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TW Profile Services (Pty) Ltd — Technical Evidence Pack| Driven by people. Powered by technology.
This pack gives you a concise, practical view of our capabilities, controls and compliance, so you can assess fit quickly and confidently. It explains what we do (cutting, forming, finishing to dispatch), how we assure quality, and what materials and tolerances you can expect on your project.

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1) Scope & Use

- Purpose: provide hard limits and planning tolerances so engineers can assess laser cutting fit at a glance.
- Covers: flat-bed fibre/CO_2 laser cutting, etch marking, precision roller leveling, brushing/deburring, identification & traceability, logistics.
- Applies to: carbon steel, stainless steel and aluminium. Final capability depends on grade, thickness, geometry and inspection level.

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2) Capabilities briefly (planning values)
(See table below)

Process	Working envelope	Typical material ranges	Typical planning tolerances
Laser cutting (flat)	Up to 32,000 × 3,000 mm; fibre power up to 15 kW	Carbon steel (CS): 0.5–30 mm • Stainless (SS): 0.5–50 mm • Aluminium (Al): 0.5–16 mm	Linear ±0.2–0.5 mm depending on thickness & feature size; hole/slot true-position ±0.2–0.5 mm on panels ≤6 m
Etch marking	Full bed	Part numbers, bend lines, C of C tags, QC stamps	Standard etch: light, intended for pre-finish identification (may fade with sand-blasting and is not guaranteed after paint/galvanizing).
Precision roller leveling	Width ≤ 2,500 mm · length ≤ 12,000 mm	CS/SS/Al within quoted ranges	Flatness per drawing; residual curvature reduced for downstream forming/welding
Brushing/Deburr	Width ≤ 1,500 mm	SS/Al	Edge break and uniform brush. Two dedicated machines to prevent cross-contamination. WEBER — stainless steel line. Output: consistent edge break and uniform

			brush finish (40–240 grit). PVC film handling available where specified.
Brushing/Deburr	Width ≤ 1,000 mm	CS/MS	Edge break and uniform brush. Two dedicated machines to prevent cross-contamination. Timesavers — mild/carbon steel line. Output: consistent edge break and uniform brush finish (40–240 grit). PVC film handling available where specified.
Press brake bending	up to 8,000 mm (tandem) and 4,000 mm (single)	CS/SS/Al within quoted laser ranges	angle ±0.5–1.0°; bend line positional ±0.5–1.0 mm on parts ≤4 m (use conservative end near thickness/length maxima).
Plate rolling	width up to 3,000 mm; min inside diameter (ID) from ~400 mm (heavy roll) / ~180 mm (light roll), thickness dependent	CS/SS/Al within quoted laser ranges	roundness/ID per drawing; expect relaxation for heavy sections and small IDs.

Use conservative ends of each band near thickness/size maxima. Tighter tolerances available after review of drawing/CAD.

3) Machine Inventory (laser only)

- **10 flat-bed laser machines** from **DNE Laser, Bystronic, TRUMPF** (fibre and CO_2).
- Includes **long-bed fibre** up to **32 m × 3 m** for large format panels and nested kits.
- Nitrogen, oxygen and mixed-gas assist; automatic nozzle cleaning and capacitive height control across the fleet.

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4) Materials & Grades Processed: Overview

Carbon / Structural

•S235JR/Commercial Quality •S355JR+AR (AS ROLLED) •S355J2+N (NORMALIZED) •HOT ROLLED SHEETS •COLD ROLLED SHEETS •VASTRAP

Boiler

•EN10028-3-P355NL1 •EN10028-3-P355NL2 •ASTM A516 Grade 70 •BS1501-151/161 GR430A •EN10028-2-P265GH+N

Abrasion resistant

400 Brinell •NM400 •TWP400D •TH400 •HARDOX400
450 Brinell •HARDOX450 •NM450
500 Brinell •NM500 •TWP500D •HARDOX500

High Tensile steel

S690QL •S700MC •Strenx700

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Armor steel

•ARMOX ADVANCED ARMOX 440T •ARMOX 500T •ARMOX 560T •ARMOX 600T •RAMOR 500 •RAMOR 600 •MARS 500 ARMOURED

Stainless steel & Alloys

•3CR12 •430 •304L •316L •310 •904L •SAF2205 •SAF2304 •LDX2101 •INCONEL

Aluminium

•1050 •5754 •6082 •VASTRAP

If the material grade or specification you require is not listed here, please contact us. Custom sourcing can be arranged on request, including imported grades with full mill certification.

