



## Western Australia's Economic Relationship with the Republic of India

*An Avid Resources perspective*





# Avid Resources - Who are we?

**Avid Resources** is a multi-disciplinary Western Australian owned and operated business providing market-leading expertise in the following:

## ***Construction and Maintenance***

- Plant and infrastructure construction & maintenance for metals & minerals projects

## ***Structural, mechanical, piping***

- Plant and Infrastructure works - structural mechanical & piping construction and maintenance

## ***Remote Isolation Product***

- A patented remote isolation product called REMSAFE
- Designed for mineral processing, manufacturing and fixed plant applications which require electrical isolation

## ***Electrical, Instrumentation & Control Systems***

- Specialised design and manufacturing of switch room products including SCADA engineering

## ***Water Treatment and Waste Water Facilities***

- Bespoke water treatment facilities and piping infrastructure

## ***Civil, Mechanical & Electrical Engineering***

- Design capabilities to support and compliment the above



# Republic of India Economic Forecast

## Currently

- India currently has the 2<sup>nd</sup> largest population in the world with ~1.3B people
- Since 1970's, India's real GDP per capita has increased fivefold, resulting in millions of people being lifted out of poverty. Key development indicators - improvement in infant mortality and life expectancy rates supports this trend.
- This has led to the creation of a substantial and aspirational consumer-class that significantly contributes to household consumption and is an importance source of optimism for growth in the Indian Economy.

## Projections

- The forecast population growth rate is expected to make India the most populous country within the next decade. The UN projects India's population to reach almost 1.6B people by 2035
- This growth makes India one of the worlds fastest growing large economy and the third largest contributor to global growth. Australian Treasury projects India will enjoy a conservative average of c.6% annual growth over the next two decades
- In Purchasing Power Parity (PPP) terms the projected growth will see increases 7% in 2016 to ~13% in 2035 making it one of the major poles of global economic power / consumption

## Opportunities

- To fuel this growth over the next two decades there will be growing demand for many of the goods and services which Australia can be well positioned to supply
- Over the next two decade the Indian market will become more crowded and competitive than present
- It is imperative for the Australian Government and businesses to prepare and secure this important export market by investing in establishing strategic relationships in India, to market our products and services as soon as possible in order to secure the 'foot in the door'. Australian government also highlighted India's importance in "Australian Economic Strategy 2035" paper.

# Growth Sectors & Australian Comparative Advantage

The Republic of India forecast economic growth is expected to stimulate demand in numerous sectors, for the purposes of this presentation we would focus on the following areas:

## Water Scarcity & Infrastructure

- India currently has 18% of the world's population and only 4% of the world's water supply
- Current population growth, pollution and water distribution management are contributing to the depletion of available water supplies
- Water scarcity is expected in the next decade when demand outstrips supply
- **Opportunity for Australia - Increase demand for water treatment / recycling plants, and more effective water distribution to alleviate this issue**

## Mining & Resources

- Projected economic growth will increase demand for commodities such as iron ore, metallurgical and thermal coal, base metals and precious metals, which would directly benefit Australian mining exports
- Domestically, India has substantial reserves in Base metals and Iron Ore, which it intends to extract & process to keep up with domestic demand. Indian mining extraction and mineral processing expertise is currently lagging behind global benchmarks
- **Opportunity for Australia – As a global leader in mining extraction and mineral processing, export of this expertise and technology**

## Power & Infrastructure

- Projected economic growth will increase demand for Power, which generates demand for Power Generation and associated infrastructure
- Demand will be directly pegged to growth rates
- **Opportunity for Australia – Involvement in the design and construction of power generation facilities, green power generation projects and infrastructure works**



# Avid Advantage, expansion to the Republic of India

## Water Scarcity & Infrastructure

- Avid has a water management division that has capabilities of designing and construction water treatment and waste water treatment plants
- Avid has capabilities in water distribution networks (underground piping etc)
- Avid has capabilities in water management and bore-field testing, which can benefit water requirements in the public and private sectors (e.g. mining activities)
- Avid has a patented remote electrical isolation product called REMSAFE which can provide proven isolation efficiencies
- **Opportunities for Avid – Position to tender and win Water infrastructure projects in India**

