For more details, contact Conductix-Wampfler,
1-800-521-4888, press 1 for Customer Service, or
customerservice@conductix.com

Overhead Crane Maintenance Zones

Safely Maintain Cranes without Sacrificing Productivity

Routine overhead crane maintenance and repairs are critical for the long-term safety of personnel and longevity of the equipment. However, operators that run multiple cranes on a single runway must be able to shut down one crane while keeping the others running. Fortunately, this situation can be solved by creating one or more "maintenance zones" on the crane runway system.

What is a Crane Maintenance Zone?

A crane maintenance zone is a designated area within a conductor bar runway that can be powered down while the rest of the runway remains live. Creating a safe, isolated area of a conductor bar is not as straightforward as it seems. The setup requires a series of special conductor bar components and a properly wired switching system that will keep the maintenance zone from being accidentally made live by the other cranes still in operation.

A properly installed and wired maintenance zone system will:

- Enable power to be shut off in the maintenance zone while leaving the main part of the runway live.
- Keep the maintenance zone from accidentally becoming live by setting up a buffer zone. The buffer zone prevents another crane's live tandem collector from moving into the maintenance zone and inadvertently making the maintenance zone live.
- Properly ground the maintenance zone so when power is shut off it will never become live, thereby protecting maintenance personnel.

The solution is to add an electrically-isolated "buffer zone" before the maintenance zone. A typical end maintenance zone (green) is preceded by the buffer zone (blue). Maintenance zones can also be set up in the middle of the conductor bar runway, with buffer zones on either side.

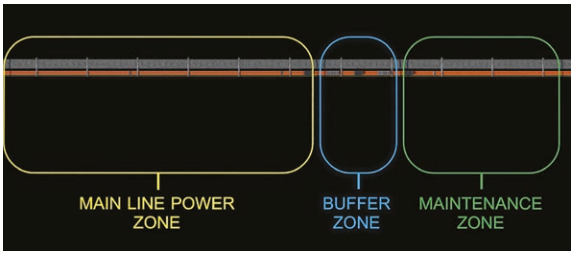


Figure 1. End Maintenance Zones – On the right side

How Do You Install a Safe Maintenance Zone?

To install an end maintenance zone like the one shown in Fig. 3, you first install "power interrupting sections (PIS's)" into each of the three phase legs of the conductor bar runway's end. This can be done right end as shown on Fig. 3, or the left by reversing the component order. A PIS consists of three special conductor bar segments each with a center power feed point (shown below). Two 1/2" air gaps electrically isolate the middle section (some models use insulating materials at the two isolation points).

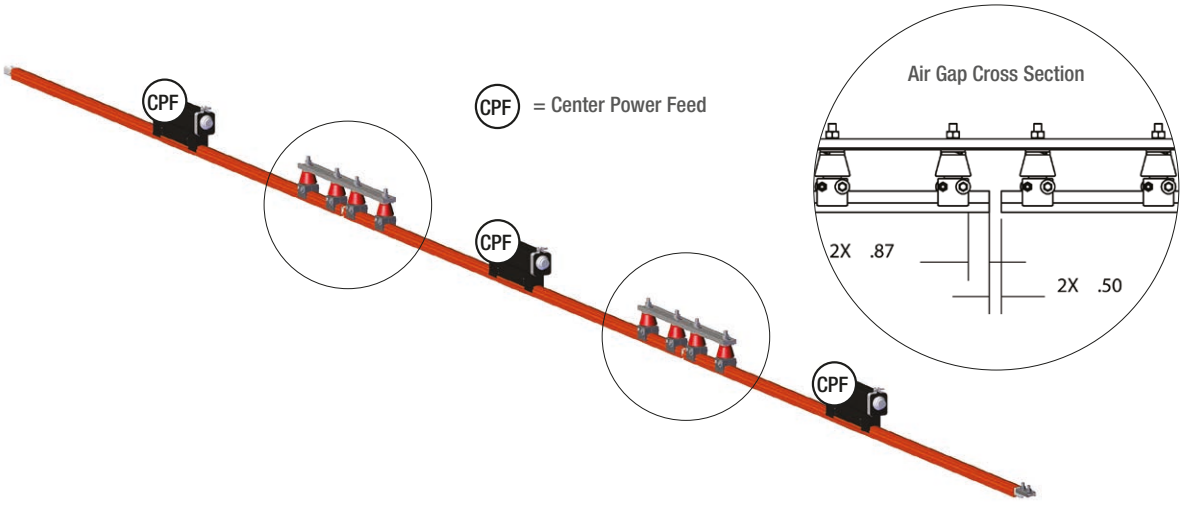


Figure 2. Power Interrupting Section

The two air gaps allow the "buffer" section to be powered down. But even with the power shut off to the buffer zone, a tandem current collector from the adjacent live crane coming in can potentially bridge the first gap and make the buffer zone live. If that happens, the maintenance zone won't be affected. The encroaching live crane won't get that far.

