

	Scope of Work	Kusile Power Station
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Title: **Kusile Power Station Supply and Delivery of a spare A.S.I.B approved Kirloskar DV 8 Diesel Engine and Kirloskar DV 8 Diesel Engine Service Kits**

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Area of Applicability: **Kusile Power Station**

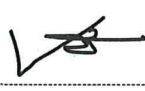
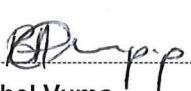
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Date: 29/01/2026	Date: 29/01/2026	Date: 17/02/2026	Date:

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1. Introduction

Kusile Power Station requires a spare diesel engine for fire service, to drive their KSB Omega 250-600B Fire Pumps. Furthermore, Kusile Power Station also required service kits for three Kirloskar DV 8 Diesel Engines. The purpose of this document is to provide the technical scope of work for the establishment of a contract for the Supply and Delivery a new Kirloskar DV8 diesel engine and associated accessories, as well as service kits for these engines, as they are the currently installed diesel engine brand and model on site driving the fire pumps.

2. Supporting Clauses

2.1 Scope

The scope of work (SOW) specifies the requirements for the Kirloskar DV8 diesel engine and accessories, as well as service kits for these engines, to be supplied and delivered to Kusile Power Station by the *Supplier*. The scope included here does not substitute procurement procedures that will be followed during the procurement process.

2.1.1 Purpose

The purpose of this document is to define the specified scope of work activity requirements for Kusile Power Station. The station is expected to perform at 92% UCF, 6% PCLF and 2% UCLF. To achieve this performance critical equipment in the form of two new diesel engines for fire service needs to be procured to ensure that the integrity of the plant is achieved and maintained. It is therefore imperative that the successful and suitably qualified Contractor (the OEM) aligns his/her organisation fully to these specified scope activities and processes laid down in this document.

2.1.2 Applicability

This document is applicable to Kusile Power Station.

2.1.3 Effective Date

This document will be effective from the date of its authorisation.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] ISO 9001 Quality Management Systems
- [2] 240-150642762 Generation Plant Safety Regulations
- [3] 32-727 SHEQ Policy
- [4] 240-84513751: Material Specification and Certification Guideline for Power Generation Plant

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- [5] 240-54820279: Receive Materials
- [6] SANS 10 287 Automatic Sprinkler Installations for Fire Fighting Purposes
- [7] ASIB Rules (Latest revision)
- [8] NFPA 20 Standard for the Installation of Stationary Pumps for Fire Protection

2.2.2 Informative

N/A

2.3 Definitions

Abbreviation	Explanation
Contractor / Supplier	Service provider contracted to provide specific spares & documentation to Kusile Power Station. Referred to as the Supplier on this document.
Employer	Kusile Power Station

2.4 Abbreviations

Abbreviation	Description
A.S.I. B	Automatic Sprinkler Inspection Bureau
NFPA	National Fire Protection Association
OEM	Original Equipment Manufacturer
PCLF	Planned Capability Loss Factor
QCP	Quality Control Plan
SANS	South African National Standard
SOW	Scope of Work
UCF	Unit Capability Factor
UCLF	Unplanned Capability Loss Factor
QA	Quality assurance
QC	Quality Control
PCM	Process Control Manual

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2.5 Roles and Responsibilities

2.5.1 Contractor

Supply and deliver a new A.S.I.B approved Kirloskar DV 8 diesel engine for fire service to drive KSB Omega 250-600B fire pumps, according to the specifications and technical requirements given in this document. Also, service kits for three Kirloskar DV 8 diesel engines are to be supplied, which shall be as per the OEM recommendations for such service kits. The engine will be stored as a spare engine and part of the scope is to ensure that the engine is packaged and preserved in such a manner that the engine can be tested as and when required (usually once a week).

Contractor shall submit all documentation as requested by the Employer.

