Total Support Service of Emergency Genset for Business Continuity Management (BCM)

Eiji Yamaguchi

Keywords BCP, BCM, Total support service

Abstract

Emergency gensets are installed as an important part of business continuity plans (BCPs). Therefore, it is essential to ensure reliable operation in the event of a loss of commercial power.

However, in recent power outages caused by large-scale disasters, there have been reports of some emergency gensets failing to start or experiencing abnormal shutdowns, resulting in insufficient functionality. Possible causes include component failure, incorrect operation, running out of fuel, and neglecting a malfunction.

After an emergency genset is installed, what is necessary is: proper inspections, periodic part replacements, in-house training, operational management and proper operation.

Business continuity management (BCM) requires identifying these issues and duly implementing countermeasures.

1 Preface

In recent years in Japan, natural disasters such as large earthquakes, typhoons, and sudden downpour (localized torrential rain) have caused prolonged power outages. Since securing power is crucial to business continuity planning (BCP), emergency gensets have been introduced.

After installation, long-term planning and management are required, including preventive maintenance, operational management, and “Restoring Reliability” by proper inspections, repairs and maintenance, as well as the proper training of Operation and Maintenance (O & M) engineers. This paper introduces our total support service for emergency genset from a Business Continuity Management (BCM) service perspective.

2 Our BCM Service Initiatives

2.1 Inspections and Evaluations

Emergency genset must be functionally verified through semi-annual equipment inspections and annual comprehensive inspections. In addition, we utilize our long-standing expertise to conduct detailed inspections and equipment diagnostics to assess the degree of deterioration of major components.

In our service, we also cover ancillary equipment, such as internal inspections of fuel tanks and flues.

2.2 Assumed Risks

Some components of emergency genset have a limited lifespan that deteriorates regardless of operating time. Table 1 shows examples of periodic

Table 1 Emergency Genset - Parts Replacement Standards Example

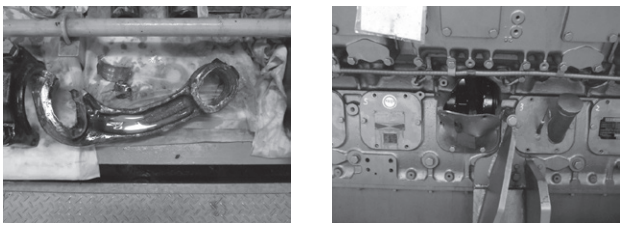
Plan the replacement timing of parts with a limited lifespan, taking into account their design lifespan.

Engine-related parts		Batteries		Electrical parts	
Name of parts	Replacement period (years)	Name of parts	Replacement period (years)	Name of parts	Replacement period (years)
Engine oil	2	Lead battery (MSE)	7	Charger	10
Oil filter	2	Alkaline battery	12	AVR	10
Fuel filter	2	Catalyst plug	5	Fuse	10
Air filter	5			Operation switch	10
				Auxiliary relay	10
				Protective relay	10～15

part replacement standards.

Chargers can malfunction due to deterioration of electrolytic capacitors, leading to battery discharge. Engine oil can damage the engine due to deterioration.

Furthermore, control components such as auxiliary relays are rarely operated due to the short operating hours of the equipment. Therefore, oxide films can form, resulting in poor conductivity and operational problems. Fig. 1 shows an example of engine damage[1].



(a) Deformation of connecting rod

(b) Cylinder block damage

Fig. 1 Engine Damage Examples[1]

(a) Deformation of a connecting rod due to internal engine damage and (b) damage to the cylinder block due to connecting rod deformation are shown.

2.3 Review and Kaizen (Continuous Improvements)

The reliability of emergency genset declines due to the assumed risks mentioned above, operating conditions, and installation environment. Therefore, maintenance plans must be revised based on the evaluation and used to improve the equipment.

2.4 Education and Training

Inspecting and evaluating emergency genset and proposing kaizen (continuous improvement) measures requires not only specialized knowledge but also highly skilled engineers with years of experience and knowledge of failure cases.

In addition, when an emergency genset operates during a power outage, customers also need knowledge of operation management, refueling methods, and alarm reset methods.

