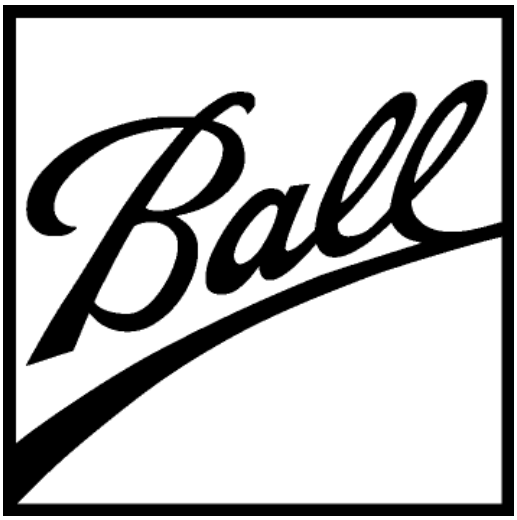
Ball Aerospace

Facilities Guidelines & Standards



C.20

Backup Power

Revision 0

Contents

Section 1 – Summary

1.1. The objective for providing a backup power standard is to ensure power distributions systems are provisioned correctly across Ball's campuses. This design standard is intended to assist engineers and contractors in designing a code compliant electrical distribution system. This standard is focused on delineating between normal (utility) power, life safety loads (NEC 700), and standby loads that Ball chooses to backup.

Section 2 – Specific Design Requirements

2.1. General

2.1.1. Ball uses backup power systems to ensure critical operations can continue when normal power is interrupted. Backup power systems typically refers to an onsite generator that starts up in the event of an outage.

2.1.2. Ball also uses backup power in accordance with NFPA 110 and NEC 700, to fulfil life safety systems requirements. In the event of an outage, it's critical certain building and infrastructure systems remain powered to ensure the health and safety of people within the building.

2.1.3. Given the different infrastructure throughout Ball's buildings it's critical new loads are designed and provisioned in a way to meet NFPA 100 and NEC 700.

2.1.4. Standby loads are considered discretionary and should be avoided in most cases. While it would be convenient to provide standby power everywhere, there are constraints (generator size and distribution systems) that should always be considered. Ball's philosophy is to provide standby power only when there's risk of data loss, hardware damage, or personnel safety. Typically, smaller UPS systems can meet the need for backup power instead of wiring loads to the generators.

2.2. Building Provisions

2.2.1. This section defines the backup power systems in place for Ball's larger facilities, to guide design efforts and changes to these systems. Buildings not listed below should be reviewed on a case-by-case basis.

2.2.2. AMC

- The AMC facility is provisioned with dual utility feeds at the 13.2kV switchgear level. This has helped reduce and eliminate the building-wide outages, by providing utility redundancy for the entire complex.
- Additionally, there is a 300kW generator onsite, which has very little additional capacity for new life safety or standby loads.

2.2.3. PDF/BRD

- The PDF and BRD facility is provisioned with dual utility feeds at the 13.2kV switchgear level. This has helped reduce and eliminate the building-wide outages, by providing utility redundancy for the entire complex.
- Additionally, there is a 1250kW generator onsite, which has spare capacity for new life safety or standby loads.

2.2.4. AHQ

- AHQ has a single utility feed which leads to more frequent power interruptions. There are no manufacturing or test operations throughout this building, and most critical computer work is backed up through standalone deskside UPS systems.
- This building has a 350W generator onsite, which has some spare capacity for new life safety or standby loads. Demand calculations should be performed when designing additional loads onto this equipment.

2.2.5. Fisher

- The Fisher complex is provisioned with dual utility feeds at the 13.2kV switchgear level. This has helped reduce and eliminate the building-wide outages, by providing utility redundancy for the entire complex.
- There is a 300kW generator onsite dedicated to serve loads in FA, which has some spare capacity for new life safety or standby loads. Demand calculations should be performed when designing additional loads onto this equipment.
- There is a 100kW generator onsite dedicated to serve loads in FM/FT, which has very little additional capacity for new life safety or standby loads.
- There is no generator supporting equipment in FI.

Supplemental Document Information

The following resource documents should be referenced for execution of the standards and guidelines described above.

Document Number	Document Title

Revision Log

Revision	Release Date	Description of Changes
0	05/09/2023	Initial Release