

DATE: 2nd Feb 2025



COMMERCIAL IN CONFIDENCE

"In Business for Australia"

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Introduction:

McMillan Engineering Group specialise in the design and manufacture of Heavy Steel components for mining, offshore, construction, civil and industrial sectors, such as large bore Hydraulic Cylinders and associated equipment, mining equipment, pressure vessels, presses, tanks and bespoke equipment.

The company performs all manufacturing processes within the company owned facility in Dandenong South, Australia with the focus on producing finished products utilising internal resources of the company.

History:

McMillan Engineering Group "MEG" was founded in 1973 by Ross McMillan as a Hydraulic Cylinder and associated equipment manufacturer.

The business has become one of Australia's largest and leading manufacturers of Hydraulic Cylinders and ancillary equipment.

The business has strong ties with Defence manufacturing with Ross McMillan founding Rosebank Engineering in 1982, a manufacturer of components for Military Aircraft, and the business was subsequently acquired by Ruag of Switzerland in 2012.

People:

MEG employ 48 people, 11 within the office in Engineering, Quality Assurance and Administration. The balance of employees are machine operators/programmers, welders, fitters, testers, painters and storemen.

Key Employees:

Employee	Position	Years of Service at MEG	Years of Industry Experience.
Ross McMillan	Director	53	55
Justin McMillan	Managing Director	36	41
David Slatter	General Manager	14	33
Akif Soltan	Welding Engineer / Welding Coordinator Metallurgical Engineer	4	35
Gareth Kumnick	Production Manager	37	39
Simon Ross	Production Planner	26	30
Greg Devine	Deputy Welding Coordinator	10	17

Commercial:

MEG operate from it's own Facility, the company has maintained a profitable business model deriving revenue from 4 main streams being Rail, Manufacturing, IHS Stressing, Service/Repair.

1. Rail: Rail consists of approx. 15% of the company turnover, the products produced are welded assemblies usually machined post welded. The welding is to a high standard as required under EN15085 CL1 (Class 1) which is the most stringent.
2. Manufacturing: Manufacturing consists of 45% of the company turnover, the products produced are Large Bore Hydraulic Cylinders, Custom Hydraulic Cylinders, Turn-Key Projects, Specialist Welded products like Titanium Impellers and Inconel Heat Exchangers.
3. IHS Stressing: Stressing consists of 25% of the company turnover, the products produced are high pressure Hydraulic Jacks, Hydraulic Tensioning Equipment, High Pressure Hydraulic Power Units and accessories like hoses.
4. Repair and Service: Repair and Service account for 15% of the company turnover, mainly Hydraulic Cylinder and Power Unit repairs. MEG has some of the largest equipment in Australia and regularly repair cylinders up to 20t in weight and 14m in stroke.

Certifications:

- . ISO 9001 – Quality certified by Bureau Veritas.
- . ISO 45001 – OH&S certified by Bureau Veritas.
- . AS/NZS 3834 – Fusion Welding certified by Bureau Veritas.
- . AS/NZS 5131 CC3 – Structural Welding
- . EN 15085 CL1 – Welding of Rail Vehicles certified by Bureau Veritas.
- . ISO 17025 – Force Calibration accredited by National Association of Testing Authorities (NATA).

Site Security:

The factory is completely fenced with lockable gates and monitored live via an alarm system and video surveillance by a 3rd party (security company).

Cyber Security:

The current Cyber security is at an acceptable level for the current business needs in line with standard industry requirements.

MEG store copies of the Server by a 3rd party to remove risks with IP loss.

Cooperation with Customers:

MEG is a company valuing diversity, inclusiveness, experience and openness. We draw on life and professional experiences of staff members and customers in our quest to produce high quality products.

We have an experienced, knowledgeable and skilled workforce, however, there are situations when we need support and guidance from our customers to assist us to meet specific project objectives. In these instances, we exchange ideas and promote discussions with our customers in an open and transparent manner.

Existing Equipment:

