

# Fire Pumps Capabilities

# Dynapumps®

DYNAMIC PUMP SOLUTIONS



# Company Profile

Pressure & Vacuum Pump Specialist

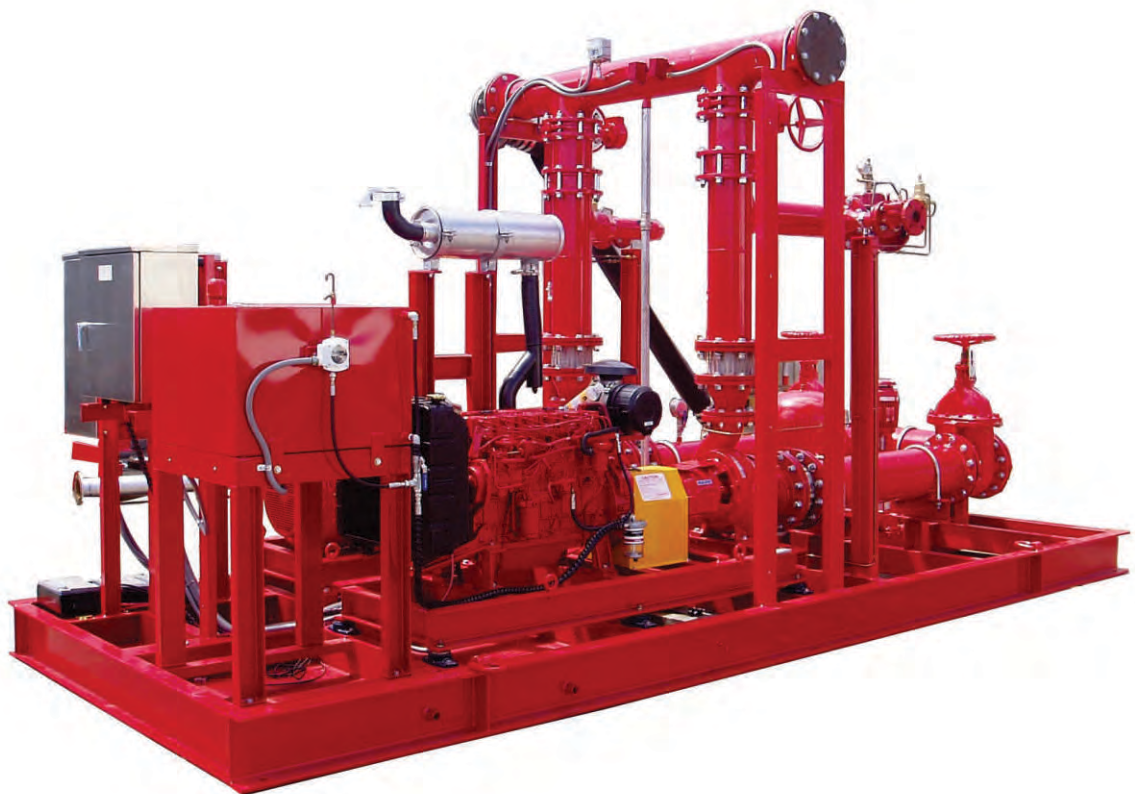
## Vision



*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





# 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.

PERTH



BRISBANE



SYDNEY



MELBOURNE

# 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 1<sup>st</sup> 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.



# Company Information

## Fire Pump Standards and Test Tank

### Fire Pump Standards

Dynapumps produces fire pump systems to both Australian (AS2941) and International Standards (NFPA20) as well as hybrid systems anywhere in between for Mining and Oil & Gas applications.

Fire pump systems can also be provided to meet other standards such as FM 3-7; which is commonly requested by US based insurance underwriters.

All the fire pump systems produced at Dynapumps fully conform to the latest AS2941:2013 standard and can accommodate additional client requirements, provided they don't contradict fire system standards.

We have extensive experience in all types of conforming fire pump styles: end suction centrifugal, axially split case, multistage and vertical turbine pumps.



