

NOVANTUM

DEFINE. DESIGN. DELIVER.

Novantum is a specialist mechanical engineering firm. You work directly with the engineers who design, analyse, verify and sign the work.



Accountable from concept to delivery.

Purpose

Good engineering is too often slowed by the structures around it. Novantum exists so specialist Australian capability can move at the pace decisions actually need, with nothing between the problem and the engineer. For you, that means speed without shortcuts. Work never waits in a queue, and decisions stay where the engineering is done.

Vision

A firm known by its outcomes, trusted by the clients who rely on them, and respected by the engineers who check them. A partner that answers like it has been in the room all along. And a place where the next generation of engineers learns the trade, where better ways of working are developed, proven and kept.

Approach

The right questions come first. What governs, what breaks, what certifies. Then we iterate. Model, test, break, learn, refine. A failure found early is cheap and instructive. One found late is neither. Process is sized to the risk. Nothing ritual, nothing skipped.

CPEng sign-off

Carried by every Novantum project.

Culture

Curious and unprecious. Any engineer can challenge any design, whatever the seniority behind it. Reviews care about the finding, not the finder. Teaching is part of the job. No problem is beneath the firm. The small ones get the same scrutiny as the headline kind.

Values PRISM

Precision. Detail is the work itself. Numbers are exact, assumptions are stated, units are checked.

Reliability. Commitments hold. When risk builds against a date, you hear it from us first, and early.

Integrity. We recommend what the engineering supports, not what is easiest to sell. Outside our scope, we say so.

Simplicity. The simplest design that meets the requirement wins. Fewer parts, fewer failure modes, fewer surprises.

Method. Plausible is not enough. Nothing rides on a guess. We test our own work before anyone else has to.

Define.

The problem pinned down in writing before any geometry exists.

Design.

The design and its proof developed together, reviewed in stages.

Deliver.

Drawings, hardware and the verification behind them, handed over signed.

DELIVERY

Equipment	The physical parts themselves, where the job includes the build.
Drawing pack	Fully defined, released for manufacture.
3D geometry	The CAD models behind the drawings.
Bill of materials	Every part in the assembly, down to the fastener.
Analysis report	Assumptions, load cases and results, on the record.
Verification statement	The result verified against the requirement.
Plans and procedures	Test plans and work instructions, where the job calls for them.
CPEng sign-off	Carried by every Novantum project.
FAT / SAT and commissioning records	On build and commissioning jobs, the acceptance record.

SECURITY

- Every engagement handled under documented security practices, aligned to the ACSC Essential Eight
- Security clearance held, details on request

Design Engineering

Rework on the floor starts as ambiguity on a drawing. We take a design from first concept to a pack that leaves none.

- Concept development, rapid prototyping and additive manufacturing (FDM, SLA, SLS) to settle the design early
- Bespoke equipment and one-off machines, jigs, fixtures and test rigs, first-of-type design and proving
- Lifting and rigging equipment designed and verified to AS 1418
- Prototypes staged through technology readiness levels
- 3D modelling, 2D drafting and manufacturing drawings, with GD&T to AS 1100 and ASME Y14.5
- Sheet metal, weldments, machined parts and heavy fabrication, each designed for the process that makes it
- Hydraulic and pneumatic manifolds, hose routing, schematics and system sizing, with pipework designed for CNC bending
- Electrical routing resolved in the same model
- Repair and modification design for plant and equipment in service

Simulation & Modelling

We quantify behaviour before anything exists to test. Stress, flow, heat and fatigue life, under the duty the equipment will see in service.

- Static, dynamic and fatigue analysis (FEA), single components to full assemblies
- Flow, pressure, ventilation, cooling and aerodynamic performance (CFD)
- Topology optimisation, cutting mass and material cost without giving up stiffness or fatigue life
- Thermal behaviour, buckling, contact, bolted joints and weld assessment
- Fatigue life against accumulated duty, substantiating repairs, modifications and extended service life
- Hydraulic and pneumatic system modelling
- Strain-gauge results interrogated and reconciled with the analysis
- Design margins, hand-calc correlation and documented assumptions, written to be checked

Systems Engineering

The parts can be perfect and the system can still fail. We hold the whole system together, from the first requirement to the verification that closes it.