Equipment	Brand	Model	YOM	Sizes	Max Mass
CNC Lathe	Okuma	LH55	2025	1.35m dia x 4000mm	6.5t
Double Column Mill	Okuma -	MCR 5	2021	6m x 3.5m Bed	40t
Mill Turn – Large	Okuma	B750	2020	Max dia 1200mm	3.5t
CNC Mill Turn – Medium	Okuma	U4000	2020	Max dia 450mm	1t
CNC Mill Turn – Medium	Okuma	U4000	2018	Max dia 450mm	1t
CNC Mill Turn – Medium with Fanuc Robot	Okuma	U4000	2025	Max dia 450mm	1t
CNC Mill Turn with Robot Loader – Small	Okuma	LB3000	2019	Max dia – 300mm	600kg
CNC Mill	Okuma	MB 56	2019	1.2m x 0.6	500kg
CNC Double Column Mill	V-Tech		2019	2.5 x 1.2	2t
CNC Column Mill	MTE	BF2700	2012	2.7 x 1	3t
Manual Lather	Poreba	PL4-480	2002	Bed Length – 8m Swing -	
Manual Lathe with 6m Boring Bar	Broadbent Stanley		2004	Bed Length – 11m Swing – 1250mm	
Brake Press	Amada	HG1303	2018	3.5m Bed	
Laser Cutter	Amada	LHG3015	2016	3.0m x 1.5m Bed	
Hone	Barnes				
Hone	Sunnen				
Welding Positioners	MEG have approx. 30 Welding Positioning machines with 5 suitable for rotating the Tubes for Welding.				
Sub Arc Welding Machines	Lincoln	LT-HS100E2	2014	Max wire 3.2mm	
Mig Welding Machines	BOC	Various	2015	20 items	
12.5t Gantry	JDN Mono Crane	10t	2019	35m span 6.5m under hook.	
10t Gantry	JDN Mono Crane	10t	2019	20m span 6.5m under hook.	
10t Gantry	JDN Mono Crane	10t	2019	20m span 6.5m under hook.	
5t Gantry	JDN Mono Crane	5t	2014	35m span 6.5m under hook.	
5t Gantry	JDN Mono Crane	5t	2014	35m span 6.5m under hook.	
1t Swing Arms	Approx 16 1 t Swing Arm with 5m Boom surrounds the production facility.				
Bulk Gas Storage	BOC		2020	5 large Vessels or Various sizes.	
CMM Machine	Kreon	ACE-7-30	2016		

Machine Shop:

MEG investment in staff training, machines, tooling, and techniques is an ongoing process. In the past 7 years we have increased our investment to modernise the entire factory and with a total of \$14,200,000.00AUD spent in the factory. This modernisation focused on a complete revamp which included:

- Engineering office with the standardisation of Solid Works.
- Solid Cam for machine integration.
- Replacement of ageing CNC to current Mill Turn technology.
- Updating Measuring Equipment for example – CMM purchase.

Welding:

MEG has obtained AS/NZS 3834, AS/NZS 5131 and ISO 15085 Welding Accreditations endorsed by Bureau Veritas.

The MEG Welding Shop has undergone significant investment. The Welding plant has been replaced within the last 5 years; bottled gases have been removed and replaced with Bulk Gas storage and distribution through permanent pipework along with the installation of 1T cranes in each welding bay and fume extraction. The company has also carried out upskilling of workforce including obtaining MPI and UT qualifications and appointment of a full time Welding Coordinator/Engineer.

The company has the experience and capability to weld a wide range of steels, including structural carbon, quenched and tempered alloy and stainless steels, for demanding applications in the mining, rail, chemical, paper, oil and gas sectors. In addition, MEG has the capability in welding and brazing of Nickel and Copper alloys respectively.

The welders are skilled and qualified in the use of GMAW, GTAW, FCAW and SAW processes. Welding is aided by use of an extensive range of jigs, fixtures, positioners, rotators and rollers.

All equipment is regularly inspected for fitness for service. The welding machines, gas flow meters, thermocouples and multi-meters are calibrated and their parameters are verified.

Regular weld tests are conducted externally and in house with the aim to;

1. Ensure the welder skill remain at the required level;
2. Verify compliance with standards and procedures;
3. Identify welder training needs if necessary.
4. Maintain a high standard of Work and Quality.

Manufacturing Experience:

MEG has extensive experience and capability to manufacture Long Cylinder Barrels that are commonly welded to increase the length and to attach flanges.

The Cylinder Barrels are wholly manufactured in-house and includes the following steps:

- Rough Machining.
- Welding.
- NDT.
- QA Inspections.
- Weld Inspections.
- Final Machining.
- Honing.
- Packing.

Calibration of Equipment:

The QA Manager with the Production Manager keep a register of all equipment and calibration requirements/status.

The calibration of equipment is monitored using the register and actioned accordingly. This includes all Welding Plant, measuring devices, weld positioning machines, jigs, fixtures and templates.