## Mining & Resources

- Avid has capabilities in the design & construction of Mineral Processing Facilities
- Avid has capabilities in the design, testing and construction of mining water management infrastructure (e.g. bore-fields, piping infrastructure, pumping stations)
- Avid has a patented remote electrical isolation product called REMSAFE which can provide proven isolation efficiencies, which is considered an industry benchmark and adopted by the major mining companies in their operations (e.g. Rio Tinto & BHP)
- **Opportunity for Avid – Position to tender and win mineral processing construction and maintenance projects, and other mining infrastructure projects in India**

## Power & Infrastructure

- Avid has capabilities in the design and construction of Power Infrastructure
- Avid can design and implement SCADA control systems used in control rooms
- Avid has capabilities in the maintenance of Power Infrastructure facilities
- **Opportunity for Avid – Position to tender and win mineral processing construction and maintenance projects, and other mining infrastructure projects in India**



# What does that mean to WA if AVID wins Indian Contracts?

**Being a WA owned and operated METS business, winning Indian Contracts would mean:**

## *Jobs*

- Creating WA Jobs, as the design, engineering and management of the projects will be controlled from WA

## *Brand*

- Consolidating the WA brand, that WA companies provide world leading products and services and sets the reputation for other WA brands

## *Innovation*

- Growth in AVID's business, leads to further innovation. For example the patented REMSAFE product can be further developed and marketed within India and the world

# How WA Govt can assist WA businesses?

## ***Business Development Grants***

To assist with marketing and prospecting costs involved in Indian business development

## ***Financial and Business Support***

Recommend & support to provide working capital requirements for Indian expansion projects

## ***Business Introductions through Trade Missions***

Government support and introduction to key decision makers within the targeted industries



# Company Overview

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## Our Core Capabilities







# Company Overview

**Avid Resources** is a multi-disciplinary business providing market-leading construction and maintenance for metals & minerals projects; end-to-end structural, mechanical, piping, electrical, instrumentation and control solutions; and extensive design, civil, mechanical and electrical experience across water treatment plants & waste water treatment facilities.

- We are able to combine and leverage these capabilities, successfully delivering **fully integrated** structural, mechanical and electrical construction, installation, maintenance and shutdown projects
- Our team has a proven track record built on our **collaborative approach** and a fundamental commitment to reliability, quality assurance and responsiveness to dynamic and changing requirements
- We are highly experienced in assembling the right team and resources needed to meet even the most compressed project schedules



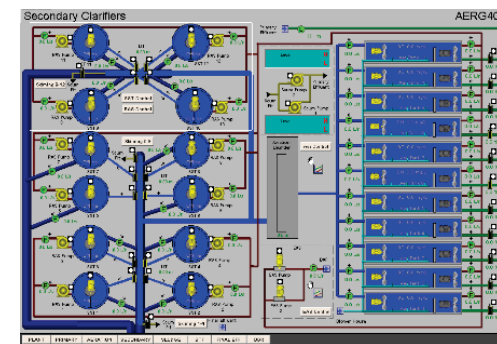
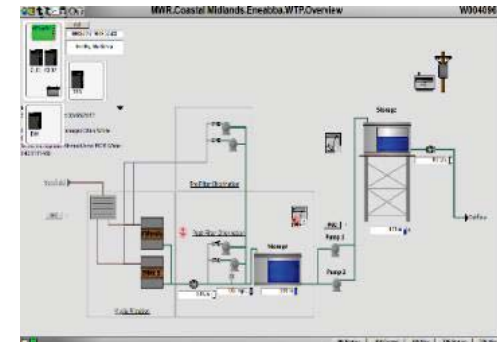


# Engineering Capability

## Controls & SCADA

Combined with Remsafe, our automation and controls team delivers automation and process control solutions for our clients in a fast-changing global environment. The primary interface to process control systems is the **SCADA (Supervisory Control and Data Acquisition)** system. AVID is a recognised systems integrator with all the major PLC and SCADA vendors

- We are experienced in developing software for **SCADA and HMI** (Human-Machine Interface) systems
- Expertise covers stand-alone touch-screen systems to **large networked systems** with features such as redundancy, multiple clients and multi-monitor support
- We are specialists in communications and **interfacing between SCADA, PLC and RTU systems**. Our team has extensive experience with all major protocols and remote I/O systems. Custom product solutions range from engineering design services through to **implementation and final site commissioning**.



