

Capability Information

EPCM Solutions

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1 Introduction

EPCM Solutions is a dynamic engineering support company that brings together expertise to provide successful construction project delivery for our clients for the efficient operation of their facilities. Our highly experienced team is focused on the successful delivery of value for our clients and our experienced staff have been doing this for over 35 years in mining, oil & gas and utility industries.

EPCM Solutions was established in 2016 and has built a strong capability and client base in mining, power infrastructure and industrial engineering construction and facility maintenance projects.

EPCM Solutions provides custom solutions in our areas of expertise which are:

- > Electrical, instrument and control systems engineering
- > Energy management including renewable energy generation & storage systems, remote power systems and energy efficiency
- > Standards and codes compliance assessments and audits
- > Construction project delivery, management and execution

With a focus on engineering support, we have been able to assist many customers to augment their project teams and provide specialised technical services required for their projects.

Some focus areas that EPCM Solutions maintains specific expertise on include:

- > Feasibilities and detailed designs for mine process plants, underground mines and power generation facilities.
- > High voltage designs.
- > Power systems modelling.
- > 2D & 3D CAD designs.
- > Process control and automation.
- > Electricity grid connections.
- > Hazardous areas classifications and designs.
- > Functional safety systems design.
- > Structural integrity designs and standards compliance.
- > Energy efficiency assessments and designs.
- > Electrical regulatory and standards compliance.
- > Electrical equipment, switchboard, and switchroom designs.
- > Power quality improvements.
- > Site construction engineering support, supervision and commissioning.



2 Key Personnel

EPCM Solution's key staff personnel include:

Bruce Johnson – CEO. Bruce has 30+ years' experience as a consulting engineer and manager, working on project management, design, installation supervision, commissioning, support and optimisation for many projects in the mining and utilities industries globally. Bruce has been CEO of EPCM Solutions since 2016, is a chartered electrical engineer and engineering manager with a MBA as well as certifications in functional safety design and hazardous areas design.

With strong skills in problem solving and project team leadership, Bruce focuses on providing innovative and value adding solutions for complex projects. He has proven experience in integrating new technologies and hands-on experience in site construction work. Bruce has extensive experience on large projects for mine process plants, underground and open pit mines, container and bulk material ports, conveyor systems & stockyards, power stations and networks, borefields, renewable energy facilities, telecommunications, rail networks, manufacturing and subsea systems.

Cirilo Villan – Principal Electrical Engineer. Cirilo has 30+ years' experience in project management and electrical design focused on protection systems, high voltage transmission operations, renewable energy designs, underground and overhead power distribution, earthing systems and electrical fault investigations. He has extensive experience in the design, construction and operation of public and privately owned power generation, transmission and distribution networks. Cirilo is a chartered electrical engineer with a MBA degree and strong technical skills.

Reza Ahmadi – Principal Electrical Engineer. Reza has 20 years' experience across mining, distribution network, power generation, construction, oil and gas and water industries. He is a subject matter expert in engineering leadership and thrives on working in a team and ensuring safe work practices. Reza is a chartered electrical engineer leading engineering teams in HV and LV designs for industrial construction projects.

Arthur Touw – Principal Electrical Engineer. Arthur has 40 years' experience in the design of HV and LV electrical systems for mine process plants and power systems infrastructure, providing a lead design and commissioning role on dozens of large process plants in Australia and around the world. Arthur is a chartered electrical engineer leading engineering teams.

Paul Wilkinson – Lead Electrical Engineer. Paul has 20+ years' experience is electrical design, quality management, construction and commissioning of mining, power generation and oil & gas facilities. Paul has extensive experience and HV and LV switchgear design and construction, mine electrical systems and in the interpretation of and correct application of the Australian Standards, applicable Statutory Regulations and Codes, the National Construction Code and Project Specifications.

Mike Turrill – Lead Electrical Engineer. Mike has 13 years' experience in controls and automation and low voltage design, leading projects on large mine sites focusing on sustaining capital and brownfields projects.

Dishant Deshmukh – Lead Electrical Engineer. Dishant has 13 years' experience as an electrical and electronic engineer with expertise in commissioning, design, maintenance and repair of electrical and ICT infrastructure. He is a well organised, hardworking engineer with strong communications skills and focus on detail and quality control. Dishant has technical expertise in high voltage designs, power system modelling, protection relay set-up and switchgear testing and commissioning.

Shaun Young – Lead Electrical Engineer. Shaun has 13 years' experience as an electrical project engineer working in technical design, asset management, construction management, and commissioning roles with a focus on mining plant, heavy industrial, and power distribution infrastructure for brownfields and greenfields mine projects. Shaun manages small to medium sized engineering design teams and has good scheduling, project and cost management skills.