Product Examples:

. Hazelwood Power Cylinder Barrel

- Application: Dredge Luffing Cylinder
- Barrel Dimensions: 670mm Bore x 790mm OD
- Length: 7400mm
- Weight: 8586kg



. Offshore Cylinder - Skidding Cylinders (to ABS design)

- Application: Skidding Cylinders
- Barrel Dimensions: 690mm Bore x 820mm OD
- Length: 1400mm
- Weight: 1800kg



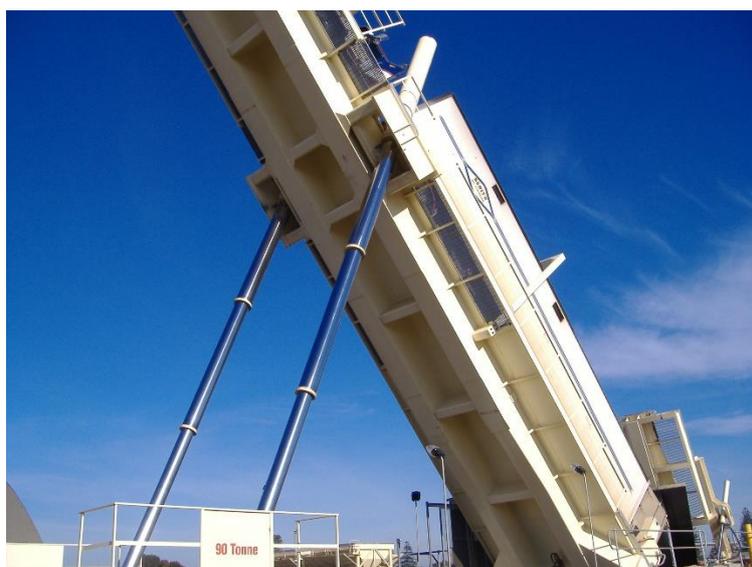
. Offshore Jack-up Barge Cylinders (to ABS design)

- Application: Jack-up Barge
- Barrel Dimensions: 480mm Bore x 540mm OD
- Length: 1800
- Weight: 923kg



. Truck Dump Cylinders

- Application: Truck Dump
- Barrel Dimensions: Outer Barrel 430mm Bore x 530mm OD
- Length: 16.94m
- Weight: 7800kg



. Tower Crane Climbing Cylinder

- Application: Construction Tower Crane
- Barrel Dimensions: 406mm Bore x 457mm OD
- Length: 5880mm
- Weight: 1870kg



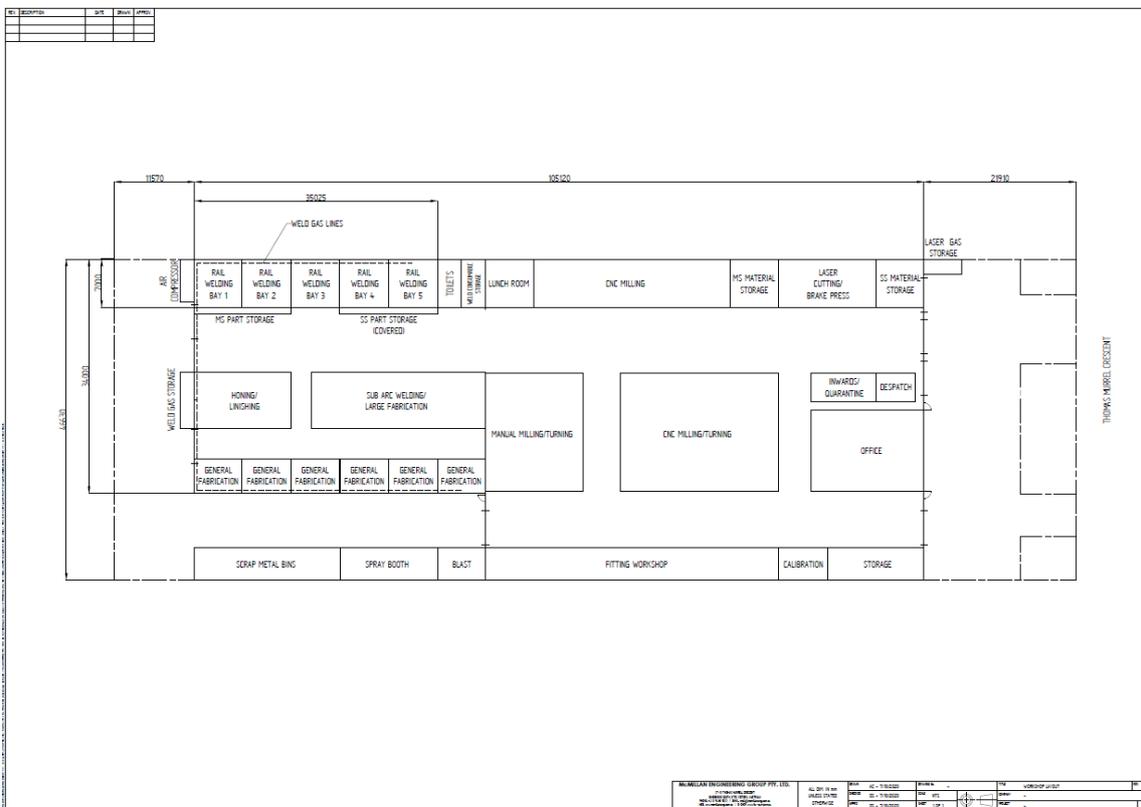
. Facility

The facility is wholly owned by the company and purpose built for large bore cylinder production.