We have a technical training center for lecture-style education and practical training. It is equipped with practical training facilities, and we provide technical training not only to our own field-service engineers/technicians but also to those from our customers. Fig. 2 shows an overview of our technical training center[2]. Fig. 3 shows a practical training scene[2].

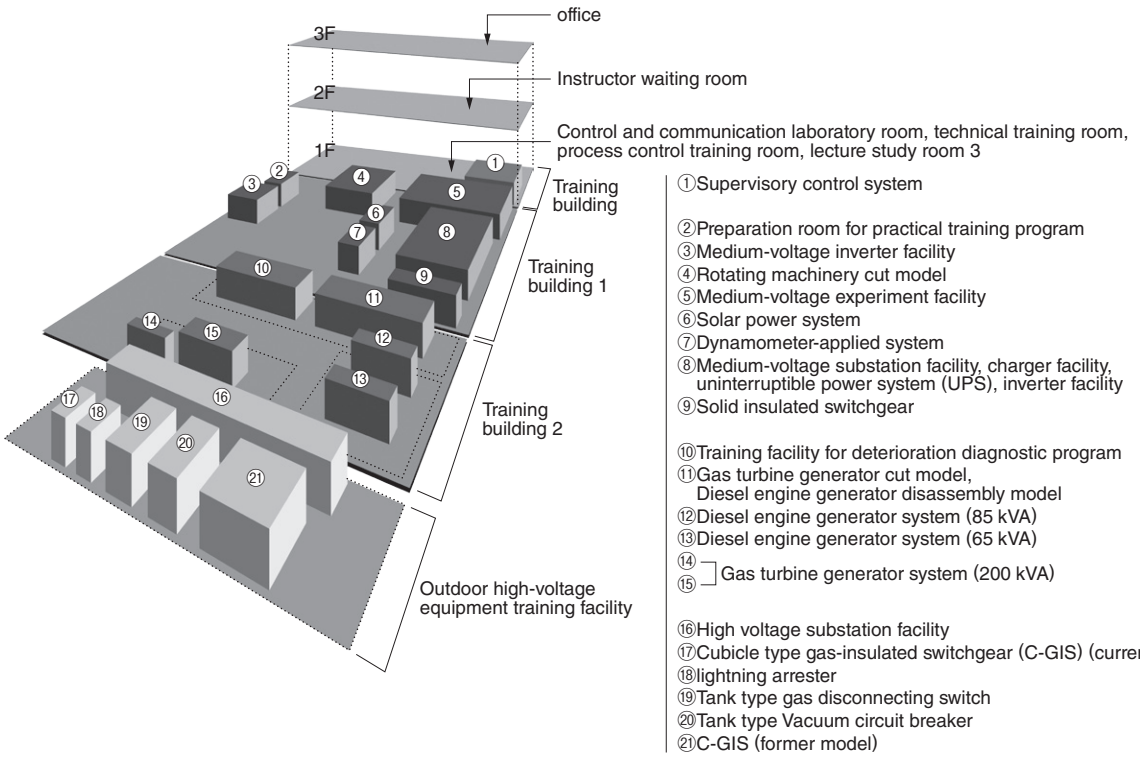


Fig. 2 Overview of Meiden Technical Training Center[2]

An overview of the technical training center's main facilities is shown.

Fig. 3 **A View of Training Session[2]**

We provide practical training that simulates actual on-site equipment.

3 Postscript

As a means to ensure business continuity in emergencies, we introduced our total support services for emergency genset after its installation.

Unforeseen events have become more frequent in recent years, and even with BCM initiatives, the possibility of disrupting business continuity remains. For this reason, in addition to providing total support service for our customers' emergency genset, we also offer a mobile genset and a load testing vehicle (for simulated load testing and performance verification of genset) to provide flexible services. The former provides "mobility" (the ability to "move" to the site) and supplies power.

Going forward, we intend to offer new values to our service, such as remote monitoring of remaining fuel levels using sensors and cameras, and remote diagnostic services based on battery voltage drop during startup.

《References》

(1) [Proposal of Our Genset Maintenance Service], Catalog No.SA8-3013
(2) [Passing on Skills and Know-hows and Fostering Field-service Talents – A Guide to Meiden Technical Training Center], Catalog No.ABB-3072