



## Power Control Centers

### **CPC is meeting today's changing industry needs**

Each Power Control Center is designed, built and tested at CP to fit your specific needs and NEC/UBC standards. Installed equipment often includes medium and/or low voltage AC switchgear, DC switchgear, metal enclosed Bus Duct, power transformers, rectifiers, metering, battery systems, SCADA panels, UPS systems and relay & control panels.

After your PCC leaves the factory, CP's support can continue with shipment on dedicated trailers. CP's value-added services can include site testing, site erection supervision, and start-up services; a total design/build service for the most demanding sites.

The growing demand for CP's Power Control Centers has come as a result of the changing needs of several industries.

**1. The need to control total installed costs of new substation projects.**

*PCC solution:* Over 30% savings due to economies in factory vs. site construction and testing. PCC's take less square footage than a standard block building, requiring only a concrete pad or concrete pier for construction, thereby eliminating multiple contractor liaisons and reducing overall Project Management costs.

**2. The need to quicken new substation projects due to tight deadlines.**

*PCC solution:* Substation construction and installation are separated. Projects are built faster in a factory. Each finished PCC can be shipped to sites and energized within days.

**3. The need to improve appearances and safety of substations in urban areas.**

*PCC solution:* Substation enclosures appear to be industrial buildings, containing locked doors and sealed roofs, walls, and floors. CP can offer you a 20-year written warranty for roof and wall panels as well as a wide variety of colors and surface textures.

**4. The need for design flexibility in economically expanding substations for later growth plans.**

*PCC solution:* Expansion areas can be included in PCC designs, or walls can be designed for expansion to a larger PCC configuration at a later date.

**5. The need to know that the substation will pass testing standards without costly field debugging.**

*PCC solution:* Stringent PCC testing can be done at CP's factory while the PCC is being built. Any potential problems are handled in-house, affordably. The same test technicians that performed the factory testing are available for field start-up testing and commissioning.

### PCC Classification

As defined by UBC and NEC standards, Power Control Centers are considered as electrical equipment enclosures, designed for short-term occupation by personnel for only maintenance and monitoring purposes.

Specifically: Efforts should be made at project initiation to educate local zoning and inspection agency staff as to the legal classification of PCCs to avoid disputed or misunderstandings later. PCCs do not require building permits nor inspections in most situations.

## Standard features of CP Power Control Centers

### Standard PCC Features

- 125 MPH wind load for assembled PCC
- Zinc plated exterior hardware
- Weatherproof gasketing is EDPM adhesive backed
- Interior lighting features 48", dual receptacle fluorescent tube fixtures
- Light switch and duplex receptacle (qty. 2 each)
- Panic hardware – single-point latch touch bar exit device
- Door closer – hydraulic with hold open feature
- Expandable ends
- Baked, dry powder epoxy coating on all metal surfaces except structural steel base

### Standard Door Features

- Steel flush door typical
- Paintable 16 gauge A60 galvanized steel
- 1 ¾" thick construction
- 42" wide x 84" high
- 16 gauge A60 galvanized steel door jambs
- Drip shields over all doors
- Equipment rear doors are standard

### Standard Wall Features

- 36" High gloss, white interior wall panels
- 2.5" Thick wall construction
- 24 Gauge epoxy coated galvalume exterior wall and roof panels
- Heavy duty interior framework throughout for strength and rigidity
- Absolutely no exterior hardware except for doors

### Standard Roof Features

- 24 Gauge epoxy coated galvalume roof panels
- Slope = 0.5" per 12"
- 80 lb./sq. snow or roof load
- Interior steel ceiling

### Standard Base Features

- ASTM A36 structural steel
- 3/16" Thick steel floor plate (¼" is optional)
- 250 lbs./sq. Foot floor loading
- Cover plates for conduit/cable entry areas
- Grounding pads
- Lifting provisions from the base

### Available PCC Options

- Undercoated structural base
- Insulated structural base
- Electrically insulated floor coating
- Separate battery room
- Windows in walls or doors
- Additional duplex receptacles
- Panic Hardware – two-point latch touch bar exit device
- Panic Hardware – three-point latch touch bar exit device
- Door options – single, double, louvers, fire-rated, window
- Double-wide Equipment access doors
- 300 series stainless steel exterior hardware
- Air conditioning/Heat Pump/Ventilating fans
- Electric Heaters
- Pressurization system
- Louvered panels
- Clean air stacks
- Exterior lighting with Photo Cell
- Door "crash" stops
- Interior Partitions (walls/compartments/battery room)

## **CP stands out against the competition**

### Power Control Center

#### **Major Electrical Equipment**

Same as Block Building.

#### **Design and Engineering**

Complete package design and engineering by Controlled Power. We manufacture the metal clad switchgear, low voltage switchgear, bus duct, relay and control panels. One stop shopping for all your electrical needs.

Power Control Center is designed for ease of expansion.

Power Control Center offers one-stop shopping and unit responsibility.

Power Control Center is factory wired complete with schematics, wiring diagrams and conduit layouts. Changes can be made after functional checkout at factory in a controlled environment.

Power Controlled Center is completely factory tested as a unit under single responsibility of CP.

#### **Building Construction**

Power Control Center can have hinged access panels behind equipment.

Power Control Center requires a minimum foundation (i.e. curb type, pier type, or perimeter vault).

Power Control Center is easily adaptable to overhead or underground conduit systems.

