

Mining Capabilities Pack

Dynapumps®

DYNAMIC PUMP SOLUTIONS



Company Profile

Pressure & Vacuum Pump Specialist

Vision

To supply on time, high quality and recognised products to our clients as packaged equipment to their specifications with excellent after sales service and spares

Dynapumps Core Values

- Consulting with our clients to achieve satisfaction and improvement
- Training our staff to ensure high levels of competency
- Following the policies & procedures set down in our Quality, OHS and Environmental systems
- Providing high quality products at competitive prices
- Supplying service support to our clients for spare parts, programmed maintenance and repairs



Our Mining Product Range:

- Turbine pumps
- ISO End Suction Pumps
- Vertical Multistage Pumps
- Submersible & Borehole Pumps
- AS2941 & NFPA20 Fire Pumps
- Helical Rotor Pumps
- Piston & Plunger Pumps
- Peristaltic (hose) Pumps
- Magnetic Drive Pumps
- Air Operated Diaphragm Pumps
- Liquid Ring Vacuum Pumps & Compressors

Australia Wide

With offices in WA, NSW, VIC and QLD, Dynapumps are equipped to supply nationally and internationally

Company Background

Dynapumps commenced operations in December 1981 selling pumps and pump systems to mining companies and manufacturers in Western Australia. The company was started by two directors and has grown from a staff of four to fifty with a substantial increase in assets.

Dynapumps now represents a wide range of internationally recognised pump companies and specialises in the supply of complete project packages for mining, oil & gas and water supply & water treatment markets.

WESTERN AUSTRALIA

WA is the Head Office and has the largest turnover. It supports our central design and engineering office and has an integrated manufacturing and assembly plant. WA office is accredited to ISO9001:2008.

It processes all the other states accounting and has a main server with remote Citrix connection for the other offices and an offsite computer back-up system

NEW SOUTH WALES

May 1995 we opened our NSW office on the East Coast of Australia. In July 2001 we commenced manufacturing our own brand of "Flo-Max" turbine, propeller and submersible borehole pumps. In 2010 the Flo-Max range was extended to cover submersible sewage pumps. Flo-Max pumps are sold for use in mining, oil & gas and water supply & water treatment markets as well as farm irrigation through their country distributors.

QUEENSLAND

In November 2003 we opened a branch in Queensland to market our range of general pumps but in particular the range of metering pumps for the East coast of Australia. In 2005 we purchased our own premises in Yatala. They have their own engineering department and have secured major contracts in the mining industry for Queensland and overseas projects

VICTORIA

In March 2006 we opened a branch in Melbourne, Victoria to improve our National coverage and offer stock and service for our products in that state. Its aim is to promote the range of vacuum pumps in particular to East Coast companies and our products in mining and oil & gas markets. In 2011 we purchased modern, larger premises in Thomastown.



Company Information

Providing clients with complete engineered solutions for all their pressure and vacuum requirements

Quality

Dynapumps is accredited to AS/NZS ISO 9001: 2008 and are audited annually by Bureau Veritas. We provide training for all our staff to ensure that they are aware of and capable of implementing our Quality System



OHS

Dynapumps has implemented an Occupational Health and Safety program to comply with Worksafe requirements. We will revise our system to comply with the new Safe Work Australia legislation as of 1st January 2012.



Environmental

Dynapumps is committed to ensure that we follow Government legislation for the protection of our environment and this is conveyed to all staff for their implementation.

Associations

Dynapumps has joined a number of organisations to better understand our clients and their needs. These memberships also provide further learning opportunities for our staff.



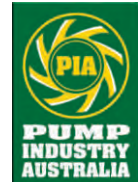
Australian Petroleum Production and Exploration Association



CHAMBER OF COMMERCE AND INDUSTRY WESTERN AUSTRALIA



Australian Drilling Industry Association



Pump Industry Australia



Vacuum Society of Australia

Vacuum Society of Australia



SolidWorks3D™

Dynapumps have invested in the latest in 3D technology to support our customers who are dealing regularly with multi-million dollar projects. Efficiency, cost containment and time are more crucial than ever, engaging with suppliers with SolidWorks3D™ capabilities can offer businesses a distinct advantage. Listing BP, Chevron, Woodside and many well known Oil & Gas consultants amongst our clientele, our drawings

integrate seamlessly into their systems in any number of drawing formats. Our clients have benefited from the notable reduction in fabrication costs, which has resulted from the ability to more thoroughly check the systems in 3-dimensional format.