### In House Test Facilities

Our in house test facilities are able to provide performance testing to Australian or International standards and are staffed by qualified trades people.

Our in house facilities at the Dynapumps head office in Belmont, W.A are equipped to provide performance testing for your completed pump skids. This is performed to Australian or International standards as required. On top of what Dynapumps can locally test, we can also organise non destructive testing at certified labs by certified inspectors (NATA), and certification of risk assessment by ABS, DNV or Lloyds. Load testing and stress relieving can also be organised, should it be required.



### Our test tank specifications are as follows:

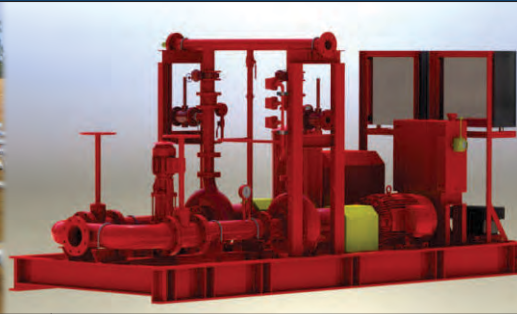
- Dual Test Rig set-up.
- Pump Test Flow: 420l/s or higher with tank modifications
- Magnetic flow-meter and auto control valve
- Datalogger records all tested parameters eg. Suction & Discharge Pressure, Flow, Temperature, rpm
- Electric variables are measured by an Electrical Network Monitor
- Finite element analysis, acoustic and vibrational analysis



# Fire Pump Specialists

## RECENT PROJECTS

Below is a brief overview of some of the typical clients and projects from a variety of industrial markets Dynapumps have supplied with fire pumps.



Year	Customer	Projects	Package
2014	CHIRANO	CHIRANO GOLD PROJECT	-DIESEL FIRE PUMP PACKAGE
2013	WOODSIDE	BURRUP MATERIALS FACILITY	-CONTAINERISED DUAL DIESEL FIRE PUMP SYSTEM -JOCKEY PUMP -AUTO FUEL FILL PUMP
2013	RIO TINTO	MARANDOO PROJECT	-REPLACEMENT DIESEL FIRE PUMP SYSTEM
2013	RIO TINTO	WEST ANGELAS PROJECT	-CONTAINERISED ELECTRIC/DIESEL FIRE PUMP SYSTEM -JOCKEY PUMP PACKAGE
2012	ANGLOGOLD ASHANTI	TROPICANA GOLD MINE	-ELECTRIC AND DIESEL FIRE PUMP PACKAGE -JOCKEY PUMP PACKAGE
2012	SEDGMAN	MUNGARI GOLD MINE	-ELECTRIC AND DIESEL FIRE PUMPS
2012	ALCOA	MYARA PROJECT	-DIESEL FIRE WATER PUMP PACKAGE
2012	BECHTEL	WHEATSTONE LNG PROJECT	- DIESEL FIRE WATER PUMP SET
2012	AUSENCO	KWALE MINERAL SANDS	- FIRE WATER PUMPS PACKAGE
2011	LYCOPODIUM/ NEWMONT GHANA	AKYEM GOLD PROJECT	- SOLUTION PUMP PACKAGE - FIRE PUMPS PACKAGE - SUBMERSIBLE PUMPS
2011	LYCOPODIUM/ NEWMONT GHANA	CHIRANO GOLD PROJECT	- FIRE WATER PUMP SET
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/ ENVIROGOLD	LAS LAGUNAS GOLD MINE	- FIRE WATER PUMPS - DIESEL PUMPS - SOLUTION & REAGENT PUMPS - TAILINGS DECANT WATER PUMP
2011	FIRST QUANTUM MINERALS LTD	MAURITANIAN COPPER MINES	- ELECTRIC FIRE UNITS - STANDARD PUMPSETS
2011	VEOLIA WATER	CUNDALINE IRON ORE PROJECT	- FIRE WATER PACKAGE
2011	BECHTEL	GLADSTONE LNG PROJECT	- TEMPORARY FIRE PUMPS - PERMANENT FIRE PUMPS
2010	KJVG/ CHEVRON	GORGON PROJECT: BARROW ISLAND LNG PLANT	- POTABLE & FIRE WATER PUMPS
2009	FORTESQUE METALS/ NOVATRON	CHRISTMAS CREEK CAMP	- FIRE PUMP SET
2009	PROTEUS ENGINEERS/ MIDWEST VANADIUM PTY LTD	WINDIMURRA VANADIUM PROJECT	- FIRE WATER PUMPS - SUBMERSIBLE PUMPS
2008	AUSENCO/ AMCK MINING SPRL	KINSERVE STAGE 2 COPPER PROJECT	- FIRE WATER PUMPS - POTABLE WATER PUMPS - REAGENT PUMPS

