Power Distribution Centers

Single point acquisition of complete factory assembled and tested power distribution systems in modular, expandable enclosures for any location and any environment.

Bulletin 3.4.1-1E

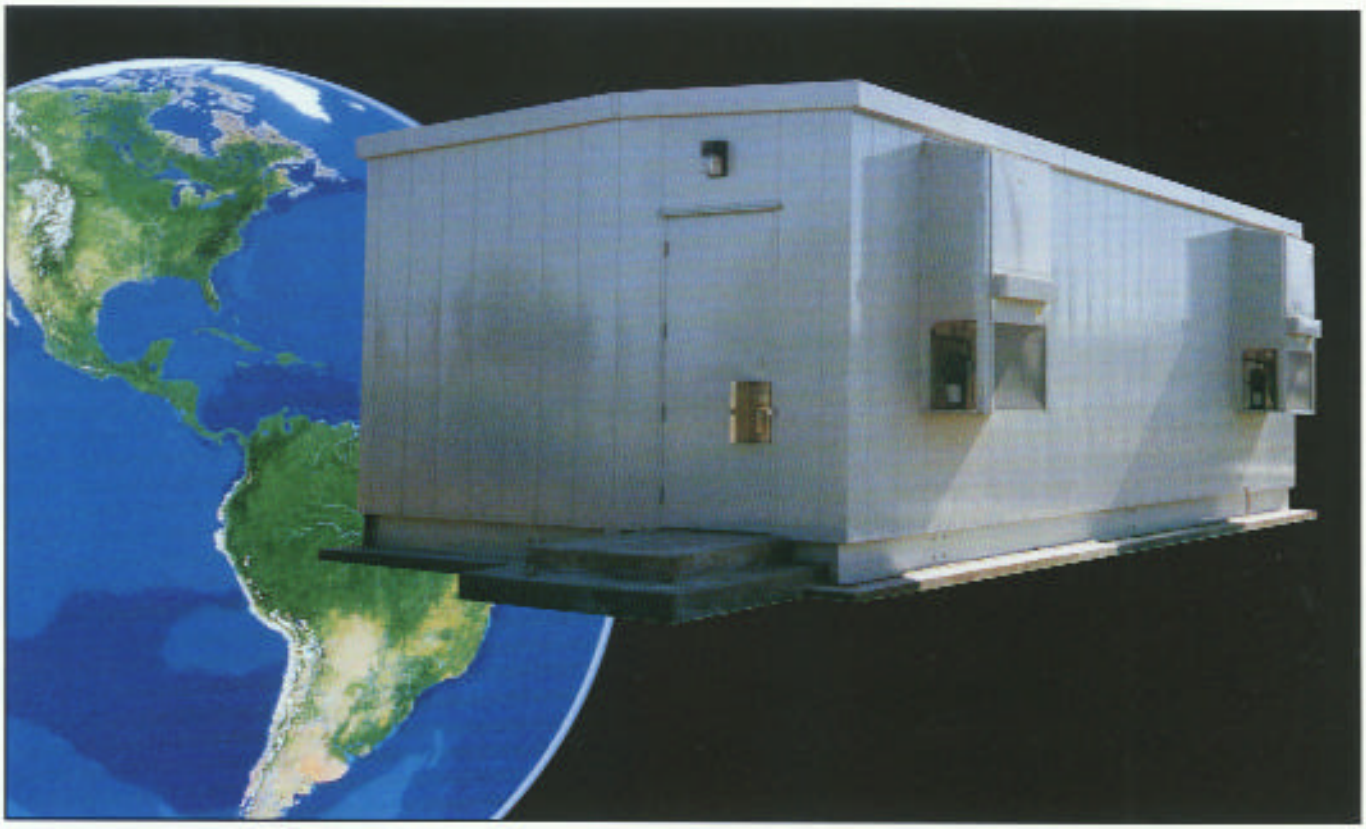


ABB integrates a wide range of power distribution components and systems into rugged, durable Power Distribution Centers using the best design for each custom application.

ABB

The ADVANTAGE of ABB Power Distribution Centers

A PDC is a prefabricated, modular, skid-mounted enclosure for switchgear and auxiliary equipment. As a self-contained unit, it is completely coordinated, assembled and tested in a controlled factory environment. Primary switchgear and control applications include low and/or medium voltage switchgear and motor control center enclosures; relay panel enclosures; and RTU and SCADA enclosures. With integral transformers, close-coupled to switchgear or with bus duct connections, a PDC can serve as a complete, enclosed unit substation.

Typically, a PDC is provided with station electric service that includes a panelboard, interior and exterior lighting, power outlets, and appropriate HVAC systems. A PDC also can include a battery and charging system, emergency equipment (eyewash fountains, fire suppression systems), and convenience facilities (work areas, toilets).

The PDC is an alternative to on-site building construction (usually concrete block) with separate acquisition and installation of electrical subsystems. A PDC is also an alternative to purchasing, installing and connecting outdoor types of loose electrical subsystems for new substations or distribution system expansions.

Key advantages of the PDC concept include:

- **single source responsibility, coordination, and accountability for a complete system**
- **reduced installation and ownership costs, and**
- **application flexibility**

PDCs add value for your business!