On balance, SolidWorks3D™ has presented the opportunity for the engineering team at Dynapumps to fully harness their technical expertise and skills and as a result, the designs being received by our clients are more innovative, accurate and cost efficient.



Mining Specialist

RECENT MINING PROJECTS

Below is a brief overview of some of the typical clients and projects supplied by Dynapumps in the mining sector.



| Year | Customer | Projects | Package |
|------|----------------------------------|----------------------------------|--|
| 2011 | AUSENCO/ LONDON MINING CO | MARAMPA IRON ORE PROJECT | - WATER FEED PUMPS |
| 2011 | LYCOPODIUM/ NEWMONT GHANA | AKYEM GOLD PROJECT | - SOLUTION PUMP PACKAGE - FIRE PUMPS PACKAGE - SUBMERSIBLE PUMPS |
| 2011 | NALCO AUSTRALIA PTY LTD | BHP BILLITON KWINANA | - BOILER DOSING PUMP SKID |
| 2011 | AUSENCO/ TONKOLILI IRON ORE LTD | TONKOLILI IRON ORE PROJECT | - SOLUTION PUMPS |
| 2011 | CHIRANO GOLD MINES LTD | CHIRANO GOLD PROJECT | - FIRE WATER PUMP SET |
| 2011 | AMEC MINPROC/ PHU BIA MINING LTD | BAN HOUAYXAI GOLD/SILVER PROJECT | - GOLD ROOM PAN FILTER SYSTEM |
| 2011 | ABESQUE ENGINEERING | KANMANTOO COPPER PROJECT | - REAGENT & DRUM TRANSFER PUMPS - WATER PUMPS - TRAILER MOUNTED DIESEL DRIVEN WATER PUMP SET - FIRE & POTABLE WATER PUMPS |
| 2011 | LYCOPODIUM/ ANGLOGOLD ASHANTI | TROPICANO GOLD | - SUBMERSIBLE PUMPS |
| 2011 | CRUSHING SERVICES INTERNATIONAL | FMG CHRISTMAS CREEK IRON ORE | - DUST SUPPRESSION PUMPS |
| 2011 | LYCOPODIUM/ ENVIROGOLD | LAS LAGUNAS GOLD MINE | - FIRE WATER PUMPS - DIESEL PUMPS - SOLUTION & REAGENT PUMPS - TAILINGS DECANT WATER PUMP |
| 2011 | FIRST QUANTUM MINERALS LTD | KEVITSA COPPER/NICKEL PROJECT | - DRUM PUMP PACKAGE |
| 2010 | FIRST QUANTUM MINERALS LTD | RAVENSTHORPE NICKEL PROJECT | - HP GLAND SEAL PUMPS - HP ACID PUMPS - SOLUTION PUMPS - SEAWATER TRANSFER PUMPS |
| 2010 | FIRST QUANTUM MINERALS LTD | KANSANSHI COPPER/GOLD PROJECT | - REAGENT PUMPS - WATER PUMPS - VACUUM PRIMING SYSTEM |
| 2010 | FMG | CHRISTMAS CREEK IRON ORE PROJECT | - STOCKYARD PUMPS - GLAND PUMP SET |
| 2010 | AUSENCO/ AKARA MINING | CHATREE GOLD PROJECT | - SOLUTION PUMPS - PAN FILTER VACUUM SET |
| 2010 | LYCOPODIUM/ ADAMUS | NZEMA GOLD PROJECT | - SUBMERSIBLE PUMPS - SEWAGE PUMP STATION - CENTRIFUGAL SOLUTION PUMPS |
| 2010 | THIESS | BHP BILLITON IRON ORE - YANDI | - SUBMERSIBLE PUMPS |
| 2010 | GALAXY RESOURCES | MT CATTLIN SPODMENE PROJECT | - ISO 5199 WATER PUMPS |
| 2010 | GFR INDUSTRIES | SINO DESALINATION PLANT | - WATER PUMPS |
| 2009 | WORLEY PARSONS/ VALE INCO | GORO NICKEL S.A.S. | - ELECTRIC SELF PRIMING PUMPS |
| 2009 | PROTEUS ENGINEERING | TIWEST EXPANSION PROJECT | - DUCTILE IRON WATER PUMPS |
| 2009 | PT NATARANG MINING INDONESIA | WAY LINGGO GOLD/SILVER PROJECT | - PROCESS & SOLUTION PUMPS |
| 2009 | RIO TINTO | DAMPIER SALT | - SALT PRODUCTION PUMPS - FEED WATER PUMPS |