5000m² Facility - McMillan Engineering Group – Dandenong South, Australia.



Floor Plan

McMillan Engineering Group – Dandenong South, Australia.

. ITP

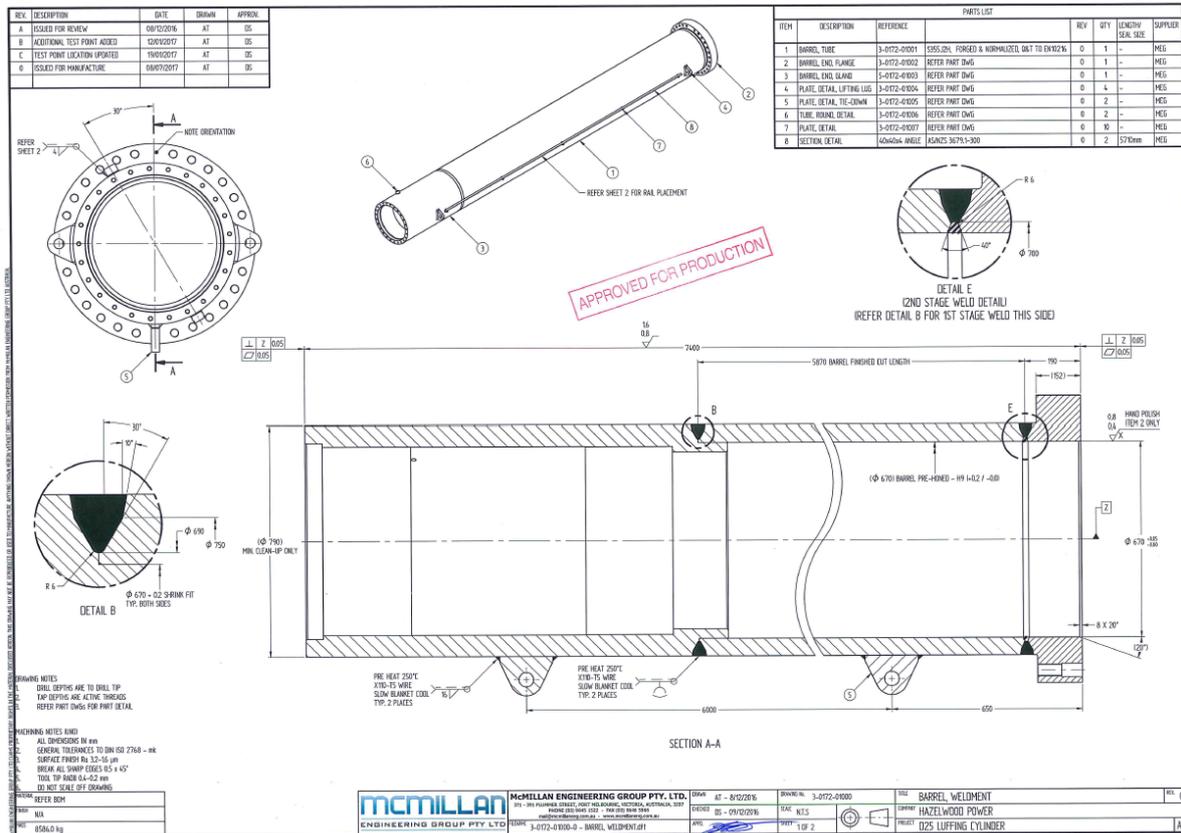
As part of Quality Control an ITP will be developed similar to the sample ITP 176 attached for consideration.

Appendix – MEG 2 - ITP 176 REV A.

. Approved Production Drawings and Job Tickets.

MEG utilise Shop Drawings and Job Tickets for production purposes to track job progression and verify steps. The shop drawings are created by the Engineering department and are stamped "Approved for Production" during the design review meeting before issuing to the production personnel.

The Job Tickets are generated from the Inventory Management System and specify the step-by-step processes required in production. They also enable the employees' time to be captured within the Inventory Management System



(ITMS).