# Engineering Capability

## Engineering & Drafting

### In-house Electrical, Mechanical and Civil drafting services:

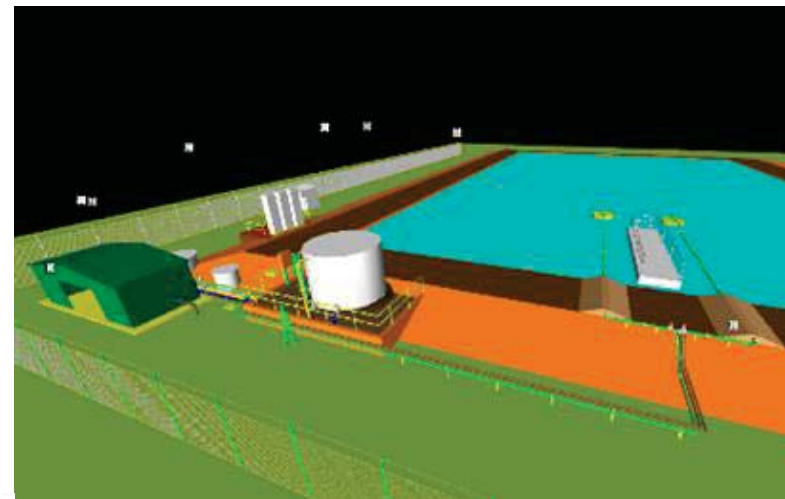
- Site Layouts
- Single Line Diagrams
- Earthing and Protection Diagrams
- Process & Instrument Diagrams (P&IDs)
- Concrete footings
- Foundations
- Long sections
- As-constructed/As-built drafting

### 3D modeling:

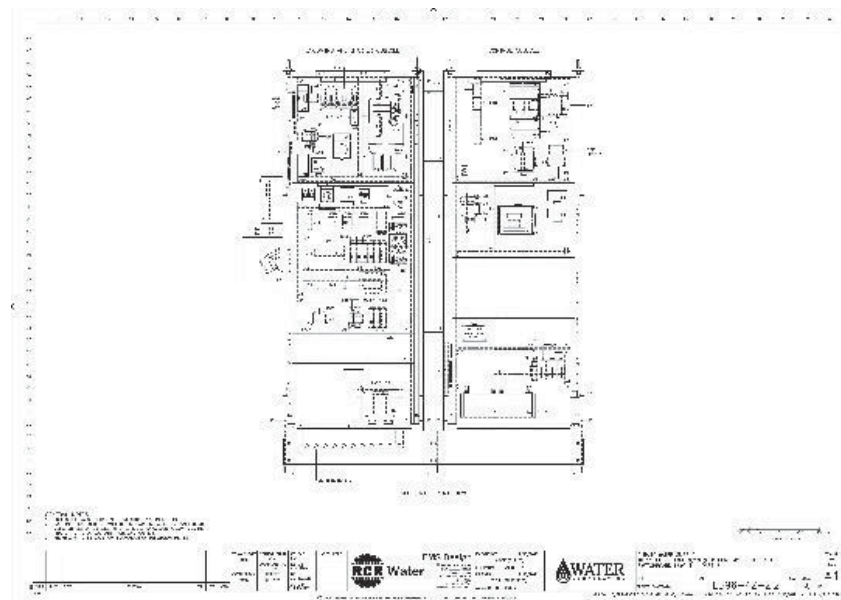
- General arrangement design for industrial facilities
- Conveyors
- Crushers
- Treatment plants
- Pump stations

### The Systems we use include:

- AutoCAD electrical
- AutoCAD Civil
- AutoCAD 3D
- MicroStation
- Inventor
- Autoplant
- Navisworks



AutoCAD 3D – William WWTP



Switchboard Manufacturing Design

# Manufacturing Capability

At AVID, our goal is to provide our Clients with turnkey solutions for the design, fabrication, installation, commissioning and maintenance of their assets, as well as the integration of data and communications infrastructure.

AVID manufacturing draws on our extensive manufacturing capability for specialist production and fit out of switchrooms. Our facilities provide us with exceptional ability to produce switchrooms within metropolitan and regional areas.