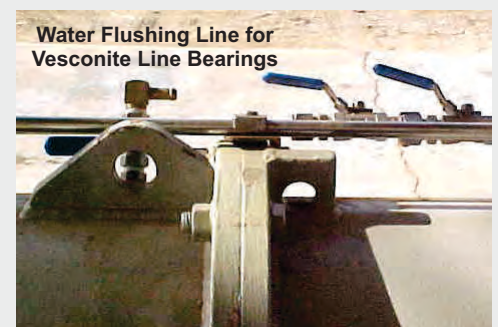
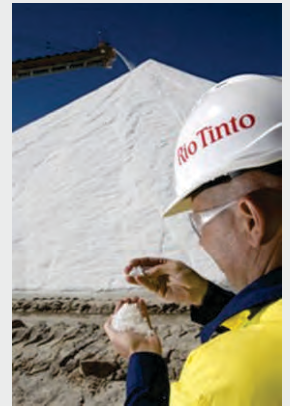
Mining Projects

FLO-MAX RANGE

Client: Rio Tinto
Project: Dampier Salt Operations
Application: Salt Production Pumps

Product Details

Flo-Max Vertical Axial Flow (Propeller) Pumps
2 x 16 P (400 mm diameter) 316 stainless steel Flo-Max Axial Flow (Propeller) Pumps used for salt production at Rio Tinto's Dampier Salt Operations which is the world's largest exporter of solar salt.
Pumps are fitted with a 37kW motor and produce 416 litres/sec at 3.5 metres head.
They were supplied with Vesconite water flushed bearings for long life under abrasive and corrosive conditions.



Client: Vale-Inco
Project: Goro Nickel Project- Noumea, New Caledonia
Application: Main Tailing Dam Flood Water Pump Barge

Product Details

3 x Flo-Max 4 Stage HM16TC vertical turbine pump complete with

- 316SS Bowls
- SAF2205 Impellers
- SS Shaft- Bowl Assembly
- 12L24 Packed gland discharge head
- 250 mm Flanged water lubricated column
- Motor stool & independent thrust bearing

Dynapumps supply also included

- 630 mm Poly delivery pipe and 200 mm Poly for electric conduit both with floats
- Tender Barge and gangway to main barge (gangway not shown)



Mining Projects

FIRE PUMPS



Client: Barrick Australia Ltd
Consultant: Aker Kvaerner
Project: Cowal Gold Mine, Central NSW
Application: Plant Fire Water Pumps to AS2941

Product Details

Flo-Max Vertical Turbine pump for AS2941 Fire Pump duty, Flow 90 l/sec at 90 metres Total Dynamic Head supplied as a complete package with:

- 1 only 300 mm pump coupled to 132 kW, 4 pole motor
- 1 only 300 mm coupled to 6 cylinder diesel engine
- 1 only Jacking Pump
- AS2941 Control Panels
- Piping and valves

Client: Vale CVRD
Consultant: Inco Nickel
Project: Goro Nickel Mine- New Caledonia
Application: Plant Fire Water Pumps to NFPA20 standard

Product details

NFPA20 Vertical Turbine Fire Pumps Duty flow 392 l/sec at 110 metres Total Dynamic Head supplied as a complete package with:

- 1 x pump coupled to 630 kW, 4 pole electric motor
- 2 x pumps coupled to 650 kW, Diesel Engine with acoustic enclosure
- 1 x jacking pump
- Control panels
- Piping and valves



Client: Lycopodium Engineering Pty Ltd
Project: KMT Copper/Cobalt Project- Kolwezi, Democratic Republic of the Congo
Application: Plant Fire Pumps