One purchase order can be issued to a single PDC supplier for a turnkey system, including mechanical and electrical design, a single set of drawings, enclosure fabrication, acquisition and integration of electrical subsystems, and equipment interconnection and testing. All of this activity is performed in a controlled factory environment. Delivery and installation are fast.

PDCs reduce total installation & ownership costs!

Site preparation, on-site equipment storage, field assembly, erection, interconnection and testing services are greatly reduced in comparison to alternative outdoor switchgear installations. Advance engineering, specification, acquisition, coordination effort and resources are reduced, since much of this work is delegated to the PDC supplier who maintains expertise in these areas. Additionally, costs are lowered because installation space is usually smaller, and because the PDC is a portable building that often is not regulated or taxed as a permanent improvement. Portability means economical relocation, and modular construction results in lower cost future expansions.

PDCs have the application flexibility to solve tough environmental problems

The compact size of closely integrated equipment in a single enclosure results in a considerable space savings, which in turn reduces overall installation costs. With its smaller footprint and lower profile, the appearance of a PDC can be more aesthetically pleasing than conventional installations.

An insulated PDC allows sensitive electrical equipment to operate in adverse environmental conditions. The basic design controls interior temperature more effectively than conventional outdoor walk-in enclosures. In hazardous atmospheres, electrical equipment can be enclosed in the controlled atmosphere of a pressurized PDC.

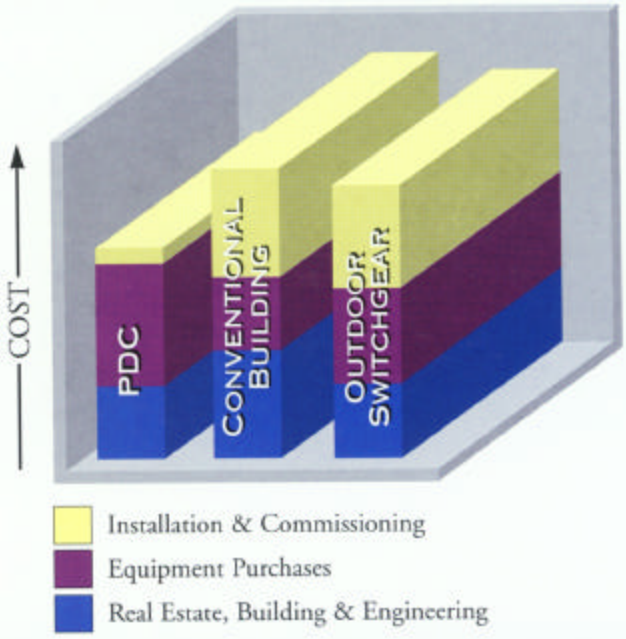
Power Distribution Centers are the best choice for outdoor switchgear installations

Traditional options for outdoor switchgear installations include conventional buildings, usually based on concrete block construction, and outdoor "walk-in" enclosures manufactured by switchgear suppliers. The PDC concept offers many advantages over these alternatives, as shown by the following comparison.

	POWER DISTRIBUTION CENTER	CONVENTIONAL BUILDING	WALK-IN "SHELTERED AISLE" SWITCHGEAR
Equipment installed	No Difference	No Difference	Limited systems, specific to switchgear
Sourcing	ABB	Multiple suppliers for enclosed systems and building	Separate enclosure for each type of equipment
Design/engineering	ABB	Purchaser or consultant	
Construction	Variety of materials	Usually concrete block	Usually manufacturer's standard steel, paint & finish
Foundation	Minimal (curb or pier type)	Full slab	
Base	Self-supporting, leveled before shipment	Purchaser provides channel base & grouting to level	
Access	Hinged switchgear doors in rear (rear aisle not required)	25%-40% larger to permit rear access	Hinged switchgear doors in rear
Internal wiring	Complete in factory	Job-site for shipping splits, control wiring and different sub-systems (first time at job site)	
Main bus	ABB	Purchaser coordinates interconnection of shipping splits, bus duct and different types of equipment (first time at job site)	
Grounding system	Integral to ABB	Must be planned and built into foundation	
External connections	Flexible, easy to change (both overhead & underground)	Restricted by slab floor (must plan exact locations, difficult to change)	
Testing	ABB in factory environment	Field tested after first-time interconnections	
Control & wiring changes	ABB in factory environment	Field conditions	In field conditions after connections to other equipment
Receiving, handling & storage	Single shipment, easily unloaded, stored as integral unit, inherently protected against elements	Purchaser coordinates multiple suppliers, delivery, handling & storage	
Installation	Minimum number of skills	Several skills, supervisors	Field assembly of aisle and shipping splits requires multiple skills, supervisors
Commercial treatment	Taxed same as weatherproof equipment	Real estate improvement, tax schedules, building permits & inspections, and insurance	Usually no difference
Expansion	Facilitated by modular, flexible construction	Provisions must be made during initial installation	Usually no difference
Relocation/portability	Easily moved	Permanent	Not transportable as a unit, requires extensive disassembly

PDC ADVANTAGES ADD UP TO BIG SAVINGS!

