggested payment structure

Engagement type	Payment structure	Notes
Entry assessment	50% start / 50% delivery	Good fit for Service #7 and short investigations.
Core design program	40% start / 40% draft / 20% final	Balances cash flow with milestone reviews.
Large program	30% start / monthly progress / 10% final	Better for longer product development or infrastructure scopes.

11. Sales Messaging and Client Positioning

How the portfolio should be presented so the client buys business outcomes, not hours.

Positioning statement

We provide **structured mechanical engineering programs** that help industrial companies validate risk, build the engineering record, develop the design, and implement practical improvements with confidence.

Discovery questions to use in sales calls

- What equipment, product, or mechanical system is creating the most risk, downtime, or engineering uncertainty right now?
- Do you already have a traceable calculation package, approved drawing set, and PPMP-style engineering record for it?
- Is the priority compliance confidence, a better design, lower manufacturing cost, or improved reliability?
- What would success look like in 60 to 90 days: approved documentation, a released design package, a recovery action plan, or a validated product concept?

Call to action

- Start with the Engineering Risk & Compliance Program (#7) when the client has hidden risk, legacy assets, or incomplete engineering records.
- Move into redesign, product development, reliability improvement, or implementation support based on the findings.
- Use this document as both a brochure and a conversation guide during discovery meetings and proposal reviews.

Prepared for business development use - editable capability statement and proposal foundation.