- Requirements elicited, structured and traced, with changes managed rather than absorbed
- System architecture, interfaces and configuration, defined and controlled
- Integration planning across subsystems, suppliers and legacy equipment
- Trade studies that settle the design choice
- Reliability, availability and maintainability engineered in from the start
- The hazard log and safety requirements owned from concept, through every decision that follows
- Mandated system reviews, SRR to CDR and beyond, run against their entry and exit criteria
- Verification and validation, mapped to requirements and carried through to acceptance
- CDRLs, certification evidence and documentation, assembled as the work happens



Specialist Engineering

For safety-critical and high-complexity projects, we do the engineering that keeps a capability safe, supportable and testable through its life, inside the program rather than outside it.

- System safety, hazard identification and risk assessment, worked into the design as it develops
- Operational test and evaluation, from test strategy to executed test program
- Test data collected, analysed and reported so the deployment decision has evidence under it
- Material characterisation through NATA-accredited labs, with mechanical and chemical testing, micro and macrostructure, coupon and weld qualifications
- Integrated logistics support, from RAMS and level-of-repair analysis to supportability modelling
- Maintenance planning, lifecycle cost estimation and obsolescence management
- Technical publications, spares provisioning and support tooling analysis

Project Management

Delivery is part of the engineering. Technical project management by the people who understand the drawings, from acquisition to through-life support.

- Scope, work breakdown and estimating grounded in how the work gets done
- Scheduling, budgeting and resourcing tracked to milestones
- Manufacture and testing managed through qualified suppliers and accredited facilities
- Design reviews and mandated system reviews run as gates, with configuration held under control
- Acceptance at FAT and SAT, then a documented handover
- CDRL preparation and delivery against the contract schedule
- Contract management and bid development for engineering programs

Advisory

Independent judgement for decisions that carry consequence, from a firm that also designs, analyses and certifies its own work.

- Safety reviews and risk assessment to AS 4024 and ISO 12100, with controls that eliminate or minimise the risk so far as is reasonably practicable
- HAZID and HAZOP facilitation, and failure mode analysis (FMEA)
- Standards compliance assessment and independent design review
- Independent design verification for registrable plant, the verifier's statement signed
- Chartered engineering review and sign-off
- Feasibility studies and technical due diligence
- Defence contract advice, from scoping and negotiation to CDRLs
- Bid strategy and independent review of bids



Defence

Engineering that turns demanding requirements into capability.

Defence demands traceability, certification, assurance and discretion, because everything it fields is bound for somewhere unforgiving. We take equipment from first concept to proven outcome, whatever the platform and wherever it operates.

SCOPE

Land. Vehicle and weapon system structures, containerised modules, shelters and trailers, logistics and handling equipment. Designed to move with the force, analysed against terrain-induced load and fatigue.

Aerospace. Air programs trade on mass and margin. Flight hardware and the ground tooling behind it are substantiated from the first model and documented for the reviews that follow.

Maritime. Shipboard structures and handling gear engineered for motion and vibration at sea, with welds and materials qualified through NATA-accredited testing.

Space. Test and integration equipment for space programs, with mass-led design, sized for launch loads and documented to the stated acceptance standard.

Mining

Engineering for the machines that move mountains.

Every machine on a mine is asked for more than it was built to give. We design the difference. New equipment, repairs, strengthening, modifications and life extension, proven strong before it takes load again.

SCOPE

Mobile plant. Draglines, excavators and haul trucks take punishment no fixed structure sees. This is the deep end of our mining work.

Materials handling. Ore moves on structures that run flat out for years on end. We design what keeps it moving.

