STELLENBOSCH

STELLENBOSCH • PNIEL • FRANSCHHOEK

MUNISIPALITEIT • UMASIPALA • MUNICIPALITY

INNOVATION CAPITAL

APPLICATION
ENGINEERING SERVICES / ELECTRICAL DEPARTMENT

1. DECLARATION OF INTENT TO UTILISE OWN USE LOW VOLTAGE STANDBY GENERATOR
2. APPLICATION FOR CONSENT (IN TERMS OF ELECTRICITY SUPPLY BY-LAW)

SECTION A

NAME OF APPLICANT: _____

CONTACT DETAILS: _____

_____

_____

_____

PHISICAL ADDRESS: _____

_____

ERF NO: _____

SECTION B (1)

CONTRACTOR/ ACCREDIT PERSON:

CONTRACTOR REGISTRATION/ ACCREDITED PERSON CERTIFICATE NO:

SIGNITURE: DATE:

SECTION B (2)

PROFESSIONAL ENGINEER/TECHNOLOGIST:
(FOR SOFT RECONNECTION FUNCTIONALITY)

REGISTRATION NO:

SIGNITURE:

TELEPHONE NO:

EMAIL ADDRESS

SECTION C

		√
Mode Of Standby Generation: *(Tick Appropriate Box)*	Portable generator (Complete Section B, C & E	
	Permanently installed standby generation that is interfaced with the consumer electricity installation. (Complete all sections	

Construction Schedule:	Construction start date	

Type of Energy Conversion: e.g Synchronous Generator, Induction Generator, Inverter, Fuel-cell, Dyno set.	

Fuel:	Type		Capacity	

		√
Site Plan:	Site Plan to show scaled map with existing services	
	Future site development plans	

Land Use Zoning:	

Preliminary Design:	Design showing generators, transformers, customer circuitry interfacing with Stellenbosch Municipality electrical network, isolating devices, protection schemes, operating characteristics, etc	

Total Capacity of Standby Generation (KVA and PF): (Attached schedule for each unit if more than one generation unit)	Design showing generators, transformers, customer circuitry interfacing with Stellenbosch Municipality electrical network, isolating devices, protection schemes, operating characteristics, etc.

Make and model of generating unit/s	

Protection Details:

Method used by interlocking mechanism to prevent parallel operation with Stellenbosch Municipality distribution network, electrical and mechanical, break-before-make interlock required for generators that are interfaced with the consumer electrical installation.	
Circuit diagram of standby/portable generator including all interlocking with the Municipal grid, approved by Professor Engineering/ Technologist, attached.	
Certificate of compliance to be supplied after installation	

Note:

Soft reconnection
If momentary synchronisation/paralleling with Stellenbosch Municipality distribution network is required prior to operating the interlocking device when Stellenbosch Municipality supply is restored, a professional engineer/ technologist must approve the complete installation.

SECTION D

List of Regulatory requirements and normative references:

	√
AMEU guidelines for the Safe Use of Portable Generators on Utilities Networks, Revision 10 dated 27 June 2008	
Department of Environmental Affairs and Tourism in terms of Environmental Conservation Act, No. 73 of 1989 as amended and National Environmental Management Act, No. 107 of 1998 as amended	
Electricity Supply By-Law	
Explosives Act, No.26 of 1956, as amended	
NRS 003, SANS 62271: 11 kv switchgear and control panels	
NRS 029: Current transformers for a.c voltages (3,6kV -≤ 420kV)	
NRS 030: Voltage transformers for a.c voltages (3,6kV - ≤ 145kV)	
NRS 034: Design guidelines (where applicable)	
NRS 054: Power transformers	
Occupational Health and Safety Act, No. 85 of 1993, as amended	
SABS ISO 8628 (Parts 1 – 8): 1993 – Reciprocating internal combustion engine driven alternating current sets	
SANS 342, SANS 10089 – Petroleum and diesel fuel	
SANS 10142-1, The Wiring of Premises Part 1. A completed copy of the Certificate of Compliance for the complete electrical installation must be submitted prior to reconnection of the supply to the premises after installation work that specify the electrical and mechanical	

break, before make interlock that prevents paralleled operation with Stellenbosch Municipality electrical Distribution network.	
SANS 60034: Rotating Electrical machines	
Soft reconnection: Written approval provided by a professional engineer/ technologist for the complete electrical installation design, construction and commissioning is required.	