In addition to our key staff personnel, EPCM Solutions has an additional staff resource of 18 electrical design engineers, CAD designers and support staff based out of offices in Perth and Sydney.

3 Service Delivery

EPCM Solutions provides project engineering support services for our customers in industrial facility construction and operations. We have project management, engineering, construction supervision and startup systems, experience, documentation, and standards in place to carry project delivery of complex projects and provide technical support to our customers' project teams.

EPCM Solutions undertakes projects operating under the customer's quality system or using our quality system which follows the requirements of AS/NZ ISO 9001. The quality system is complimented by the company's policies.

EPCM Solutions applies a rigorous quality control to every phase of a project and attaches particular importance to the establishment of a close working relationship with the customer. One of our key quality objectives is achieving deliverables consistently on time, within budget, and in a manner that meets the customer's needs, while providing a technically appropriate and socially responsible solution.

EPCM Solutions recognises the importance of managing our health, safety and environmental (HSE) responsibilities in the delivery of a successful project. We embed a safe working culture within our organisation.

Electrical Engineering services include:

- > High Voltage, power generation, transmission and distribution design and inspections
- > Solar farms and BESS
- > Power studies and network modelling, electrical protection schemes, arc-flash studies
- > Communications networks – fibre, wireless, microwave system designs
- > Equipment automation and process control systems integration and functional safety systems
- > Mine process plant and underground distribution, motor control, EI&C.
- > Earthing and lightning protection systems design.
- > Hazardous Area compliance and design.

EPCM Solutions work is split into service areas for construction engineering, energy management, automation, and compliance auditing.

Construction Engineering

EPCM Solutions provides construction engineering support services for our customers in industrial facility construction and operations. Services offered include:

Engineering design – Electrical, instrumentation, control systems, communications, civil & structural, fire systems and HVAC.

Detailed designs – Lighting, lightning protection, cable and cable support systems, fabrication drawings, protection studies, and electrical earthing systems.

Estimating and Feasibilities – Options analysis, capital and operational expense development, long term planning studies, tendering assistance.

Project services – project labour hire, project management, scheduling, procurement management, project labour hire.

Site engineering support – construction engineers, installation supervision, equipment testing, commissioning and breakdown callouts.

Automation – PLC/SCADA, functional safety, IED configuration.

CAD services – 2D & 3D CAD design drafting (AutoCAD, Microstation, SolidWorks, Revit, Navisworks).

EPCM Solutions' team have strong construction project experience in:

- > Mineral processing plants
- > Materials handling plants
- > Water and Wastewater treatment facilities
- > Chemical and Gas plants
- > Non-processing mine infrastructure / accommodation camps
- > Power stations, switchyards and substations
- > Solar farms
- > Underground Mines and paste plants
- > Tunnelling construction
- > EV Charging infrastructure
- > Electrical distribution networks
- > Switchrooms and switchboards
- > IT Datacentres
- > Marine ports
- > Mine & Rail vehicles and balance machines
- > Borefields, water storage and transfer stations
- > Containerised plant and equipment skids
- > Fuel Depots
- > Offshore Platforms
- > Radio communications networks

Energy Management

EPCM Solutions provides a suite of services in the field of Energy Management to assist our customers in managing their energy costs and to run safe and efficient operating energy facilities.

EPCM Solutions carry out audits and studies, construction engineering, project management and full service solutions for:

- > Renewable energy installations
- > Energy storage systems
- > Energy efficiency and recovery
- > Electric vehicle charging infrastructure

At EPCM Solutions we believe that a focus on the efficient use of energy will benefit our customers' bottom line.

EPCM Solutions provide tailored expertise to help our customers with:

FEASIBILITIES - We carry out project feasibility, estimating services and option studies assessing the business case for power supply and energy saving opportunities and providing funding application and bankable feasibility reports. Our feasibilities consider site location, load profiles, derating factors, lifecycle costs, cost of grid power, equipment depreciation and other aspects as part of a comprehensive review to provide a more accurate return on investment.

GRID CONNECTIONS - We provide high voltage (HV) designs and regulatory submissions as well as power network modelling and grid authority liaison for grid connected systems. We provide consulting services for power purchase agreements (PPA) and energy market operations (EMO).

ENERGY STORAGE SYSTEMS - EPCM Solutions will review and design in appropriate energy storage support for renewable energy projects including battery storage, potential energy-based systems (e.g. pumped storage), heat and compression storage as well as flywheel technologies.

SYSTEM DESIGN - We do detail design work including civil, structural, mechanical, piping and electrical designs and drawings.

ENERGY EFFICIENCY - Our services include review of energy use and efficiency improvement recommendations such as low power lighting, insulation, efficient appliances, optimal use of variable speed drives and waste heat recovery as well as assessing building energy efficiency ratings in accordance with the National Construction Code (NCC). We also integrate proactive load-shedding schemes.