Fixed plant and structures. Processing structures carry dynamic load around the clock. We make sure the capacity and the connections still hold what production is counting on.

Fitness for service. When an asset is ageing, the real question is whether it earns its place another year. We make that answer stand up.

Reliability and maintenance. Uptime is the requirement. We design for it.

Repairs and modifications. Plant rarely comes offline when it suits. We design the fix to the window the site can give, and the decommissioning when an asset comes out for good.

Safety and compliance. Heavy plant and the people who work around it share the same floor. We engineer that boundary to the standard.

Automotive

Vehicle engineering proven on road and rig.

Every part on a vehicle is being used up from the first kilometre. We design them to see the odometer out.

SCOPE

Components and mounts. A bracket looks minor but carries real load. We design it for that load, and for the years it has to last.

Bodies and equipment. Trays, bodies and vehicle-mounted equipment are structures first, and we engineer them that way.

Durability and validation. Duty cycles decide component life. We quantify fatigue before the fleet finds it out.

Release and production. A design is finished when manufacture cannot misread it. We hand over packs that build clean.

Motorsport

Performance engineered to the gram, validated to the grid.

A race car is never done, only faster or slower than yesterday. The sport measures everything and forgives nothing. Finding the next tenth starts here.

SCOPE

Race components. Uprights, wishbones, hubs and brackets. Designed light, proven strong.

Loads from the car. The car already recorded the truth. We turn logged data into load cases the analysis can stand on.

Reliability at the limit. Margins in motorsport are thin by design. We make sure they are known, not hoped.

At the track. Race weekends are decided by fractions of a second. Novantum supports them live, trackside, on the data.

CATEGORIES SERVED

- Supercars (V8 Supercars)
- Porsche Carrera Cup Australia
- Porsche Carrera Cup Asia
- Porsche Sprint Challenge Australia
- Intercontinental GT Challenge
- Australian GT
- World Time Attack Challenge
- V8 Ute Racing Series



Agriculture

Engineering that gets the harvest in.

Farm machinery sees no gentle miles. Shock, vibration, season after season. We design and verify against that reality.

SCOPE

Implements and attachments. From seeder bar to spreader, an implement is a structure with a job. We design it to be built, and to last.

Field duty and durability. Season loads are irregular, violent and cumulative. We make the equipment survive them.

Strength, wear and repair. Paddock fixes become permanent. We put engineering under them.

Hydraulics and drives. Your harvest depends on implements that move when you command them. We size and route fluid power for machines that live outdoors.

Manufacturing

Manufacturing engineering that keeps the line running.

A machine remembers every change ever made to it. The drawings usually don't. We keep the engineering as current as the machine.

SCOPE

Tooling, jigs and fixtures. Good tooling is the difference between a process and a habit. We design it to make every part in tolerance, whoever is on the machine.

Plant and equipment. Machines get moved, modified and pushed into new work. We design the change before the machine feels it.

Guarding and safety. A guard is the boundary between the machine and a person. We engineer it like one.

Change and compliance. Every change to the line is a small design project, whether anyone treats it that way or not. We do.



LEADERSHIP



DIRECTOR

Andrew Collins

MIEAust CPEng NER APEC Engineer IntPE(Aus)

A Chartered Professional Engineer, Andrew has spent over a decade in mechanical design, product development and project management for defence, maritime and automotive programs. He has led multidisciplinary teams on automated load handling for Australian Defence Force land vehicles, armoured running gear, fluid power systems and weapon system integration.

He has also spent over a decade as a professional motorsport engineer competing around Australia and the world, with data engineering and coaching for drivers at every level. He holds a Bachelor of Engineering (Honours) in mechanical engineering from the University of South Australia.

Novantum was founded to put that capability behind clients' problems directly.

Let's define the problem.

Tell us what you're building and the requirement it has to meet.

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NOVANTUM CAPABILITY STATEMENT
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