2.5.2 Employer

The responsibilities of the Employer include the following:

- a) Ensure the SOW is issued to the Contractor in time to allow sufficient time to supply the required new A.S.I.B approved Kirloskar DV 8 diesel engine to drive the KSB Omega 250-600B fire pumps, as well as OEM approved service kits for three such Kirloskar DV8 Diesel Engines.
- b) The Employer and Contractor in this SOW is committed towards the following.
 - 1) Retention of critical skills
 - 2) Continuous cost reduction
 - 3) Health & Environment Safety

2.6 Process for Monitoring

This document will be a once-off document to state the scope of work to supply and deliver a new A.S.I.B approved Kirloskar DV 8 diesel engines to drive Omega 250-600B Fire Pumps, with a duty point of 750 m³/h at 1000 kPa. The engine shall be packaged and assembled on site such that the engine can be tested as and when required. Six OEM approved service kits shall also be provided for Kirloskar DV8 diesel engines.

2.7 Related/Supporting Documents

N/A

3. Scope

Supply and deliver of deliver a new A.S.I.B approved Kirloskar DV 8 diesel engine to drive Omega 250-600B Fire Pumps, with a duty point of 750 m³/h at 1000 kPa. Also, six OEM approved service kits shall also be provided for Kirloskar DV8 diesel engines.

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3.1 Plant Description

Kusile Power Station is a 4 800MW rated power station, with each of the six (6) Units rated at 800MW.

3.1.1 Description of the works

The works is to supply and deliver, a new A.S.I.B approved Kirloskar DV 8 diesel engine to drive Omega 250-600B Fire Pumps for Kusile Power Station. This diesel engine shall be A.S.I. B approved, suitable for fire services, with the same specifications (technically and dimensionally) as our currently installed diesel engines (Kirloskar DV 8 Diesel Engines). This engine will be used to drive KSB Omega 250 - 600B (566 mm impeller diameter) fire pumps with a duty point of 750 m³/h at 102m head at a speed of 1480 rpm. This engine will be kept as a spare in the fire pump building/stores. Also, six OEM approved service kits shall be provided for Kirloskar DV8 diesel engines.

The Diesel Engines shall meet the requirements of the latest revision of SANS 10287 [6], A.S.I.B rules [7] and NFPA 20 [9]. The engine shall be supplied complete with battery operated starting as well as an electronically controlled governor valve.

The new A.S.I.B approved diesel engine to drive two Omega 250-600B Fire Pumps shall also be tested to A.S.I.B requirements prior to being delivered to site.

Details of the currently installed engines are given in Appendix A of this document. The length, width and height dimensions of the two new diesel engines shall be the same as the currently installed engines. The weight of the engines shall also be similar to the currently installed engines.

3.2 Documentation

The following are the *Employers* requirements from the *Supplier*:

- a) The *Supplier* will ensure proper handling of the engines (from procurement of equipment, storage and transportation)
- b) The *Supplier* will supply any additional information such as brochures, general arrangement drawing, certificates (including material certificates), detailed specification, data sheets, settings, documents, check sheets or drawings for quality inspections, detail drawings, etc.
- c) The *Supplier* provides the *Employer* with additional spares information.
- d) The *Supplier* provides the *Employer* with all inspection, testing and maintenance requirements for the new engines.
- e) The *Supplier* shall supply preservation and storage procedure/s, where applicable.
- f) The *Employer* may make clarification sessions available to prospective *Suppliers* to further assist the prospective *Suppliers* to meet the requirements of the work to be performed by the *Supplier*.
- g) The *Supplier* must ensure that all components supplied loosely (such as filters, exhaust diffusers, etc) must be individually packed in such a way as to protect the parts during transportation and storage. The packaging must also include the necessary labels to identify the items.

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3.3 Acceptance of the New Spare A.S.I.B Diesel Engine

3.3.1 Inspections and A.S.I.B testing Prior to Delivery (HOLD POINT)

The Supplier shall ensure that Employer's Engineering and Quality Control team are invited to inspect and witness the A.S.I.B testing of the new engine.

3.3.2 Obsolescence

The Supplier shall inform the Employer immediately if the requested diesel engine is found to be obsolete before any alternative engines are supplied, the Supplier shall indicate this to the Employer and indicate viable alternatives thereof.