Grounding system is designed into Power Control Center.

### Concrete Building/Butler Type Building

Same as Power Control Center.

Purchaser responsible for Engineering, Design, Purchasing, and Expediting for all major equipment as well as coordination with building design firm and site contractors.

Generally, building space is shared with mechanical, instrument, and operating people. This means the Electrical Group must fight for every square foot of floor space with minimum space for spare units and future expansion.

Frequently, the civil group using the electrical budget performs building design. This blank check can lead to a cost far above budget.

The old method requires multiple specifications and several rounds of soliciting and analyzing proposals. This results in split responsibilities, even if the electrical equipment is from the same vendor.

Purchaser must prepare integrated schematic and interconnect diagrams for various types of equipment. Any changes must be made, by the contractor, subject to job site environmental conditions and at premium field labor rates.

Contractor must make and check all interface connections between various types of equipment in the field at very expensive labor rates.

Block building must be 25 to 40% larger to permit access to rear of equipment in accordance with NEC.

Block building requires full slab foundation with relatively large stem walls and footers.

Block building with slab floor requires a detailed and exact conduit system that is difficult to change once the floor is poured.

Grounding system must be planned and built into foundation. Provisions for future expansion must be made with initial installation.

Power Control Center involves a minimum number of crafts working at fixed factory rates.

Building requires many union crafts, i.e. laborers, carpenters, iron workers, cement finishers, bricklayers, electricians, etc. Each trade generally requires a foreman and helpers, all at high labor rates.

Power Control Center often includes bus duct for transformer secondary that is checked for ease of assembly before shipment.

Purchaser must coordinate bus duct and other equipment and hope that everything matches electrically and mechanically.

Power Control Center includes an integral self-supporting base. All equipment is factory leveled.

Purchaser must provide channels and grouting for leveling all equipment individually.

All bus connections and equipment shipping sections are coordinated by CP.

Purchaser must coordinate the match up of buses and shipping spits for different types of equipment.

All equipment is inter-wired and tested before leaving the CP factory.

Purchaser must coordinate and allow for field labor to install and interconnect all equipment. This could include the following: Lighting Transformers – Thermostat – Power Panels – Exhaust Fan – Lighting Panels – Pressurizing Fans – Lighting Fixtures & Receptacles – Exterior Lighting – Battery & Charger – Air Conditioner – Electric Space Heater. Testing must be done at site after everything is installed, which adds time to overall schedule.

### **Building Inspection**

Building permits or labor inspection not required.

Building permits must be obtained at various times during the project. This causes delays and can add unforeseen costs.

### **Insurance Requirements**

Power Control Center would be insured at the same rate as a piece of electrical equipment.

Insurance rates for a building will most likely be more expensive because of its classification.

### **Interconnections**

All coordinated by CP.

Purchaser must coordinate all interconnecting wiring and interlocks between different pieces of equipment within the building.

### **Receiving, Handling, & Storage**

Power Control Centers arrive 14 ft. wide and up to 45 feet long, as a single shipment that can be unloaded in as little as one hour. Larger buildings will be shipped in two or more pieces and usually can be unloaded and set in one day.

Purchaser must provide for receiving several shipments made at different times for different locations. This frequently involves: double handling of storage, trucking from warehouse to location, special protection during storage, possible pilfering or lost equipment, lost time due to foul weather, breakage or damage during storage, drayage, or delays in completing installation and start-up.

## Scheduling

Order can be placed very early since major part of the engineering, drafting, and coordination is transferred to the manufacturer.

Procurement is slow and costly. Even a small control building has all the elements of a major project that requires expert charts. A series of purchase orders is required. Requisitions may come from several sources. Meetings for evaluation, review and coordination are required. More engineers are required internally. Frequently, amended specifications and rebidding are introduced.

Experience, planning and a flexible organization enables CP to make equipment changes throughout the schedule as the project requirements are evolved.

Coordinating changes is complex. More internal people are involved. Several outside vendors may be involved. Formal communications through multiple channels is slow. Oversights can be expensive.

In general, the total shipping cycle for Power Control Centers is about the same as indoor equipment of the same type.

Shipping time will be different for each product type. The low voltage equipment that ships quickest is most subject to change because of project changes. This can result in more time-consuming field changes. Responsibility for match-up may shift from the vendor to the field. Schedules and warranties may be affected.

Since the Power Control Center arrives complete and pre-tested, the field installation time is reduced to as little as a few days.

Experience has shown that four times the man-hours must be allotted because of additional work done in the field. Start-up may be delayed by equipment loss, pilferage, mismatch or damage in shipment. Last minute modifications can fall short of the quality built in and tested by the manufacturer.

## Financial

Fixed charges do not begin until after the shipment of the PCC and payment of invoice, usually 30 days after the shipment of the unit with all components complete.

Fixed charges begin after receipt and payment of invoices for individual components and building materials usually months before building and all components are placed in service. Additional costs are incurred handling multiple invoices.

May be depreciated in 8 to 10 years.

Must be depreciated over a 40-year period.

## Safety

The Power Control Center is an offspring of the industry's old workhorse, the NEMA 3R outdoor, walk-in, and metal enclosure. It has been widely used and accepted throughout the industry, i.e. utilities, petroleum, chemical, industrial, etc. for hazardous and non-hazardous applications. It offers a better-engineered solution to power distribution needs, keep critical projects on schedule and yet, is more economical to purchase.