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5) Laser Planning Guide (DFM)

- **Minimum hole Ø ≥ material thickness (t)** (Minimum hole diameter: Ø ≥ t (standard planning rule). Example: 20 mm plate → standard minimum hole Ø = 20 mm. **Note**: Holes smaller than thickness available on request, confirmed at quote.
- **Minimum slot width ≥ t** (≥1.5·t if t >10 mm). Internal radii **≥ 0.5·t**.
- **Hole-to-edge distance ≥ t** (≥1.5·t for thin webs/heavy parts).
- **Tabs/micro-joints**: 3–6 mm typical; specify if parts travel as kits.
- **Etch layers**: provide separate CAD layers for **CUT / ETCH / NO-CUT**; show bend lines and data-matrix if needed.
- **Edge state**: carbon steel with oxygen shows slight draft and oxide; specify nitrogen on CS when weld-through cleanliness is critical.

Indicative tolerance by thickness (flat parts)

≤6 mm: **±0.20 mm** • 8–12 mm: **±0.30 mm** • 16–20 mm: **±0.50 mm** • 25–30 mm: **±0.60 mm**
(Small features, long panels >6 m and heat-sensitive alloys may require relaxation or secondary ops.)

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6) Quality, Traceability & Certificates

- Quality system **ISO 9001**; defence supply **DCAC** registered.
- Our company has been ISO 9001:2015 certified since 2016, demonstrating a long-standing commitment to maintaining internationally recognized quality management standards. Through the consistent application of process control, documented procedures and continuous improvement, we ensure that every product meets customer and regulatory requirements.
- DCAC-registered under South Africa's National Conventional Arms Control Act (Act 41 of 2002), we are legally authorised to cut, process and supply armoured plate and other controlled materials, with full traceability and state oversight. Placing TW Profile among the few manufacturers in South Africa accredited to perform this work.
- Full material traceability: MTCs linked to job traveller; part ID via etch/label; nest reports retained.
- Inspection: first-off / in-process / final to plan. Certificate bundle **on request** (MTCs + dimensional report + process records + CoC).

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7) Safety (site requirements & KPI approach)

- Induction required for shop-floor access; visitors escorted. PPE: high-vis, eye protection, safety footwear; task PPE as specified.
- Fitness for duty: random breathalyser testing; walkways and exclusion zones enforced; licensed operators for forklifts/overhead lifting.
- **KPI approach (client preference):** monthly counts by incident category (**TF1–TF4**, CAR/near-miss). **TRIR/LTIFR and environmental KPIs are not reported.**

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8) Logistics & Handling

- Sequenced kitting and labelled packaging as standard; large-format pallets for panels up to 32 m length by arrangement.
- Fleet support: **33 trucks** (4-ton, 8-ton, horse-and-trailer) and **31 forklifts** (22 diesel, 8 electric, 1 petrol) for local collections/deliveries.

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9) How to Engage (quotation inputs)

- **CAD**: DXF/DWG (polylines, no splines) or STEP-to-2D; include revision, material spec, thickness, finish; separate **CUT/ETCH** layers.
- **Finishing**: specify brushing (grit), PVC film, edge break, data-matrix marking, protective paper/stacking requirements.
- **Certificates**: request bundle with the RFQ if required by contract.

Appendix A — Laser Bed & Thickness Quick Reference

- Max bed envelope: **32,000 × 3,000 mm** (select machines smaller; confirm at quote).
- **Carbon steel**: 0.5–30 mm
- **Stainless**: 0.5–50 mm
- **Aluminium**: 0.5–16 mm
- Typical positional tolerance: **±0.2–0.5 mm** depending on thickness/geometry.

We are committed to precise, reliable processing. From cutting and forming through finishing and dispatch, supported by robust controls and full traceability. For project-specific validation, we align processes, tolerances and documentation to your drawings and quality plan.

Disclaimer: Capabilities, materials and tolerance ranges in this pack are indicative and subject to detailed drawing review, material availability and formal quotation. The client is responsible for fitness-for-purpose, applicable codes and end-use requirements. TW Profile does not provide welding or assembly services.