# Fire Pump Projects

CONTAINERISED FIRE PUMP PACKAGES



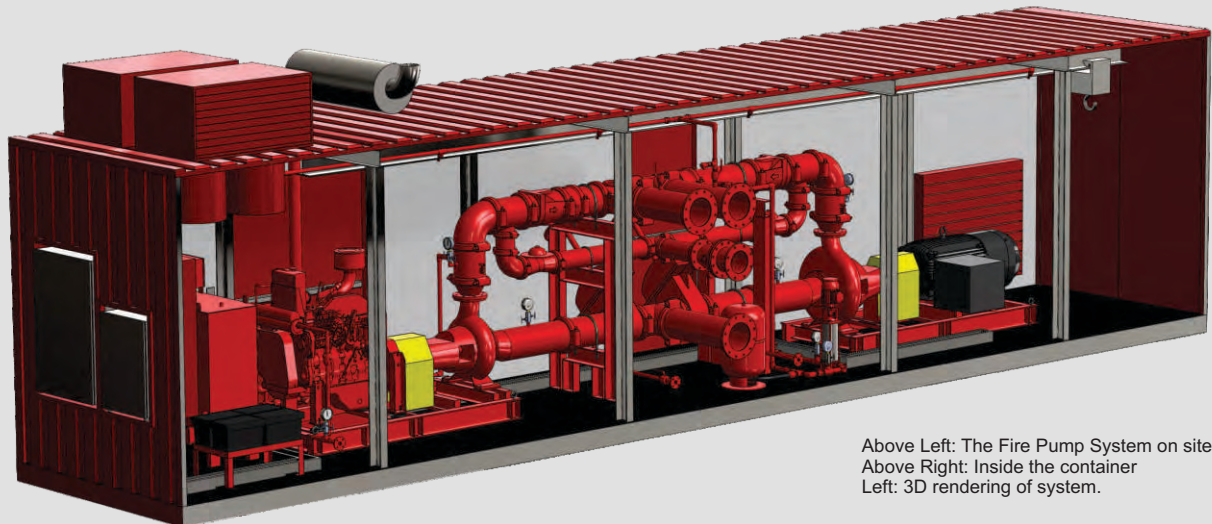
## West Angelas Project

**Client:** Rio Tinto  
**Consultant:** Forge Group

### Product details

Containerised electric and diesel fire pump system with jockey pump in accordance with AS2941:2008

<i>Flow Rate</i>	360m <sup>3</sup> /h
<i>Total Dynamic Head</i>	92m
<i>Electric Pump</i>	Southern Cross 200x150-500 Centrifugal Pump
<i>Diesel Pump</i>	Southern Cross 200x150-400 Centrifugal Pump
<i>Electric Motor</i>	Toshiba 185kW 4 Pole
<i>Diesel Engine</i>	Cummins 6CTA (194kW @ 2200rpm)
<i>Jockey Pump</i>	Grundfos CR 1-21 Vertical Multistage Pump
<i>Enclosure</i>	Barclays acoustically attenuated 40' High Cube Container (Rated 85dB@1m)
<i>Additional Features</i>	1500kg Monorail Weatherproof intake louvres Roof mounted discharge duct with extraction fans Internal lighting with GPO's



Above Left: The Fire Pump System on site.  
Above Right: Inside the container  
Left: 3D rendering of system.