18005-2 Manufacture

date printed: 26/08/2021 PR

JOB TICKET

18005-2

Client Code HAZELWOOD	Part Description BARREL, WELDMENT	Client Part Code 3-0172-01000
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Issue Date 02/06/2017	Due Date 07/06/2017	Order No Contract -16-2164	Drawing 3-0172-01000	Revision 0
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Manufact Qty 1	Unit EACH	Over Run	From Stock 0	Order Qty 1	No of Job Tics 51	Level 2
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MANUFACTURING PROCESSES - THIS PART BELONGS TO 18005-1

10 Processes to be Completed				
Code	Process	Process Detail	Qty	Emp
1	PROCUREMENT / M	Check delivered material to ensure compliance for next operation check..... date..... ** Record Heat Number: **		
26	INSPECTION - IN P	ENSURE ALL CERTS AVAILABLE BEFORE MACHINING INCLUDING BUT NOT LIMITED TO BARREL X-RAY CERT check..... date.....		
13	WELDING - MANUA	TACK PARTS TOGETHER, HOLD POINT PENDING INSPECTION BEFORE WELDING COMMENCING check..... date..... Record welding wire batch no and manufacturer.		
13	WELDING - MANUA	Manual welding as per drawing - SWMS #12 check..... date..... Record welding wire batch no and manufacturer.		
24	INSPECTION - FIRS	First off part inspected by QA Department: check..... date.....		
26	INSPECTION - IN P	MPI weld inspection check..... date.....		
5	LATHE - LARGE MA	Finish machine as per drawing - SWMS #05 check..... date.....		
17	HONES	Hone as per drawing - SWMS #17 check..... date..... ** Original Ø: Final Ø: **		
26	INSPECTION - IN P	Inspect turned features and complete 'INSPECTION SHEET' form no. 20 check..... date.....		
9	MACHINE CENTRE	* check..... date.....		

. Material Inwards Good Inspection and Material Traceability.

As part of production specific procedures control inward materials specifying the inspection methodology and provide the acceptance criteria.



Okuma MCR-A5 Installed at

McMillan Engineering Group – Dandenong South, Australia.

. Machining on B750

The Okuma Multus Mill Turn B750 is capable of 1100mm dia work pieces



Okuma Multus B750 Installed at

McMillan Engineering Group – Dandenong South, Australia.

. Weld Sections using approved WPQR's

We have reviewed the welding requirements of the examples given, we currently have 3 Submerged Arc welding machines which we envision would be used to join the barrels. Various MIG machines would be used for the cladding. As mentioned, all welding machines are regularly inspected, calibrated and parameters verified.

These procedures may also be qualified to other standards, namely military standards, if necessary. Similarly, if required new procedures may be developed for different applications and processes.



Typical Rotator used for production of Cylinder Barrels

McMillan Engineering Group – Dandenong South, Australia



Typical SAW Project – Class 1 Pressure Vessel Production

McMillan Engineering Group – Dandenong South, Australia

. PWHT

The below photo demonstrates a PWHT process being performed on a similar size barrel used in a Mining Application to Luff a Dredge Boom.

We have identified future investment for a Heat Treatment Console and Ceramic Bead Pads to enable in-situ heat treatment (preheat, PWHT) if MEG are successful with the contract.



PWHT at McMillan Engineering Group – Dandenong South, Australia.

. NDT

As part of quality control, MEG currently use MPI and UT, carried out by level 2 technicians. For a production job of this type the company would engage an independent Level 3 technician to develop a specific procedure for testing completed welds and to oversee the correct use of the procedure by technicians.

If RT is required, this would be performed by a 3rd party NATA accredited service provider.

. QA Inspection

Quality Inspection methodology would specifically be developed as part of the production procedure. MEG currently have CMM as below and a 3D Laser Track.



CMM at McMillan Engineering Group – Dandenong South, Australia.

. Bore Sections after Welding

Bore on the 11 m Lathe using the 6m long Boring Bar that currently exist within MEG.



11m Broadbent Stanley Lathe

McMillan Engineering Group – Dandenong South, Australia.

Hones

MEG has 2 Hones



Hones at McMillan Engineering Group – Dandenong South, Australia.

. Final QA Inspections

The final QA inspection will form part of the production procedure and include dimensional checks, weld inspection and surface checks followed by review of all quality documents and approvals by management.

If required, an MDR containing all pertinent documentation will be compiled and submitted to the client for final approval and issue of a release note.

. Pack in suitable Wooden Crate for Transport as per client instructions.

Finished products will be packed in suitable crates for transport as shown in a photo below.



Packing at McMillan Engineering Group – Dandenong South, Australia.