3.3.3 Packaging

- a) The diesel engine, associated accessories and service kits shall be packaged in such a manner that it will be transported and stored without damage. This includes preventing damage due to moisture ingress, dust and foreign objects. The OEM's Transportation and Storage procedure shall be used for Transportation and Storage.
- b) Where possible, packaging and/or loose parts are to be such that procured spares can be positively identified through the packaging. Where this is not possible, the packaging to be such that it allows opening and closing of packaging and still maintain the packaging integrity thereafter.
- c) Delivery packaging shall include as a minimum the following details:
 - 1) Purchase Order Number
 - 2) Part Description
 - 3) Part number
 - 4) Eskom SAP Material number
 - 5) Drawing number, where applicable
 - 6) Physical address of Kusile Power Station and the *Supplier*
 - 7) Contact details of the *Supplier*
 - 8) Delivery note number

3.3.4 Acceptance of spares

- a) Incorrect, damaged, or faulty diesel engines and loose parts (if any) will NOT be accepted.
- b) The engine and loose parts (if any) will be inspected and accepted by Engineering, Quality Control and/or OEM Representative before payment can be processed.
- c) Upon delivery of the diesel engine at the Eskom Kusile stores / Fire Pump Building, an inspection of goods and the receipt must be conducted by the End-user and the Supplier within 48 hours of delivery.

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- d) The Supplier must supply the Employer with warranty certificates, test certificates and the complete data book of manufacture and testing of the engines at the time of delivery.
- e) The Supplier must deliver the diesel engine and service kits as per the agreed to delivery times.
- f) The Supplier to provide Material certificates as a minimum, where applicable.

3.4 Spares Management

The Employer may request the Supplier to provide accurate description of all spare parts included in the spares list.

3.5 Equipment Required

The Supplier and his sub-suppliers (if applicable) must possess the tools and equipment to satisfy the requirements for the scope.

3.6 Consumables Required

The Supplier must supply his own consumables (if required) to satisfy the requirements for scope.

3.7 Workshop

The Supplier and his sub-suppliers (if applicable) are required to have suitable premises with the required tools and equipment to be able to conduct the scope of work. Eskom reserves the right to inspect the workshop premises to make sure that it is kept up to standard.

3.8 Planned KEY PERFORMANCE INDICATORS (KPI)

The KPI's will be used to determine the successful performance of the scope. The Supplier is required to perform to meet these targets. The KPI's are to be agreed to between parties and are subject to change on an annual basis, based on the need.

- a) First committed delivery date
- b) Quality
- c) Non-compliance to the agreed Scope of Work, Hold points and Quality Control Plans

4. Acceptance

This document has been seen and accepted by:

Name	Designation
Sibusiso Vezi	Turbine Maintenance Manager
Yingisani Chauke	Senior Technician Turbine Maintenance
Abel Vuma	Maintenance Group Manager

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5. Revisions

Date	Rev.	Compiler	Remarks
January 2026	01	Dhiresb Ram	Comments addressed
September 2025	00	Dhiresb Ram	Draft

6. Development Team

The following people were involved in the development of this document:

- 1) Dhiresb Ram

7. Acknowledgements

None

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Appendix A – Details of Currently Installed Diesel Engines

KIRLOSKAR



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KIRLOSKAR DIESEL ENGINES

Engine Model : DV8

No. of Cyls.	Bore x Stroke (mm)	Displacement (cc)	Gross Power Output Rating as per ISO3046 at 1800 RPM bhp (kW)		Suitable Power Rating for Generator at 0.8 pf	
			Prime	Standby (ESP)	Prime	Standby (ESP)
8	130 x 150	15910	490 bhp (360.6 kW)	539 bhp (396 kW)	400 kVA	440 kVA

Features -

- Designed for heavy duty applications
- Extremely reliable
- Lower operating cost
- Easy maintenance – higher uptime
- Superior design standards that minimize power deration even at high ambient temperatures.
- Winner of the Frost & Sullivan Voice of Customer Award in the "Best Bang for Buck" category in the Indian Generating sets Market.

Ratings Definition:

Standby Ratings: These ratings are applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The alternator on this model is peak continuous rated (as defined in ISO 8528-3)

Prime Rating: These ratings are applicable for supplying continuous electrical power (at variable load) in lieu of commercial purchased power. There is no limitation to the annual hours of operation and this model can supply 10% overload power for 1 hour in 12 hours.

Continuous Rating: These ratings are applicable for supplying power continuously to a constant load upto the full output rating for unlimited hours. No sustained overload capability is available for this rating.