# Fire Pump Projects

## CONTAINERISED FIRE PUMP PACKAGES

### Burrup Materials Facility

Client: Woodside

Consultant: Worley Parsons

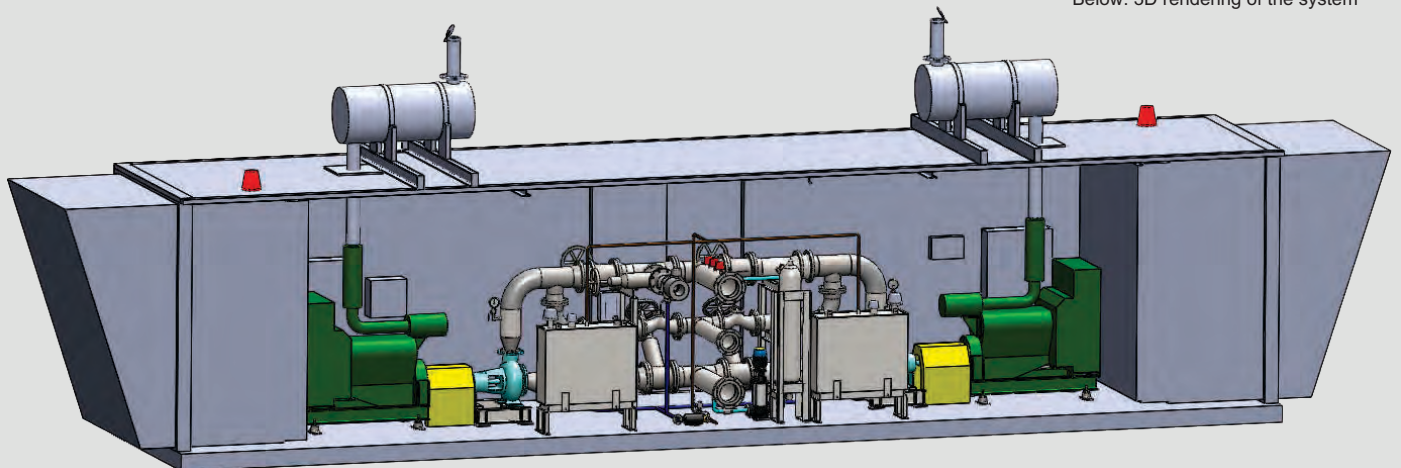
#### Product details

Containerised dual diesel fire pump system with jockey pump in accordance with AS2941:2008

<i>Flow Rate</i>	228m <sup>3</sup> /h
<i>Total Dynamic Head</i>	107m
<i>Pumps Supplied</i>	Southern Cross 125x100-315 Centrifugal Pumps
<i>Diesel Engines</i>	Cummins 6BTAC177 (132kW @ 2500rpm)
<i>Jockey Pump</i>	Grundfos CRI 1s-15 Vertical Multistage Pump
<i>Enclosure</i>	Barclays acoustically attenuated 40' High Cube Container (Rated 85dB@1m)
<i>Additional Features</i>	500kg Monorail Actuated weatherproof intake louvres Internal and external lighting with GPO's 2x 220L Double skin fuel tanks with external supply



Above: Containerised Fire Pump on site  
Below: 3D rendering of the system





# Fire Pump Projects

COMPLETE PACKAGES

## Kansanshi Copper Smelter



**Client:** First Quantum Minerals Limited

**Consultant:** Worley Parsons

### Product details

Electric Fire Pump System and backup diesel fire pump system in accordance with AS2941:2008

- Electric Fire Pump system incorporating 1 electric pump and 1 jockey pump
  - Duty Description* Main fire water pump
  - Flow Rate* 625m<sup>3</sup>/h
  - Total Dynamic Head* 95m
  - Pump Supplied* Sulzer APP 53-200C Centrifugal Pump
  - Electric Motor* WEG 355kW 4 Pole
  - Jockey Pump* Grundfos CRI 3-21 Vertical Multistage Pump
  - Pipework* DN300 Carbon Steel
  - Control Panel* 316 Stainless IP66 525V AS2941 Panel w/ ET200M I/O
- Diesel Fire Pump System
  - Duty Description* Diesel backup fire water pump
  - Flow Rate* 625m<sup>3</sup>/h