Product details

Electric & Diesel Fire Pump Package to AS2941

Liquid: Raw Water
Pump flow: 1200 m³/hour
Discharge pressure: 70 metres
Pump supplied: Sulzer Centrifugal Pump model APP53-250 material code 53
1 x electric, 1 x diesel and 1 x jockey

Electric package: Above pump driven via 330 kW, 4 pole electric motor

Diesel package: Same pump, with Deutz Engine BF8M1015CP

Jockey pump: Grundfos model CR1-17, 1.1 kW, 1 m³/hour @ 100 metres

Control Panels: Electric & Diesel Control Panels including main isolating switches, power lights, pump run lights, monitor battery, alarms, emergency manual start buttons



Mining Projects

VACUUM & AIR

Client: Alcoa of Australia

Project: Pinjarra Alumina Refinery Upgrade, Western Australia, AUSTRALIA

Application: Liquid ring vacuum pumps are used in the Bayer Process of refining bauxite to produce alumina particularly in separating valuable solids from valuable liquids (seed filtration)

Product Details:

Pump 10 x Single Stage Liquid Ring Vacuum

Inlet Capacity 3910 Nm³/hr (13,420 Am³/hr)

Gas Handled Air saturated with water vapour, caustic vapour & dust

Motor Power 315 KW, 6 Pole



Client: Ausenco Limited

Projects:

- New Bendigo Gold Mine, AUSTRALIA
- Jin Feng Gold Mine, CHINA
- Chatree Gold Mine, LAOS
- Sepon Gold Mine, LAOS PDR
- Tulawaka Gold Mine, TANZANIA
- North Marra Gold Mine, TANZANIA

Application: To capture and collect filtrate removed from gold sludge in a vacuum pan.

Product details

Filtrate receiver vessel and pump comprising of:

Vacuum pump fitted with discharge separator and Teco Tropic Proof Motor. Seal water break tank with float level switch. Vertical vacuum receiver (filtrate receiver) with high level switch. Tank sight gauge, vacuum gauge, electrical control panel.

Process:

The vacuum pump is used to initially evacuate the filtrate receiver (tall vessel in picture above), which in turn provides a negative pressure at the pan filter. The pump remains running during this process.

Filtrate is drawn through the pan filter and into the filtrate receiver. The filtrate level in the vessel rises during operation until a high level alarm sounds to alert operator or shut down the vacuum pump motor.

The collected filtrate is drained from the receiver after the pressure in the vessel is returned to atmospheric.



North Marra package

Mining Projects

PRESSURE PUMPS

Client: Iluka Mineral Sands

Project: Capel Mine site

Application: Mine De-watering pumps capable of handling 300 m³/hour dirty mine water at 26.2 metres head.



Product Details

2 x 200mm VICTOR self priming pumps up to 720 m³/hour, heads up to 90 metres. The pump is driven by a Cummins B3.3-85, 63.0 kW diesel engine all mounted on a steel skid with a full acoustic enclosure around it to maintain noise levels below 85 dB(A) @ 1 metre



Client: Alcoa

Project: Wagerup Refinery

Application: Supplying flocculant for Alumina processing plant

Product Details

4 Boerger316SS Rotary Lobe Pumps

| | |
|---------------------------|---|
| <i>Pump model</i> | PL 200 c/w Vari-Cap (built-in relief valve) |
| <i>Lobes Material</i> | 316 SS |
| <i>Elastomers</i> | Viton |
| <i>Liquid</i> | Flocculent |
| <i>Pump Flow</i> | 25 m ³ /Hour |
| <i>Discharge Pressure</i> | 8 metres |
| <i>Motor Power</i> | 3 kW |
| <i>415V</i> | 50 Hz |