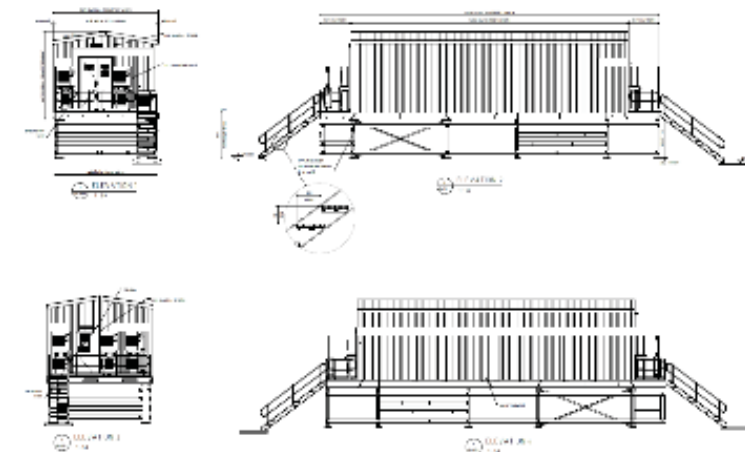
Together with our team of professional qualified engineers and experienced teams in the field we partner with other leading specialists in the delivery of turn key switchrooms to meet our diverse client requirements, allowing us to manage inhouse any changing client or design requirements.



Sample switchroom design concept



Installed switchroom Pilgangoora Lithium project



Sample Switchroom Layout Design

# Manufacturing Capability

**Pilgangoora Lithium Switchroom** – Avid were assigned the design, supply and fitout of the four (4) LV (Low Voltage), MCC (Motor Control Centre) Switchroom package.

Avid self-performed the design, supply, manufacture and assembly of the four (4) 4000A CUBIC MCC's Switchboard, at the Switchboard facility located in Perth, WA.



415V, 4000 Amp, 63kA, 70 starter modules, MCC frame – Pilgangoora

One of the largest CUBIC MCC built in Australia (11.904m). The manufacturing schedule was challenging; as the complete MCC was built in 6 weeks inclusive of procurement and installation into the switchroom.



Avid self-performed the design, supply, manufacture and assembly of the four (4) 4000A CUBIC MCC's Switchboard, at the Switchboard facility located in Perth WA.



Website: [www.cubic.eu](http://www.cubic.eu)

# Manufacturing Capability

**Technical & Innovation** – Avid created the following technical and/or innovative solutions, all of which demonstrated excellence on Pilgangoora project:

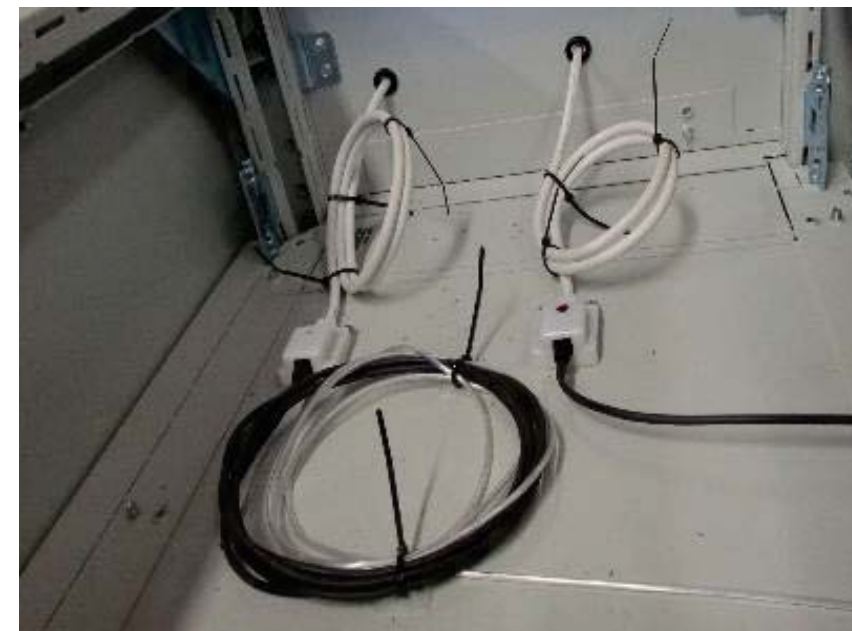
- The design of the busbar dropper design;
- The design of the switchboard arc fault detection system;
- The design of the Switchroom and
- Delivered a working system to Pilbara Minerals.



Centre fed MCC busbar system. The standard CUBIC busbar system was designed as ring busbar system for back to back MCCs. We worked with NHP and designed a center fed busbar system with horizontal main bus and front and back common dropper. This saves significant amount of copper.



CUBIC's specially developed assembly bolt, it is not necessary to drill holes or cut threads. The assembly bolt allows for an adjustable connection, exactly where it is needed on the busbar holders. All busbar joints are designated as maintenance-free according to DIN 43671.



To detect the Arc Flash there are two types of arc-flash sensors; point sensors and fibre-optic sensors have been used in incomer cable zone, busbar zone and dropper zone. Both sensor types gather light and transmit the intensity of the light back to the PGR-8800.