# Fire Pump Projects

## FIRE PUMPS FOR MINING



**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 right angled gearbox 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 m<sup>3</sup>/hr

*Discharge pressure:* 70 metres

*Pump supplied:* Sulzer Centrifugal Pump

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 m<sup>3</sup>/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





# Fire Pump Projects

FIRE PUMPS FOR THE OIL & GAS INDUSTRY

## Gorgon Project: Barrow Island LNG Plant

**Client:** Chevron

**Consultant:** Kellogg Joint Venture Gorgon



Image and Artist Impression courtesy of Chevron

### Product details

Construction Village Fire Water Pump Set in accordance with AS2941-2008. Complete with one electric, one diesel and one jockey pump

#### *Pump Supply*

2 x Southern Cross, Iso-Pro Centrifugal Pump with 316 SS Casing, Impeller and Shaft; and Oil Lubricated heavy duty tapered roller bearings with constant level oiler.

#### *Electric Package*

Above pump with 1 x Siemens 45kW 2 Pole Ex'n Electric Motor according to Chevron specifications (Duty: 90 m<sup>3</sup>/h @ 89.1 metres TDH)

#### *Diesel Package*

Same pump with 1 x MTU Detroit Diesel D703LTFP Diesel Engine; Turbo Charged, Water Cooled, 90 litre fuel tank, suitable for 6 hours operation with Murphy EL150K1 low level switch. Exhaust fitted with spark arrestor, flame arrestor with heat & corrosion resistant coating, Jacket water pump and Oil pump (Duty: 90 m<sup>3</sup>/h @ 89.1 metres TDH)

#### *Jockey Pump Package*

Grundfos Vertical Multistage Jockey pump with 1 x Siemens Ex'n 0.75 kW 2 Pole motor (Duty: 90 m<sup>3</sup>/h @ 89.1 metres TDH)

#### *Control Panel*

Mounted on vibration isolators including all wiring and terminations within the terminal limits; Specified to AS2941-2008, 316 Stainless Steel IP56 Cabinet

Fire Pump Package also included performance and functional testing in accordance with AS2941-2008, and vibration & noise testing.



Fire Water Pump set undergoing performance and functional testing

# Fire Pump Projects

## MULTIPLE FIRE PUMP PACKAGES

### Lumwana Copper Project

**Client:** Lumwana Mining Company

**Consultant:** Ausenco Bateman Joint Venture

#### Product details

3 x Fire Pump Packages to Comply with AS2941

- Crusher Fire Water Package incorporating 1 electric pump, 1 diesel pump and a jockey pump

<i>Duty Description</i>	Fire water supply to the Crusher Area fire protection equipment
<i>Flow rate</i>	227 m <sup>3</sup> /hr
<i>Total Dynamic Head</i>	80 metres
<i>Pump supplied</i>	Southern Cross ISO-PRO Centrifugal Pump
<i>Electric Package</i>	Above pump with 90 kW, 2 Pole WEG Motor
<i>Diesel Package</i>	Same pump, with 103 kW, Radiator cooled Detroit /VM Motori D706LT engine
<i>Jockey Pump</i>	Grundfos Multistage with an Accumulator pressurised to suit the Fire Water system. (Flow Rate: 1.74 m <sup>3</sup> /hr @ 81 TDH)

- Plant Fire Water Pump Package incorporating 1 electric pump, 1 diesel pump and a jockey pump