Client: Rio Tinto

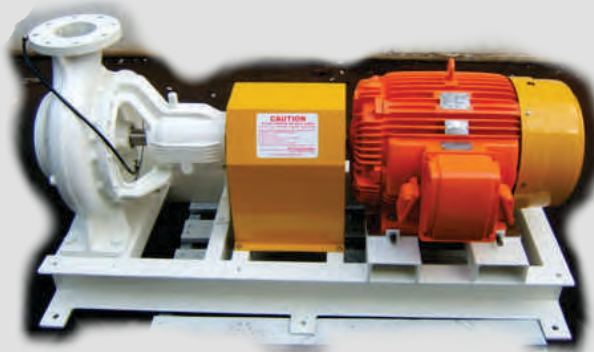
Project: Dampier Salt- North Shore

Application: Provide Feed water for evaporation ponds

Product Details

5 Southern Cross ISO PRO 250x200-315 centrifugal back pull out pumps

- 2 x Brine Duty (304 mm) Coupled to 55 kW 4 Pole TECO motor
 - 2 x Seawater Duty (342 mm) Coupled to 75 kW 4 Pole TECO motor
 - 1 x Spare pump (342 mm) Bareshaft, coupling will be supplied
- Supplied with silicon carbide/ EPDM mechanical sea, bronze casing and impeller plus reticulation flush



Mining Projects

COMPLETE PACKAGES

Ravensthorpe Nickel Mine

Client: First Quantum Minerals

With the acquisition of the Ravensthorpe Nickel mine, First Quantum Minerals Ltd (FQM) have contracted Dynapumps to supply new seawater transfer pump skids and additional solution pump packages.

These additional pumps will help FQM complete plant construction to their specific requirements and standards.

Dynapumps supplied BHP Billiton the initial fire pumps, seawater intake, solution pump packages, cooling water pumps and acid pumps for the nickel mine.

Product Details

Flo-Max Vertical Turbine Pumps for the main seawater pumps for plant process water

- 2 x 24" pumps with 250 kW, 4 pole motors
- 1690 m³/h @ 37.5 m TDH



Flo-Max Vertical Turbine pumps for main cooling water pumps for plant process water

- 7 x pumps with 315 kW, 6 pole motor
- 2398 m³/h @ 28 metres TDH
- Inlet: 762 mm
- Manufactured with corrosion resistant SAF 2507 Super Duplex Stainless Steel



Water Pump packages up to 600 kW

- 60 x water pump sets
- Manufacturers: Sulzer & Grundfos
- Manufactured with corrosion resistant SAF 2507 Super Duplex Stainless Steel

Mining Projects

PRESSURE AND VACUUM SOLUTIONS

Kansanshi Copper-Gold Mine, Solwezi, ZAMBIA

Client: Kansanshi Mining PLC (a First Quantum subsidiary)

Consultant: AMEC Minproc

Product details

6 x Automatic Self Priming Vacuum Systems for Slurry pumps. System to provide a vacuum in the suction pipework for larger non self priming pumps

Pump comprising of:

- 316SS Liquid Ring Vacuum Pump with 3.0 kW 4 Pole motor
- 316SS Level switch & reservoir
- Control Panel with digital output for "System primed" indication
- Internal piping and cabling
- All valves and instrumentation
- Mounted on common base

Electric & Diesel Fire Pump Package AS2941

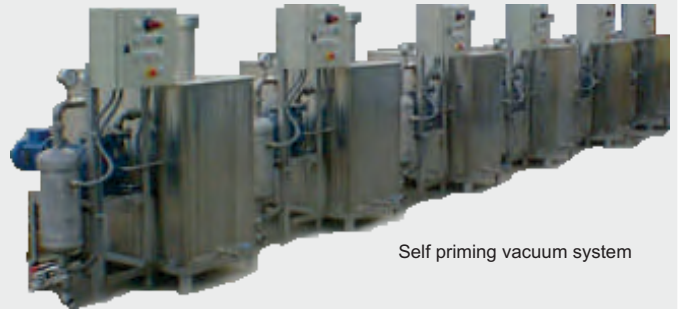
Liquid Raw water
Pump Flow 1200 m³/Hour
Discharge pressure 70 metres
Pump Supplied Sulzer Centrifugal Pump model APP53-250 material code 53
1 x electric, 1 x diesel and
1 x jockey

Electric Package Above pump driven via 330 kW, 4 Pole electric motor

Diesel Package Same pump, with Deutz Engine BF8M1015CP

Jockey Pump Grundfos model CR1-13, 1.1 kW

Control Panels Electric & Diesel Control Panels including main isolating switches, power lights, pump run lights, monitor battery, alarms, emergency manual start buttons



Self priming vacuum system



330kW Electric Pumpset



DEUTZ 330 kW Diesel Pumpset



SULZER ISO5199
300 X 250-530 Pump





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