



PURLIN IQ

PRODUCT OVERVIEW



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The Challenge

Designing cold-formed steel purlins and girts is one of the most time-consuming and error-prone tasks in structural engineering for industrial and commercial buildings. Engineers must navigate complex interactions between wind loading provisions, local pressure factors, continuity effects, and code compliance requirements, often using spreadsheets or limited legacy tools that were never built for the job.

The consequences are real: hours lost to manual calculation, inconsistent results between projects, and a persistent risk of non-compliance with governing standards. In an industry where margins are tight and deadlines are tighter; there must be a better way.

The Solution: Purlin IQ

Purlin IQ is a purpose-built, cloud-based engineering platform that automates the design and analysis of cold-formed steel purlins and girts. It replaces fragmented manual workflows with a single, integrated environment that handles wind load generation, continuous beam analysis, and code-compliant design checks. Designed by engineers, for engineers, Purlin IQ delivers the rigour you expect with the speed your projects demand.

Key Capabilities

Automated Wind Load Generation

Purlin IQ automatically generates wind load cases for roofs, walls, and canopies in accordance with AS/NZS 1170.2. The system considers both base pressure and local pressure components, including along-wind and across-wind effects, and applies local pressure factors as moving loads to identify the critical loading condition for every span.

Simply input your building geometry and wind parameters, and Purlin IQ generates the complete set of load cases and combinations required for design. No more manual tabulation of pressure coefficients or guesswork about which local pressure zone governs.

Continuous Beam Analysis

Purlin IQ performs rigorous continuous beam analysis using finite element methods. The system models multi-span purlin and girt runs with full support for lapped connections, simple supports, and continuous spans. Where lapped connections are specified, the enhanced stiffness of the lapped zone is automatically accounted for in the analysis model.

Intermediate members and their load-sharing behaviour are also modelled, giving you confidence that the analysis accurately represents the installed structure.

Code-Compliant Design Checks

Design checks are performed to AS/NZS 4600:2018 for cold-formed steel structures. Purlin IQ assesses both ultimate limit state (strength) and serviceability limit state (deflection) performance across the full design envelope.

The strength assessment considers moment capacity, shear capacity, and combined bending-and-shear interaction for every design segment along the member. Segments are automatically identified based on points of critical flange restraint, including supports, bridging locations, inflection points, and lap ends.

Flexible Deflection Assessment

Purlin IQ provides a comprehensive serviceability assessment using customisable deflection rulesets. Engineers can define project-specific deflection limits across multiple serviceability envelopes including dead load only, live load only, service wind, and total service conditions. Both absolute and relative deflection criteria are supported.

Feature	Description
Structure Types	Design purlins for roofs and canopies, and girts for walls, all within the same project environment.
Section Libraries	Built-in section libraries from Lysaght (Standard & Supapurlin), Stramit (Standard & Exacta), and Stratco (Standard & Maxi-Purlin).
Lapping & Continuity	Model lapped, continuous, and simply supported spans with automatic adjustment of analysis stiffness in lap zones.

Bridging	Specify up to 3 rows of bridging per span. Bridging locations are calculated automatically based on span end conditions.
Intermediate Members	Model intermediate members that share load with primary purlins, commonly used to stiffen end spans.
Local Pressure Zones	Supports internal, edge, ridge, and corner pressure zones. Moving pressure loads are used to identify worst-case effects.
Custom Load Cases	Define additional pressure and point loads beyond the auto-generated wind cases. Full control over load combinations and design envelopes.
Cantilevered Ends	Support for cantilevered span ends with automatic adjustment of deflection limits.
Parapet Effects	Account for the reduction in local pressures due to parapets.
Support Reactions	Reactions are reported for every support, enabling the engineer to complete bolt capacity checks independently.

Standards Compliance

Purlin IQ is designed for compliance with the following Australian and New Zealand standards:

- **AS/NZS 1170.0:** Structural design actions: General Principles
- **AS/NZS 1170.2:** Structural design actions: Wind actions
- **AS/NZS 4600:2018:** Cold-formed steel structures

Design results have been validated against the University of Sydney's ColdSteel software, a recognised benchmark in cold-formed steel design analysis.

Supported Section Libraries

Purlin IQ includes comprehensive section property databases from Australia's leading cold-formed steel suppliers. All section properties, including moment capacity, shear capacity, yield strength, and geometric properties, are built into the platform.

Supplier	Product Ranges
Lysaght	Standard Z/C sections Supapurlin SZ/SC sections
Stramit	Standard Z/C sections Exacta EC/EZ sections
Stratco	Standard Z/C sections Maxi-Purlin MZ/MC sections

How It Works

Purlin IQ follows a logical, three-stage workflow that mirrors the way engineers think about purlin and girt design:

1. Define Your Run

Set up your purlin or girt run by specifying span lengths, section sizes, end conditions (lapped, continuous, or simple), bridging rows, and intermediate members. Select from built-in section libraries to populate section properties automatically.

2. Generate Loads

Use the built-in load generators for roofs, walls, or canopies. Input your building geometry, wind pressures, internal pressure coefficients, and gravity loads. Purlin IQ generates the full set of load cases and combinations, including all relevant local pressure zone effects, automatically.

3. Analyse & Design

Run the analysis and review results instantly. Purlin IQ reports strength and deflection utilisations for every span, identifies governing load combinations, and provides support reactions for downstream design. Iterate quickly by adjusting sections, laps, or bridging and re-running with a single click.

Why Purlin IQ?

Save Time Automate wind load generation and design checks that would take hours manually. Go from building geometry to compliant design in minutes.	Reduce Risk Eliminate transcription errors and manual calculation mistakes. Code-checked methodology validated against recognised benchmarks.
Improve Consistency Standardise your purlin and girt design process across your team. Every project follows the same rigorous methodology.	Stay Compliant Design checks to AS/NZS 4600:2018 with wind loads to AS/NZS 1170.2. Built-in compliance you can trust.

Engineering Transparency

Purlin IQ is built on a foundation of transparency. Subscribing engineers receive access to full technical documentation outlining the assumptions, methodology, and analytical procedures underpinning the software. This documentation enables you to:

- Understand exactly how loads are generated and applied
- Review the structural analysis methodology and modelling assumptions
- Validate results against your own engineering judgement and independent tools
- Maintain full traceability and auditability of design outcomes

We believe engineers should never be asked to trust a black box. Purlin IQ gives you the tools and the documentation to verify every result.