# Manufacturing Capability

As an industry leader in the manufacture of electrical and instrumentation solutions / products, we have delivered switchboard manufacturing services to clients throughout Australia, Asia and Africa.

AVID has alliances with Cubic, Schneider, NHP and ABB Low Voltage Switchgear, Ampcontrol Electronics, CMI Mining Products and Lucy Trident Medium Voltage Switchgear. With considerable buying power, we offer competitive prices and improved delivery times on major products.

## Major users of our products:



RioTinto





# Installation Capability

Avid deliver all aspects of electrical and instrumentation projects, providing end-to-end solutions for the design, fabrication, construction, installation and maintenance of HV, EI & C systems and communication and data networks.

## Service Solutions

- Avid has the ability to quickly mobilise to remote sites across Australia and offshore.
- Avid is experienced in assembling the right team and resources needed to meet the compressed project schedules often encountered at the electrical and instrumentation end of a complex project.
- Each site is supported with both on-site and off-site management personnel to ensure the quality and delivery of your project.

## Integrated Solutions

- Together with our SMP team Avid provides seamless project delivery of structural, mechanical, piping, electrical and instrumentation (SMPE/I) packages.
- Integration and value-adding through a single contractor has been demonstrated through our previous projects. Project example - MMG Limited Dugald River Zinc & Lead Processing Plant valued at over \$80 million.

## Core Business

### Sectors

Resources  
Oil & Gas  
Mining-surface and underground  
Infrastructure  
Power generation  
Transmission and distribution  
Water

### Products Installations

Switchboards  
Enclosures and frames  
High Voltage mining substations  
High Voltage Switchgear  
Transformers

