

AWMA Pty Ltd

ENGINEERING CAPABILITY STATEMENT



Contact:

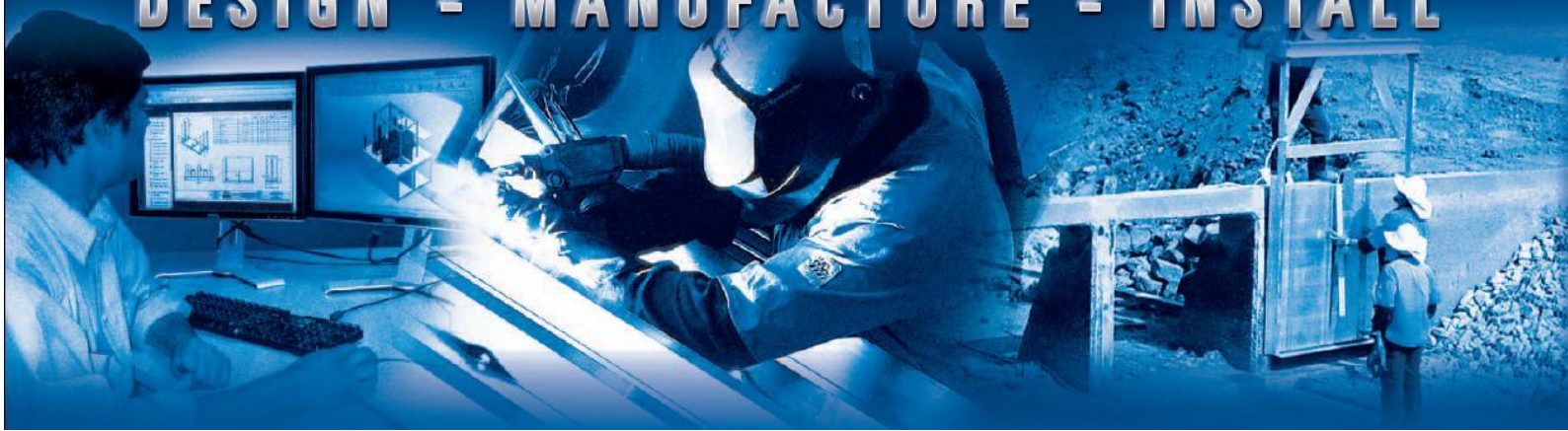
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DESIGN - MANUFACTURE - INSTALL



AWMA Design and Manufacture Specialised Control Infrastructure

AWMA's core market is the water industry, having designed and manufactured over \$80M worth of customised water control structures across Australia and internationally.

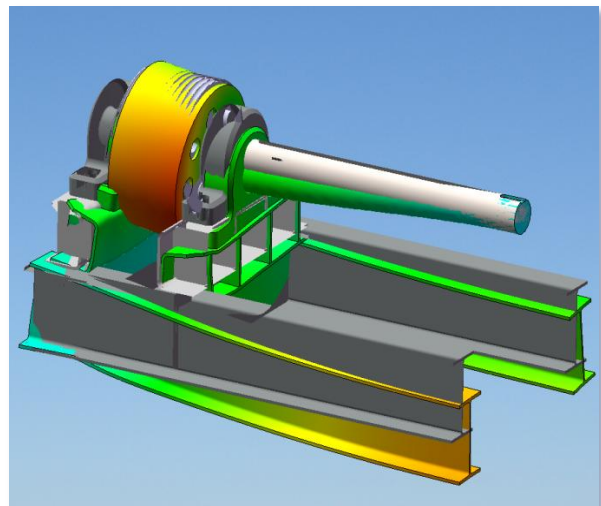
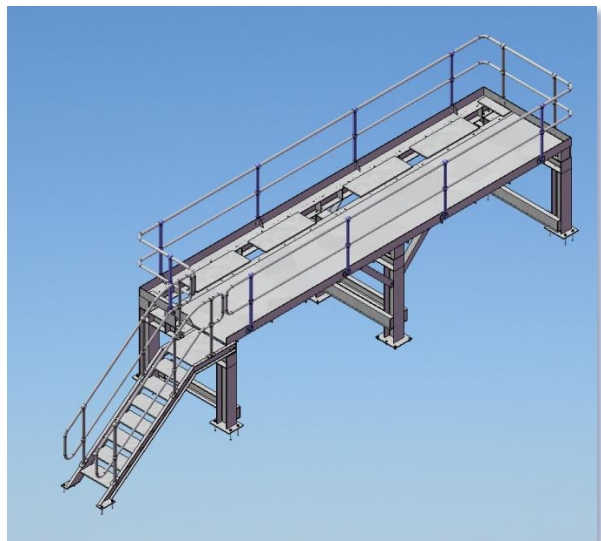
In addition to AWMA's broad range of customised water control gates, AWMA also offer specialised design services for a large range of auxiliary equipment.

