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Requirements for Installation and use of Standby Generators January 2012

Introduction

Standby Generators are normally utilised for the purposes of supplying electrical power when the mains supply has failed or has been switched off by the supplier for maintenance purposes. These generators are normally driven by petrol or diesel motors which are either air cooled or water cooled. The units can vary in size from small portable units capable of powering a couple of lights or a refrigeration unit to large units capable of powering a complete home. Surprisingly little or no work appears to have been done regarding the regulation and operation of standby generation plant in South Africa or elsewhere in the world for that matter.

From a literature search on the internet the most advanced work in this regard appears to have been done by the Association of Municipal Electricity Undertakings (AMEU). Members of this association include, JHB City Power, Eskom, Municipalities of Stellenbosch (Rodger Peense), Tshwane, eThekweni and Ekurhuleni). However it must always be remembered that the requirements of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) does cover all aspects of health and safety requirements and responsibilities associated with installation and operation of plant and equipment and would be applicable to any such standby generation installation irrespective of whether such installation is at a private home or a factory or on a construction site. In addition the requirements of SANS 10142-1, the wiring of premises Part 1 Low Voltage Installations as well as Relevant Municipal Electricity Supply and other Bylaws will also apply.

From a home owners association point of view we need not concern ourselves with all of the requirements of the Act or the building standards etc. but we must ensure that to the extent required such installations comply with the health and safety regulations as it may be applicable to the residents and employees of and service providers to the estate other than the owner installing and operating such an installation, who bears the main responsibility for such installation.

The discussion and estate rules below therefore in the main attempts to deal with requirements which should ensure that the Home Owners Association complies with its obligations and responsibilities.

Standby Generators – Health and safety risks

From the literature and the authors own limited operational experience there are 4 main risks to be considered:

1. **Exhaust fume (CO Gas) poisoning.** Besides the requirements of installing a generator in such a manner that it is properly ventilated to ensure no risk to operators and occupants of the building in which or next to which it is installed the possibility of surrounding residents being affected must be taken into account. Concentrations of CO gas are impossible to detect without suitable monitors and thus gas build-ups must be prevented by means of installation precautions.
2. **Electrocution of service providers or estate employees.** Incorrect connection to the home wiring system can result in downstream circuits in neighbouring homes being powered up as well creating the possibility of maintenance personnel and or other residents suffering electrical shock.
3. **Damage to mains distribution equipment and neighbouring home appliances.** Incorrect connections can cause voltage spikes and synchronisation problems lethal to equipment and appliances.
4. **Fire hazard.** Handling and storage of fuel presents significant safety risks in the form of fire and explosions’.

The most important issues besides risks to be considered are:

1. Noise pollution.
2. Aesthetical considerations.

Estate rules for installation and operation of Standby Generators:

1. Only one generator set may be installed on any one property except where a sub division has been done where each sub divided property may have an installation. Complete installation designs including wiring diagrams, site plan and weather protection structures must be provided to the Home Owners Association and must be approved by them prior to installation. The board may apply all remedies available to it in terms of the Articles of Association, the estate rules and the architectural guidelines dealing with building and construction which has taken place without board approval or not in conformance with such approval including the removal of such installation and applying relevant fines as prescribed.
2. Generators shall only be operated during mains power failures. The only exception shall be when running is required for service and maintenance and then only between the hours of 09:00 and 17:00 Mondays to Fridays.
3. Generators shall comply with and conform to the requirements of the ISO SANS 8528 series of standards.
4. If the generator is to be coupled to the home wiring system a certificate of compliance issued by an accredited person in respect of an electrical installation or part of an electrical installation that ensures that the electrical installation complies with SANS 10142, shall be provided to the Home Owners Association prior to operation of the system. A new certificate of compliance shall be lodged with the Association after any and every modification or alteration and in any event whenever the property is sold.
5. Small portable air cooled generators shall be placed in Home Owners Association approved designated areas such that they do not present either a noise or exhaust fume hazard to surrounding residents. (See also maximum allowed noise levels below). The cost of expert advisors in the case of a dispute regarding location and or noise levels will be for the operator’s account.
6. The maximum noise level of a generator when operating at full power when measured indoors with open windows in neighbouring residences may not exceed 25dB.

7. Larger generators shall be of the totally enclosed, ultra silent, water cooled and preferably diesel fuelled design NOT EXCEEDING 25mVA generating capacity with a noise level under full power not exceeding 67dB at 7m. They shall be installed in structures suitable for such equipment with due regard for proper ventilation requirements and adequate maintenance access. The position of the generator must be approved by the Home owners Association prior to installation which approval will only be given if the position ensures that:
 - a. It will not result in unsightly views to neighbouring residents or potentially create indoor noise levels exceeding 25dB. The onus will remain on the operator to ensure that despite association approval noise levels when operational, does not exceed levels in neighbouring residences as specified in point 6 above.
 - b. Exhaust fumes must be discharged at a height not less than 7m by means of a suitable noise attenuating exhaust pipe in order to minimize potential for causing fume concentrations in the nearby vicinity and the exhaust pipe must be directed away from neighbouring residences to minimize noise pollution. No exhaust pipe may discharge at a point closer than 20m from any neighbouring residence.
 - c. The cost of expert advisors in the case of a dispute regarding location and or resulting noise levels or exhaust fume pollution levels will be for the operator's account.
8. Fuel may be stored in containers designed for such purpose (Jerry Cans) and containers must be kept in approved storage facilities which comply with the relevant legislation for the storage of fuel, which provides for inter alia for proper ventilation and safeguards neighbouring properties in the event of an explosion or fire. In the Fynbos and Riverside areas a maximum quantity of 20 Litres of fuel may be stored. A portable fire extinguisher shall be mounted against a wall in close proximity to the storage and refuelling area.
9. Home owner's approval of installations will be subject to Estate officials being afforded the opportunity at all reasonable times to inspect the installation in order to verify continued compliance and to inspect maintenance records to provide evidence that maintenance as required by the relevant supplier has been done. Housekeeping must comply with minimum standards of no oil or grease around the generator, no loose cables or connections and all guards and safety enclosures and equipment in place.
10. Any requirements of the property insurers of neighbouring properties as well as those of the estate must also be adhered to.