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Engine Technical Data :

Physical Data		Fuel System				
Engine Make	Kirloskar	Type of fuel filter	Spin on type			
Engine Model	DV8	Governor Type	Electronic			
Number of cylinders	8	Class of Governing	ISO 3046 Class A0 & ISO 8528 G2			
Configuration	V-type	Fuel pump type	Inline			
Type	Four stroke	Fuel pump make	Kirloskar			
Bore x Stroke (mm)	130 x 150	Recommended Fuel	Class A2, High speed diesel			
Displacement (cc)	15910	Fuel consumption at +5% tolerance	Load	100%	75%	50%
Cooling	Liquid cooled		L/hr	84.9	63.2	48.0
Aspiration	Turbocharged After cooled	Fuel consumption readings are based on diesel fuel with a specific gravity of 0.85 and confirming to BS 2869, Class A2)				
Compression Ratio	16.5 : 1					
Starting Arrangement	24V Electric					

Air System		Lubrication System	
Air Filter Type	Dry type replaceable element	Type of lube oil filter	Full flow spin on type
Exhaust gas flow rate (kg / hr)	1789	Oil to be used	SAE 15W40 API : CI4
Combustion fresh air flow (m³/hr)	1980	Oil pump type	Through G-rotor gear pump
Radiator air flow (m³/hr)	36000	Lub oil sump capacity (lit)	41
Total fresh air required (m³/hr)	37980	Lube oil consumption	0.12% of fuel consumption

Cooling System		Electrical System	
Cooling system capacity (lit)	123	Starting Arrangement	24V Electric
Water pump type	Centrifugal	Starter	24V Electric
Radiator fan load (hp)	13.6	Recommended starter battery rating	2 x 210 Amp-hr
		Battery charging alternator	Engine mounted 24V battery charger
		Battery charger amps	45

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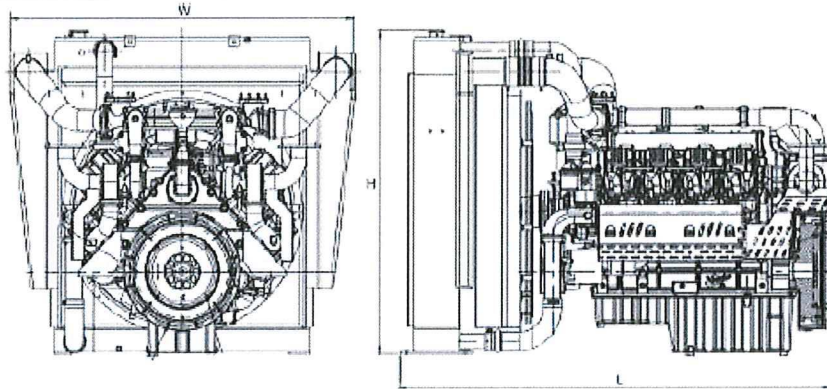
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Engine Dimensional Details :



Dimensions in mm					
L	W	H	C	X	Y
2056	1624	1547	Please refer to engine GA drawing		
Weight Details		Coupling			
Engine weight without radiator Gross / Net (kg)		2030 / 1920		Flywheel	Suitable for SAE 14" disc
Radiator and accessories weight Gross / Net (kg)		690 / 570		Housing	SAE1
				Coupling disc	Not supplied

(* Please refer to the respective rating GA drawing)



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Kirloskar Oil Engines Limited reserved the right to change the design or specifications without notice.

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Appendix B – Details of the KSB Omega 250-600B Fire Pumps

Item No: 1

DATA SHEET			
Item No	1		
Created Date	2012/12/12		
Customer:	N P S		
OPERATING DATA			
Pump Model:	OMEGA 250-600 (GC2 Std)		
No of Pumps:	4		
Flow Rate (m3/Hr):	750		
Head (Diff Pressure)(m):	102		
Pump Speed: (RPM):	1482		
Efficiency: (%):	77.5		
Impeller Dia + Form:	526mm		
Liquid:	Water		
Temperature: (Deg C):	Ambient		
NPSH Pump / Plant:	2.59m/7		
Viscosity: (mm2/S):	1		
Density: (Kg/dm3):	1		
Power Req'd. (kW):	268.96		
Rec Minimum (kW):	295.86		
Motor Size (kW):	309-4P		
PUMP DESIGN			
Number of Stages:	1		
Horizontal / Vertical:	HORIZONTAL		
Shaft Seal:	PACKED GLAND		
Direction of Rotation:	SPECIFY		
Bearing / Lubrication:	BALL/GREASE		
Casing Support:	FEET		
FLANGES:			
Suct. Flange - Size/Position:	300 HORIZ		
Suct. Flange - Drilling:	DIN 2501/25		
Disch. Flange - Size/Position:	250 HORIZ		
Disch. Flange - Drilling:	DIN 2501/25		
PUMP MATERIALS			
Suct. / Disch. Casing	GG-25		
Impeller	1.4308		
Casing Wear Ring	1.4028		
Shaft	1.4021.05		
Shaft Prot. Sleeve	1.4057		
Pedestal	GG-25		
Painting	Standard 01		
ITEM SUMMARY			
IM Number	Description	Qty	
ZAN28805	OMEGA 250-600	4	R 0.00