SECTION E

Any other additional information:	

I request the Stellenbosch Municipality, Electrical Services to proceed with a preliminary review of this standby generation application and agree to pay the cost associated with completing this review and giving written consent.

Application Completed By:	Name:	Title:

Date: _____

Signed: _____

	YES	NO
Fire switch installed:		
Certificate of compliance attached:		

SECTION F
APPROVAL TO INSTALL STANDBY GENERATOR/ BACKUP SYSTEM

1. **Fire Brigade**

   Official: _____ Signature: _____

   Date: _____

2. **Electrical Department**

   Official: _____ Signature: _____

   Date: _____

SECTION G
APPROVAL TO CONNECT STANDBY GENERATOR / BACKUP SYSTEM

1. Fire Brigade

Official: _____ Signature: _____

Date: _____

2. Electrical Department

Official: _____ Signature: _____

Date: _____

3. Final Inspection

Certificate of Compliance Submit	**YES**	**NO**
Inspection Neutral link	**YES**	**NO**
Earth Electrode Reading		
Witness:	**YES**	**NO**

Witness by: _____ Signature: _____

Date: _____

4. Installation requirements

4.1 Legal requirements

4.1.1 An application for the use of a standby/portable generator (new or existing) in the case where it will be required to interface with the same circuitry used to locally distribute mains supplied electrical power, shall be submitted to the relevant electricity distribution utility.
The application shall include, but might not be limited to, the following:

a) Contact details of the owner of the premises;
b) Site address;
c) The make and model of the standby/portable generator;
d) The capacity of the standby/portable generator; and
e) The control circuit diagram of the standby/portable generator including all interlocks with the main grid.
4.1.2 Work shall only commence upon written approval from the relevant electricity utility.

4.2 Safety requirements

The attention of the owner or tenant of a standby/portable generator is drawn to the following legal requirements (see Foreword):

"Any user of machinery shall:

a) Ensure that all machinery used by him is suitable for the purpose for which it is used, and that it is installed, operated and maintained in such a manner as to prevent the exposure of persons to hazardous or potentially hazardous conditions or circumstances.
b) In particular cause every exposed and dangerous part of the machinery, which is within the normal reach of a person to be effectively safeguarded by means of insulation, fencing, screening or guarding, except where an inspector has granted written permission for the omission of such safeguarding.
c) Ensure that all safety equipment is kept in a good working condition and is properly used and ensure that the quality of material used in and the construction of the machinery or safety equipment is suitable for the purpose for which it was intended.
d) Not remove any safety equipment which relates to the machinery in question unless a person has been authorised thereto.
e) Provide devices to start and stop machinery, and these devices shall
i. Be in a position where they can be readily and conveniently reached by the person who operates such machinery; and
ii. Be so constructed and arranged to prevent the accidental starting of such machinery.
f) Provide positive means for rendering the controls of machinery driven by an electric motor inoperative while repairs or adjustments are being made, and such means shall not only be the mere tripping of a switch."

4.3 Additional safety requirements and recommendations

4.3.1 Additional safety requirements and recommendations are given in 4.3.2 to 4.3.24.
4.3.2 The installation shall take place within the boundaries of the approved application.
4.3.3 The owner or tenant shall comply with the relevant noise and pollution legislation detailed in Annex A.
4.3.4 Where new buildings are erected or alterations to existing buildings are made, building plans are to be submitted to the relevant local authority for approval.
4.3.5 The owner or tenant shall comply with the relevant legislation (see Foreword) for the storage of fuel.
4.3.6 Never use a generator in enclosed or partially enclosed spaces. Generators can produce high levels of carbon monoxide (CO) very quickly. When using a standby/portable generator, remember that one cannot smell or see CO. Even if a person can't smell exhaust fumes, he or she may still be exposed to CO. Adequate ventilation shall be provided.
4.3.7 Only operate the generator outdoors in a well-ventilated, dry area, away from air intakes

to the home, and protected from direct exposure to rain, preferably under a canopy, open shed, or carport. Do not enclose the generator in any structure.