AWMA promote a **partnering approach to design** where strong relationships are built with our clients, facilitating ease of communication throughout all corporate levels, resulting in an efficient job - the first time.

Specialised products designed by AWMA include heavy duty stainless steel winch systems, long span pedestrian walkways, collapsible solar panel masts and automated trash screens.

AWMA's design team has worked extensively with a number of well recognised external design houses such as GHD and URS as well as boutique operations including The Carnot Group and Deacon Engineers. Additionally, AWMA's designs are often reviewed and accepted by consultants such as SKM and BECA to set specifications showing compliance to the relevant cited Australian standards.

All geometry is developed primarily in SolidWorks 3d modeling software and is entered into the Dassault Simulation software suite for linear finite element analysis. All AWMA designers are certified SolidWorks Simulation users.



AWMA also perform limit state design calculations in line with AS4100 steel structures, AS1664 Aluminum structures, AS4673 Stainless steel, AS1657 - Walkways and ladders, and AS1418 – Cranes and hoists.

AutoCAD driven drafting solutions are also available upon request.

Computational fluid dynamic (CFD) analysis is carried out with SolidWorks flow simulation and with our design partners in Ansys CFX.

AWMA also cover control hardware and software design capacity with the in house software engineering team; and use external partners as required.

When developing designs, AWMA's team works closely with our key suppliers including G James (Aluminium), Sandvik (Stainless Steel), Bosch Rexroth (hydraulics), Boss polymers (Rubber), Dotmar (Engineering Plastics), Tulip Corp (CNC machining) and Komo Industries (Brake Pressing and metal preparation.)

With AWMA's unique in house capabilities, turn-key solutions incorporate design, prototyping, testing and manufacture.

AWMA's stringent manufacturing processes are driven by programs including **ISO 9001:2008** accredited quality management system, **ASSDA** stainless steel specialist's accreditation, and qualified OH&S procedures.

$$S_1 = ((B_s - \Phi_y \cdot F_{SY}) / \Phi_{VP}) / 1.25 \cdot D_s$$

Where
 $\Phi_y = 0.95$
 $\Phi_{VP} = 0.9$
 $F_{SY} = 83 \text{ MPa}$
 $E = 70 \text{ GPa}$

$$B_s = F_{SY} (1 + (F_{SY}^{1/3} / 17.7)) = 103.45 \quad (\text{table 3.3D})$$

$$D_s = (B_s / 10) \cdot (B_s / E)^{1/2} = 0.4$$

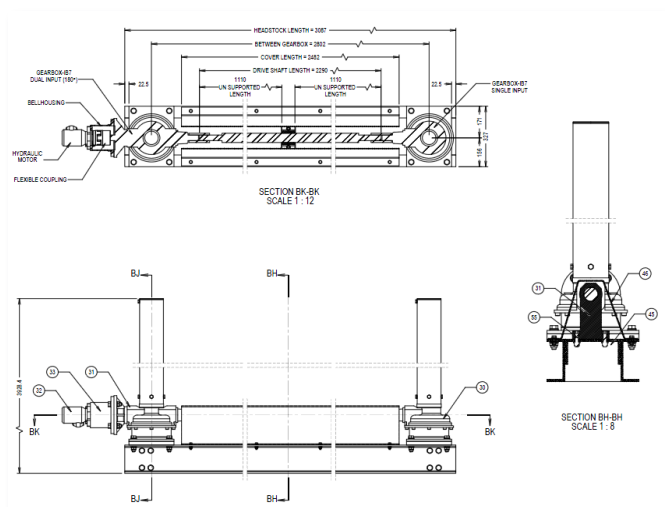
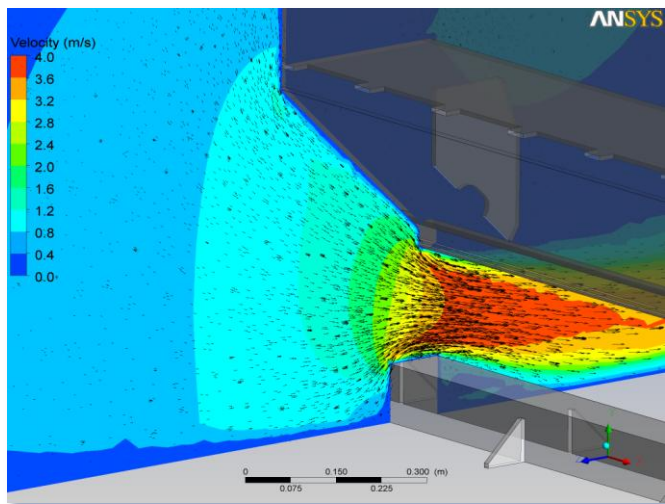
$$\Rightarrow S_1 = (103.45 - 0.95 \times (83 / 0.9)) / (1.25 \times 0.4) = 31.7$$