BATTERY CHARGING – EPCM Solutions has expertise in DC power systems including power system studies, DC switchgear and electric vehicle charging infrastructure.

PERFORMANCE MONITORING - EPCM Solutions integrate web-based energy monitoring of your facilities including the metering and communications systems and support/call-out features as well as energy market integration for selling power and gas.

Automation

EPCM Solutions provides expertise in automation, control systems integration and data management for our customers.

By developing robust control systems, we aim to simplify process operations, standardise compliance and maximise relevant information to system users.

EPCM Solutions carry out audits and studies, construction engineering, project management and turn-key solutions for:

- > Process Control
- > Machine & Vehicle Automation
- > MES, Historians, Asset Management & Workflow
- > Robotics
- > Communications Networks
- > Web-based & Mobile device applications

Using sound engineering techniques, we focus on the integration of new technologies, and improved methods into existing applications as well as the successful transfer of applications from one industry to another.

At EPCM Solutions we believe that a focus on the effective use of automation will improve productivity and reduce costs to benefit our customers' bottom line.

EPCM Solutions provide tailored expertise to help our customers with:

- > - PLC, SCADA, DCS and embedded software design, development, documentation, testing, deployment and commissioning for Industrial Process Control, Safety Integrated Systems, Profiling and detection systems, MES and Production systems and factory automation.
- > - Equipment and operational design for Industrial Robot applications, Functional Safety and OEM equipment including electrical, instrumentation, communications, hydraulic/pneumatic, speed and motion control, vision systems and mechanical design.
- > - Asset lifecycle management, performance monitoring and maintenance planning as well as integration of Online Condition Monitoring and Asset/Product Tracking systems. Remote access support; site breakdown and call-out response teams.
- > - Network design and configuration; security and CCTV system integration; protocol designs; data radio, backbone fibre, and satellite communications designs. Cyber-security integration, software bots and IoT connectivity.
- > - Optimisation of equipment operation through integration with self-teaching networks and rules-based decision making.
- > - Data concentrators and retrieval systems. Workflow software integration and database interfacing to operational systems.

Compliance Auditing

EPCM Solutions provides a suite of services in the field of Compliance Auditing to assist our customers in managing their assets and to operate safe and efficient operating facilities.

We provide the regulatory and standards expertise to augment the construction project team, assist OEM equipment suppliers importing equipment into Australia, or to support the facility operator in maintaining regulatory compliance.

EPCM Solutions will:

- > Manage regulatory compliance systems for our customers as statutory representatives including electrical safety, functional safety, and hazardous areas.
- > Plan testing and maintenance programs for routine compliance testing.
- > Carry out audits and studies.
- > Act as independent 3rd party or client representative reviewer for standards and specification compliance.

At EPCM Solutions we believe that a focus on quality control and standards compliance is essential to ensuring continuous facility operation.

Our experienced chartered engineers have extensive working knowledge of Australian Standards and Regulations and will provide practical advice in their application for industrial installations.

EPCM Solutions provide tailored expertise to help our customers with:

- > - Independent auditing of vendor and contractor compliance to customer specifications and site standards for supplied equipment and constructed installations.
- > - Independent auditing of electrical installations for certification to regulatory requirements including RPEQ and CPENG certifications.
- > - Inspection and auditing of second-hand equipment for suitability to customer requirements and compliance with current standards.
- > - Auditing of installations and systems of work for Australian Standards compliance, including imported equipment and electrical switchboard assessments to AS3000, AS61439, AS2067 and others.
- > - Electrical equipment and grounding systems testing, development of maintenance programs and safe work procedures. Compliance assessments to WHS and mining regulations requirements throughout Australia and safety of electrical systems worldwide.
- > - Verification assessments and documentation of functional safety systems and independent validation testing to IEC61511, IEC61508, AS/IEC60204.
- > - HA Compliance and HA Dossier inspections for explosive gas and dust atmospheres and testing to AS/IEC60079.
- > - regulatory compliance roles, risk assessments and development of safe work procedures, site specifications, regulatory testing programs and electrical risk control plans (including EECPP).
- > - Assessments for owners, insurers and law firms of equipment damage or personnel injury, including shock, fire & flood.
- > - Assessments of buildings to Australian National Construction Code (NCC) for energy efficiency compliance.
- > - Assessments of systems in operating facilities including:
 - o Cyber-security vulnerability assessments of industrial control systems.
 - o Energy efficiency and power quality audits.
 - o Lighting illumination level audits.
 - o Process alarm management audits.
 - o Bushfire risk assessments for powerlines and electrical infrastructure.
 - o Control system and automation performance audits.