4.3.8 Keep flammable materials away from the generator.

4.3.9 Always fuel the generator in a well-ventilated area. Fuel vapours are highly flammable and might ignite after the engine has been started. Be sure that any spilled fuel is cleaned up before restarting.

4.3.10 Always check for fuel leaks.

4.3.11 Before refuelling the generator, turn it off and let it cool down. Fuel spilled on hot engine parts could ignite.

4.3.12 Do not leave the generator unattended.

4.3.13 The total rated capacity of the generator shall not be exceeded.

4.3.14 Keep cables out of the way to avoid the danger of tripping over them.

4.3.15 Ensure that the generator's terminal voltage rating matches that of the load equipment (typically 230 V ±10%).

4.3.16 Ensure that emergency isolation of the generator is possible.

4.3.17 In the case of temporary generators being connected, ensure that there is complete isolation of the consumer's apparatus from the electricity distribution utility's equipment.

4.3.18 Have the generator run at full speed before placing load on it. This prevents damage as the generator starts and reaches full speed.

4.3.19 For permanently installed generators, ensure that permanent electrical interlocking exists between the consumer and the utility.

4.3.20 Ensure that all appliances or equipment connected to the generator have overcurrent protection or, preferably, the supply from the generator shall be equipped with overcurrent protection.

4.3.21 Turn off all loads before turning off the generator. (See Annex B for appliance ratings).

4.3.22 Check that the cables are free of cuts or tears and that the plug has all three prongs, especially a grounding pin.

4.3.23 Do not attempt to power the house wiring by plugging the generator into a wall outlet. This is known as "back feeding" and is an extremely dangerous practice. It presents an electrocution risk to utility workers and neighbours served by the same utility transformer.

4.3.24 Surge protection should be used as it is common for generators to damage more sensitive electronic equipment.

4.4 Connection requirements

4.4.1 Connection requirements are given in 4.4.2 to 4.4.9.

4.4.2 It is the responsibility of the applicant to arrange with the electricity distribution utility for the disconnection or reconnection of the mains supply to the premises when it becomes necessary to install the generator. Please note that the latest electricity distribution tariffs will apply for this service.

4.4.3 A CoC shall be completed for the installation and submitted to the relevant electricity utility before reconnection of supply to the premises.

4.4.4 A permanent red label (PVC or aluminium) with white lettering (of height of at least 10 mm) shall be affixed to the main distribution board inside the premises as well as to all other distribution boards fed from the main board and the main incoming utility supply circuit-breaker. The label shall read, "Danger: generator connected". Where only parts of the installation are supplied by alternative means, only these circuits shall be labelled.

4.4.5 Two permanent white label (300 x 300 aluminium) with red lettering (of height of at least 30 mm) shall be affixed next to the fire switch

NOTICE

Standby generator on site.

(Size 300 x 300)

4.4.6 Where any form of alternate supply (generator, UPS, etc.) is connected and automatically supplies power to circuits on the distribution board, a visible indicator (light) shall be provided on each distribution board where such circuits are live after the main supply on that board has been switched off.

4.4.7 Appropriately rated protective devices shall be supplied for short-circuit and earth fault conditions to protect the distribution board, generator and user. The protective devices shall prohibit feedback onto the utility system once the main incoming supply has been switched off. The generator shall be provided with a separate, appropriately rated overcurrent protection circuit breaker, over and above any devices installed on the generator itself. Earth leakage protection shall be provided in accordance with the applicable requirements in SANS 10142-1.

4.4.8 Unless specifically agreed upon between the electricity distribution utility and the owner or tenant, the generator shall not run in parallel with the main supply at any time.

4.4.9 The consumer shall be held responsible for all damages incurred by the utility or by himself if the devices are found to be rated incorrectly or the utility supply and generator supply are paralleled (or both).

4.4.10 Neutral earthing of the generator shall be done in accordance with the requirements in SANS 10142-1.

4.5 Single residential houses or individual commercial units

4.5.1 In addition to the abovementioned requirements, the installation of a generator at single residential premises shall comply with the requirements given in 4.5.2 to 4.5.5.