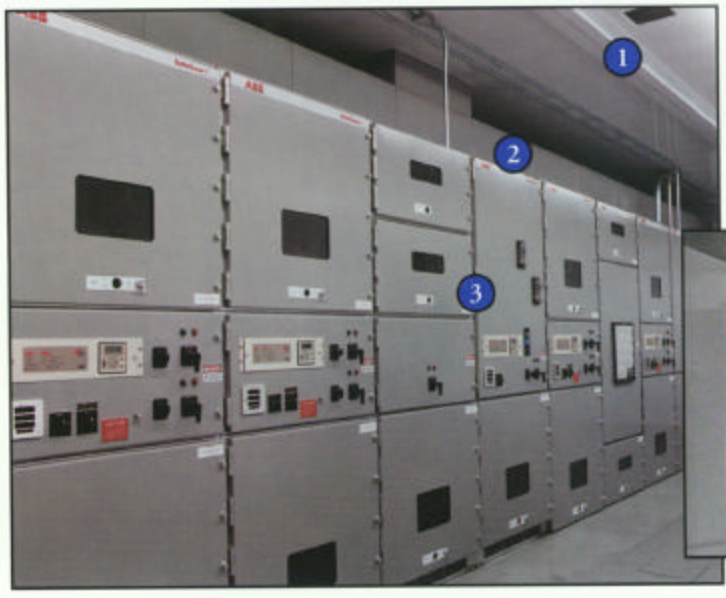
It's easy to see how the total installed cost of a PDC can be 20-30% less than the cost of a conventional approach to outdoor switchgear. Performing first-time assembly and connections in the field can be time-consuming, prone to errors, and subject to weather delays. Field labor rates are rising much faster than factory costs, and field working conditions are less than ideal. The logistics of getting the necessary crafts, supervision and tools for conventional installations are difficult and costly. When reduced in-house engineering and acquisition costs are coupled with reduced real estate requirements and lower installation costs, the result becomes obvious. PDCs provide the best value.



WITH ABB PDCS, YOU GET THE BEST IN SWITCHGEAR TECHNOLOGY ... WITHOUT COMPROMISE

PDCs have the flexibility to accommodate virtually any type of power distribution equipment. ABB combines the benefits of the right PDC for your application with the most advanced systems available anywhere: low and medium voltage power switchgear, motor control centers, transformers, and substation automation and control. And only ABB can offer a choice of systems made to ANSI or IEC standards.

For example, when ABB supplies a PDC with SafeGear™ arc-resistant metal-clad switchgear, a fully-tested plenum is provided across the top of the switchgear to cover all arc exhaust flaps. This sealed duct allows for opening of the flaps due to the pressure generated by an internal arc fault. It provides room for the gases to continue to expand, and channels the gases out of the switchgear building through a wall penetration and weatherproof vent. This solves potential problems with weatherproofing, building volume, reflected heat, and protection of cable trays and other equipment in the PDC. It is also consistent with the PDC design concept of providing a completely factory tested system, including the arc-resistance of the entire package.



1. PDC Ceiling
2. Plenum
3. ABB SafeGear™ (2-high Configuration)
4. Arc vent flaps

Rugged Construction Assures A Lifetime Of Superior Service

PDCs comply with rigorous industry standards and national building codes, in addition to applicable standards for switchgear and other enclosed systems. As a portable building, it can be constructed from a variety of materials, including galvanized steel panels, stainless steel or aluminum. Self-framing interlocking wall and roof panels are attached to a structural steel base. Modular construction minimizes initial cost while yielding good dimensional and application flexibility. Roof structures can accommodate primary entrance bushings and overhead bus supports. The enclosure can be designed for harsh environments, including extreme ambient temperature and humidity, to enable the use of lower cost indoor switchgear and sensitive electronic equipment within the PDC. The entire structure, with all contents installed, is supplied on skids for easy shipping and efficient field installation.

1. **Covered wireways (optional)**
   Benefit: safe, convenient routing of control wiring
2. **Personnel door with panic hardware**
   Benefit: personnel safety (ready egress)
3. **Heavy structural steel base**
   Benefit: strength for handling, long life, rigidity
4. **Steel floor plate**
   Benefit: superior equipment support on rigid, level floor
5. **Modular design**
   Benefit: easy, economical expansion
6. **Fluorescent lighting**
   Benefits: safety, convenience
7. **Removable interior panels**
   Benefit: easy changes
8. **Insulation**
   Benefits: comfort, safe working environment, equipment protection
9. **Sloped roof panels**
   Benefit: eliminates build-up of water or ice
10. **Removable rear access doors supplied behind each frame of switchgear or other equipment**
    Benefit: eliminates rear aisle space required in conventional buildings
11. **Pressurizing equipment (optional)**
12. **Exhaust fan (optional)**
    Benefits: comfort, anti-condensation
13. **Air conditioning with heat pump (optional)**
    Benefit: comfort
14. **Outer side panels with interlocking, self-supporting construction**
    Benefits: superior weatherproofing, unobstructed interior, expandability
15. **Removable lifting lugs**
    Benefit: confident handling