<i>Duty Description</i>	Fire water supply to the Plant and Administration Area fire protection equipment
<i>Flow Rate</i>	227 m <sup>3</sup> /hr
<i>Total Dynamic Head</i>	95 metres
<i>Pump supplied</i>	Southern Cross ISO-PRO Centrifugal Pump
<i>Electric Package</i>	Above pump with 110 kW, 2 Pole WEG Motor
<i>Diesel Package</i>	Same pump with 145 kW Radiator cooled Detroit / VM Motori D706LI engine
<i>Jockey Pump</i>	Grundfos Multistage with an Accumulator pressurised to suit the Fire Water System (Flow Rate: 1.74 m <sup>3</sup> /hr @ 81 TDH)

- Light Industrial Area (LIA), Fire Water Pump Package incorporating 1 electric pump, 1 diesel pump and a jockey pump

<i>Duty Description</i>	Fire water supply to the Light Industrial Area fire protection equipment
<i>Flow Rate</i>	227 m <sup>3</sup> /hr
<i>Total Dynamic Head</i>	90 metres
<i>Pump supplied</i>	Southern Cross ISO-PRO Centrifugal Pump
<i>Electric Package</i>	Above pump with 90 kW, 2 Pole WEG Motor
<i>Diesel Package</i>	Same pump with 103 kW Radiator cooled Detroit / VM Motori D706LT engine
<i>Jockey Pump</i>	Grundfos Multistage with an Accumulator pressurised to suit the Fire Water System. (Flow Rate: 1.74 m <sup>3</sup> /hr @ 81 TDH)



Above: Testing Pump on the Dynapumps testing system  
Above left: Preparing one of the packages for testing  
Far Left: Diesel Motor  
Left: Control panels to AS2941 standards



# Fire Pump Projects

## COMPLETE PACKAGES

### Kansanshi Copper-Gold Mine, Solwezi, ZAMBIA

**Client:** Kansanshi Mining PLC (a First Quantum subsidiary)

**Consultant:** AMEC Minproc

#### Product details

Electric & Diesel Fire Pump Package AS2941

*Liquid* Raw water  
*Pump Flow* 1200 m<sup>3</sup>/Hour  
*Discharge pressure* 70 metres  
*Pump Supplied* Sulzer Centrifugal Pump model  
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

*Control Panels* Electric & Diesel Control

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



330kW Electric Pumpset



DEUTZ 330 kW Diesel Pumpset



SULZER ISO5199 Pump

### Tropicana Gold Mine

**Client:** Anglo Gold Ashanti

**Consultant:** Lycopodium

#### Product details

Combined electric and diesel fire pump system with jockey pump in accordance with AS2941:2008

*Flow Rate* 228m<sup>3</sup>/h  
*Total Dynamic Head* 107m  
*Pumps Supplied* Sulzer A22-80 O Duplex Stainless Steel Centrifugal Pumps  
*Electric Motor* ABB 90kW 2 Pole  
*Diesel Engine* VM Motori D756TPE2 (104kW @ 3000rpm)  
*Jockey Pump* Grundfos CRN 5-15 Vertical Multistage Pump



# Fire Pump Projects

## COMPLETE PACKAGES

### Kwale Mineral Sands, Ukunda, KENYA

**Client:** Base Titanium Ltd

**Consultant:** Ausenco

#### Product details

Electric Fire Water & Jockey Pump System

*Liquid* Water  
*Pump Flow* 1125m<sup>3</sup>/h  
*Discharge pressure* 85m  
*Pump Supplied* Sulzer APP 53-250  
1 x electric, 1 x diesel and  
1 x jockey

*Electric Package* Above pump driven by  
425kW 4 pole electric motor

*Diesel Package* Above pump driven by  
Caterpillar C18 diesel motor

*Jockey Pump* 2.2kW 2 pole electric motor



### Wheatstone Project

**Client:** Chevron

**Consultant:** Bechtel

#### Product details

Diesel Firewater Pump System

*Liquid* Water  
*Pump Flow* 72m<sup>3</sup>/h  
*Discharge pressure* 92.55m  
*Pump Supplied* Southern Cross Iso-Pro 80x50-250

*Diesel Package* MTU D703T60FP Engine

*Jockey Pump* 2.2kW 2 pole electric motor.





**Dynapumps**<sup>®</sup>  
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