4.5.2 A control panel shall be installed after the meter point and as close to the main distribution board as possible in the case of both conventional and prepayment meters.

4.5.3 The control panel shall include at least

a) a main circuit-breaker, and

b) a manual or automatic changeover switch (see Annex C).

4.5.4 Where the generator is intended to provide a supply to an installation as a switched alternative to the main supply, the changeover switch shall disconnect the main supply before the generator is switched on. The changeover switch shall be interlocked in such a way that the main supply and the alternative supply cannot be connected to the same installation at the same time. This changeover switch shall be of a break-before-make type and have an appropriate rating for the size of generator as detailed in Annex B.

4.5.5 No other means of connection are allowed.

4.6 Commercial, office or multi-unit blocks

4.6.1 In addition to the abovementioned requirements, the installation of a generator at commercial or multi-unit premises shall comply with the requirements given in to

4.6.2 An automatic or manual changeover panel shall be installed.

4.6.3 The control panel (automatic or manual) (see Annex C) shall have at least

a) a main circuit-breaker,

b) a visible indicating light switched on when the generator is supplying power,

c) a manual changeover switch. This changeover switch shall be of a break-before-make type and have an appropriate rating for the size of generator as detailed in Annex B,

d) an emergency stop button which is easily accessible, is provided for the generator and which shall prevent the generator from accidental starting,

e) a remote emergency stop button (utility controlled). The remote emergency stop button shall be installed next to the main incoming utility supply circuit breaker and shall have a lable that identifies it. Alternatively, a circuit breaker with auxiliary contacts connected to the emergency stop or starter button may be installed to prevent the generator from starting if the main incoming supply is switched off due to safety reasons (i.e. in case of fire, etc.),

f) in the case of an automatic changeover panel, a foolproof interlocking system that prevents the main supply from being connected to generator supply. This interlocking system shall incorporate a mechanical as well as an electrical interlock on the changeover contactors or relays.

4.6.4 Where an individual unit within an office or multi-unit block has a generator, requirements for single residential houses shall be applied.

4.6.5 Where two adjacent commercial plots are supplied from a shared generator, each plot or connection (or both) shall have its own control or changeover panel as above.

Noise levels

A "disturbing noise" means a noise level that causes the ambient noise level to rise above the designated zone level or, if no zone level has been designated, the typical rating level for ambient noise in districts, indicated in SANS 10103, and given in Table A.1, are applicable. See SANS 10103 for more detail.

1	2	3	4	5	6	7
Type of District	Equivalent continuous rating level (L_{Req} T) for noise dBA					
	Outdoors			Indoors, with open windows		
	Day/night $L_{R,dn}$ a	Daytime $L_{Req,d}$ b	Night-time $L_{Req,n}$ b	Day/night $L_{R,dn}$ a	Daytime $L_{Req,d}$ b	Night-time $L_{Req,n}$ b
Residential Districts						
(a) Rural districts	45	45	35	35	35	35
(b) Suburban districts with little road traffic	50	50	40	40	40	30
(c) Urban districts	55	55	45	45	45	35
Non-residential districts						
(d) Urban districts with some workshops, business premises and main roads	60	60	50	50	50	40
(e) Central Business Districts	65	65	55	55	55	45
(f) Industrial districts	70	70	60	60	60	50

Note 1: If the measurement or calculation time interval is considerably shorter than the reference time intervals, significant deviations from the values given in the table might result.

Note 2: If the spectrum of the sound contains significant low-frequency components, or when an unbalanced spectrum towards the low frequencies is suspected, special precautions should be taken, and specialist advice should be obtained. In this case, the indoor sound levels may differ significantly from the values given in columns 5 to 7 in Table A.1.

Note 3: Residential buildings, e.g. dormitories, hotel accommodation, residences etc., should only be allowed in non-residential districts on condition that the calculated or anticipated outdoor LReq T values given in column 3 of Table A.1 are not exceeded.

a) The values given in columns 2 and 5 are equivalent continuous rating levels and include corrections for tonal character, impulsiveness of the noise and the time of day.

b) The values given in columns 3, 4, 6 and 7 are equivalent continuous rating levels and include corrections for tonal character and impulsiveness of the noise.