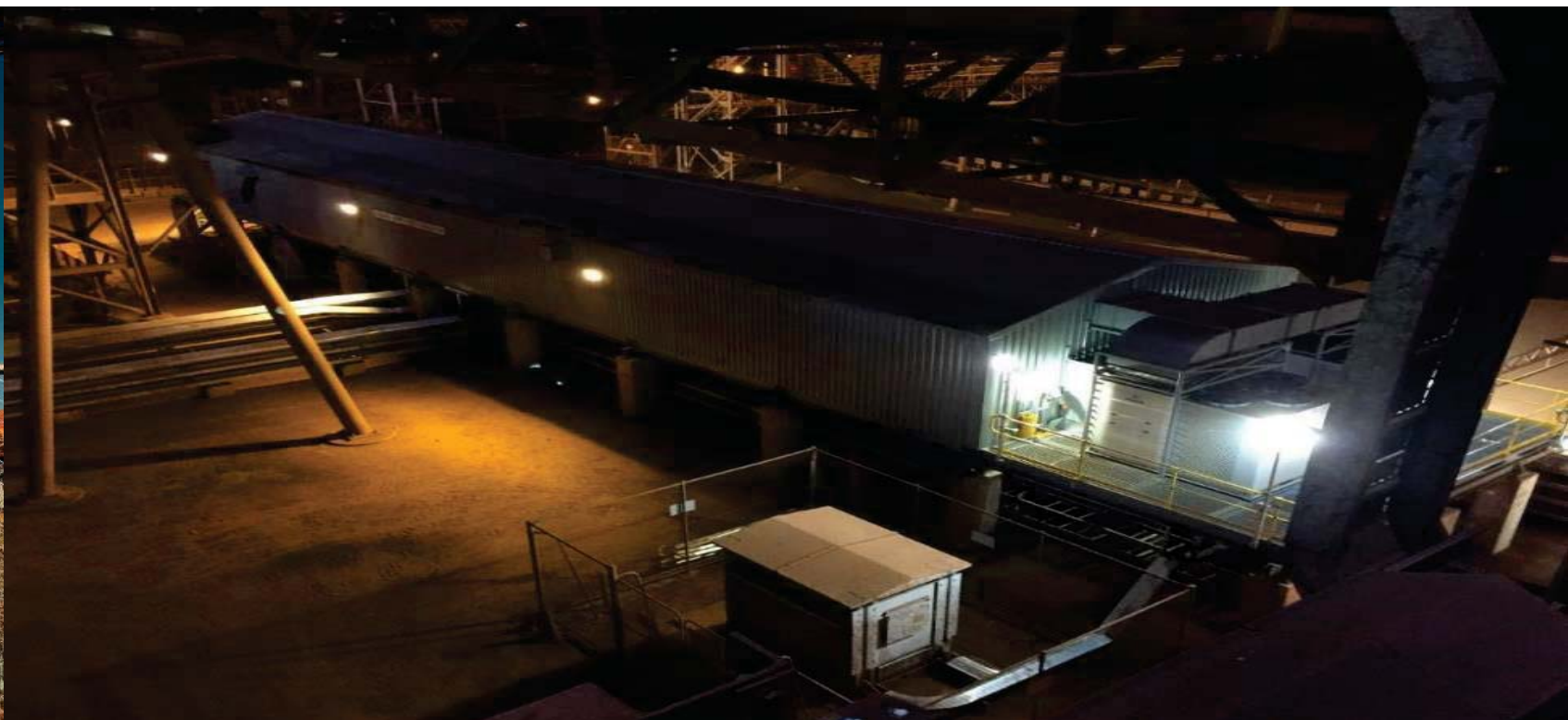
### Services

Construction  
Turnkey solutions  
Design  
Commissioning  
Specialised shutdown and maintenance teams  
Electrical safety compliance audits  
Electrical instrumentation  
Sales and hire of electrical product  
Off-site repairs





# Installation Capability



## North Yard Substation Port Hedland

Project: North Yard Substation  
Location: Nelson Point, WA  
Client: BHP Iron Ore

Installation, construction, test & commissioning of new North Yard substation switch room, HV transformers, NER and infrastructure to provide BHP with a new a switchyard facility.

The project ensured minimal plant shutdowns and seamless operation during the decommissioning and dismantling of BHP's Nelson point Secondary Crushing building.



# Remote Isolation

Smarter, Faster, Safer Isolations

# Client Benefits



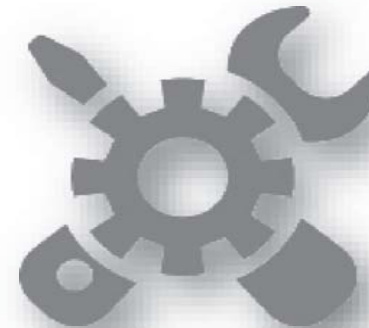
## Safety

- ❑ Eliminate Human Error
- ❑ Remove Workforce from Hazardous Tasks
- ❑ Reduced Isolation Breach Risk



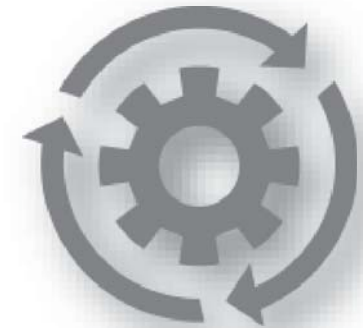
## Production

- ❑ Reduced Isolation Time
- ❑ Increased Equipment Availability
- ❑ Constraint Debottlenecking



## Time

- ❑ Reduced Isolation Wait Time
- ❑ Improved Workforce Productivity



## Distance

- ❑ Reduced Travel
- ❑ Reduced Risk

# Project Experience



REMSAFE have successfully delivered 19 remote isolation system installations, with many additional currently in progress with increased automation deployment on mine sites across Australia, South Africa, Canada and more across Iron Ore, Coal and other commodities.

World leading mining houses are REMSAFE clients.

Rio Tinto

BHP

FMG

Anglo American

New Hope Group

INDUSTRY LEADERS USING REMSAFE





# Summary

## 1. Improved Safety

- Remote Isolation System is:
  - Automated;
  - Sequential;
  - Repeatable;
  - Continuously Monitored;
  - Safety Verified.
- Multiple layers of protection;
- Multiple devices used to perform isolation;
- Multiple checks to confirm isolation;
- Continuous system failsafe monitoring;
- Safety PLC for monitoring and control;
- Tamper detection;
- Data logging;
- SIL rated system.

## 2. Reduction of Risks

- Removes human interface for MV & LV switching;
- Reduces exposure to arc flash;
- Ease of isolation encourages adherence to isolation procedure;
- Single point of isolation;
- Simplifies complex isolation;
- Isolation of wrong equipment prevented;
- Reduces risk of unauthorized isolation – Control room operator acknowledgement required;
- Improves hierarchy of control;
- Reduces human error.

## 3. Reduction in Isolation Time

- Isolation time reduced to a few minutes;
- Electricians not required to perform isolation;
- System has the capability to isolate groups of equipment for plant shutdowns.