Find $L/t = 90/8 = 11.5 \Rightarrow$ Below $S_1 \Rightarrow$ use $\Phi_L = \Phi_y \cdot F_{SY}$ (Eq 3.4.24(1))
 $= 0.95 \times 83 = 78.85 \text{ MPa}$

Given $V = \omega \cdot L/2 = 34977 \text{ N}$

$$T = F/A = V/L \cdot t = 34,977 / (90 \times 8)$$

$$= 48 \text{ MPa} < \Phi_L$$



AWMA have developed comprehensive in-house weld procedures, qualifications and inspection capability. AWMA's weld procedures and testing are developed in accordance with AS1554.6 and AS1665. All welding is carried out by experienced and qualified tradesmen with the most modern equipment commercially available.

AWMA has been awarded key contracts on some of Australia's highest specified water projects including the \$2B Sydney desalination plant, the \$1B Perth 2 desalination plant and the \$4B Victorian desalination plant. These projects had demanding requirements for quality assurance and documentation. AWMA received praise for our level of conformance. Following is an excerpt from an audit report by an Independent Quality Inspector on one of the highest specified water projects in Australian history. AWMA demonstrated consistent quality control by the receipt of zero non-conformance reports for the life of the project.

As a result of the audit trail it was evident that the level of workmanship and attention to detail within the AWMA facility is of a high standard with personnel committed to providing a product that meets the expectations of the client". BlueWater Independent Quality Inspector for the Sydney Desalination Plant Project.

AWMA's dedication to innovative and sustainable control solutions is demonstrated throughout a decade of successful projects, including:

- Desalination Plants: the VIC, WA & NSW plants required highly specified materials and manufacturing processes to accommodate the highly corrosive environments, off-seating heads up to 30m on gates over 10m² in size and to maintain high actuation loads (up to 320kn).
- Melbourne Water: Tunnelling projects involved custom designed gates up to 4m high to withstand over 10m of head pressure. For the ETP site alone AWMA have worked with contractors including the John Holland Group, Tenix Alliance, STaPS Alliance and the Eastern Tertiary Alliance on staged upgrade programs to supply approximately 200 custom designed control structures.
- Waste Water Upgrades: Hundreds of control structures have been custom designed to meet site specific requirements for flow monitoring, management and isolation within sewerage treatment, water treatment, water recycling and storm water applications.
- AWMA are currently working on a number of key Federal Government MDB environmental water saving projects, including one with the largest LayFlat gates built in Australia (Koondrook-Perricoota Flood Enhancement Works, Offtake Regulator pictured below).



- Goulburn-Murray Water: Measure, design, construct and install 80 fully automated gates including software and integration into TCC SCADA system for the Strategic Measurement program. Also design, construct and installation of over one hundred automated channel systems throughout G-MW's areas of operation (LEVTRON).

Additionally, Prof. R.J. Keller recently presented a paper "The LayFlat Gate for Flow Regulation and Measurement – Development and Experience in Large Scale Installations" at the Hydraulic Measurements and Experimental Methods 2012 Conference (HMEM2012) in the USA. The paper showcased AWMA's LayFlat Gate and the successful flow algorithm developed for its regulation and measurement capacity. The LayFlat's unique features and accurate flow management involved extensive research and development, resulting in thousands of installations of one of the world's most successful water management gates.

"CIT have enjoyed working with AWMA. Their ability to work through new ground with us, to achieve the best possible solution has been greatly received." CIT Project Manager Jim Atsaves

For further information please contact:

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