Page 1 of 2

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Pumps • Valves • Systems

Omega – Axially split volute casing pump

Industry Water Waste Water Energy Building Services Mining

Applications:

Pumps pure, raw and waste water
as well as seawater in

- Water works
- Irrigation and drainage pumping stations
- Power stations
- Industrial water supply
- Fire fighting systems
- Marine and offshore engineering
- General applications in the petrochemical industry
- Seawater desalination

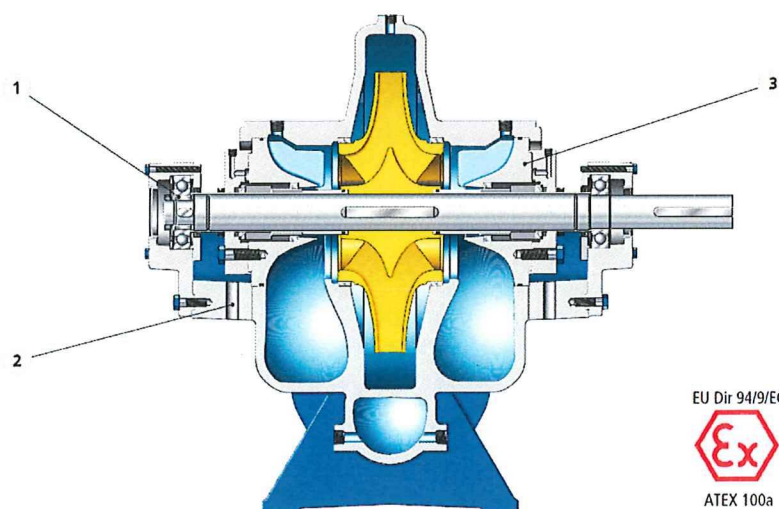
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Omega – Axially split volute casing pump



EU Dir 94/9/EC



II 2G c T1-T5

ATEX 100a

1 High operating reliability

Thanks to the double-entry impeller (compensating the axial forces) the load on the generously dimensioned, pre-loaded, maintenance-free bearings is minimal.

2 Low maintenance costs

The combination of solid bearing brackets, a short and rigid shaft, and pre-loaded bearings guarantees low vibrations and long operating lives of bearings, seals and coupling.

Corrosion and abrasion resistant materials ensure top service lives for shaft protecting sleeves, impeller/casing wear rings, and impeller.

3 Service-friendly design

The self-centring upper part of the casing and the spring-loaded rotor enable cover and rotor assembly without any adjustments. For maintenance, the cover's hexagon head bolts are completely removed from the casing. The casing split flange can therefore be easily and thoroughly cleaned, and the inside of the pump is freely accessible.

4 Optimal tightness

The solid casing split flange at the upper and lower casing part ensures reliable and trouble-free sealing of the upper and lower casing halves.

Materials:*

Volute casing:	Cast iron / nodular cast iron / duplex cast steel
Impeller:	Bronze / duplex cast steel
Shaft:	Cr steel / duplex steel
Shaft protecting sleeves:	Cr steel
Casing wear rings:	Bronze / CR steel
Impeller wear rings (optional):	Bronze / duplex steel

* Other materials on request

Technical data:

Pump sizes	DN80 – 350	3 to 14 in
Max. capacity:	2,800 m³/h	12,328 gpm
Max. discharge head:	170 m	558 ft
Max. operating pressure:	25 bar	363 psi
Max. temperature: ¹⁾	+105 °C	221 °F

¹⁾ Temperatures up to 120 °C (250 °F) on request

Automation available ✓

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