By moving the crane into the far right section past the second isolation point gap (see correct switching system below), it will remain powered down even if another crane accidentally makes the buffer zone live.

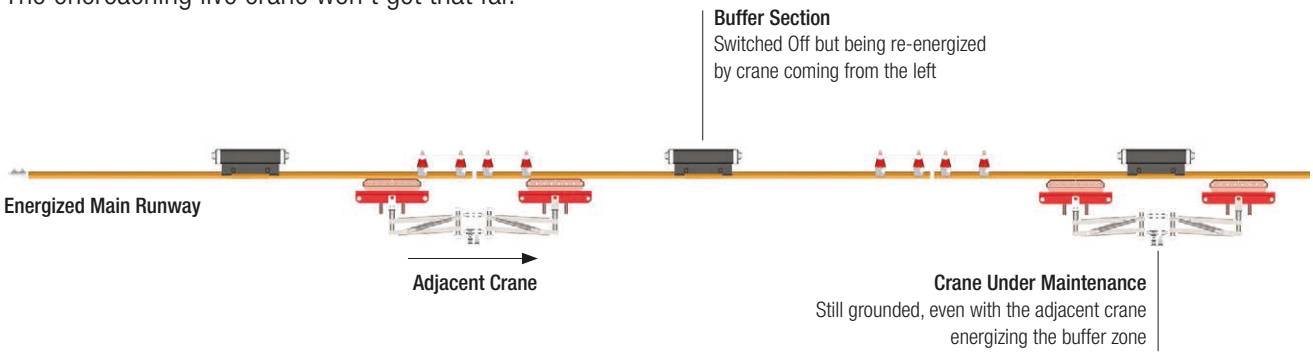


Fig. 3 Buffer Zone Being Energized by Adjacent Crane

Maintenance Zone Switching System

Conductix-Wampfler recently introduced a switching system called “PowerGuard.” PowerGuard correctly switches off power to the buffer and maintenance zones, then grounds the maintenance zone to create a safe area where the crane can be safely worked on. The system increases user safety by providing visual LED indications and dual-voltage test points at the PowerGuard panel. These LEDs are tied to the maintenance zone wiring and show the maintenance team that the zone is die-energized before beginning any work.

The PowerGuard switches within the switch panel distribute power to the various PIS segments. With all switched “on” (Position 1), power flows from the power feed connected to the live runway (yellow wires), then to the buffer zone (wires in blue), then to the maintenance zone (wires in green).

Each of the three switch positions has a specific function. >>>

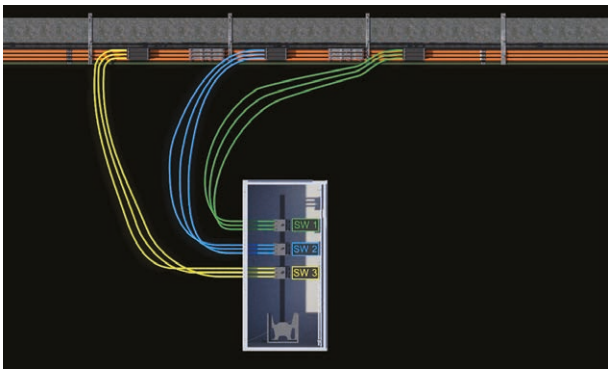
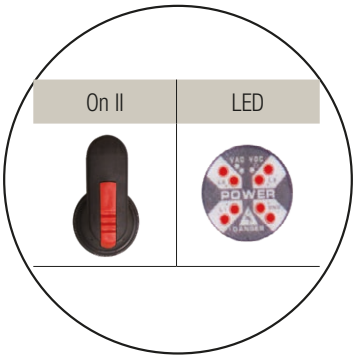
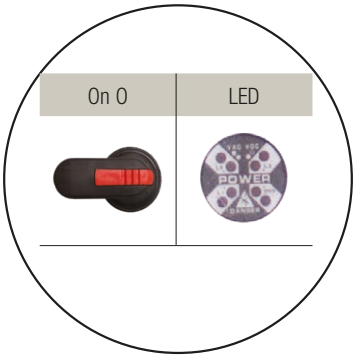
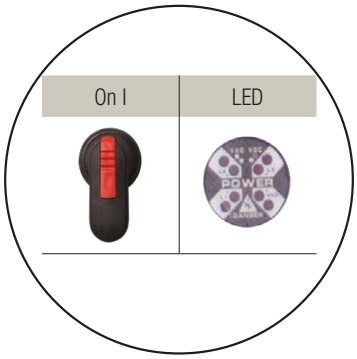


Fig. 4 Diagram of the inside of a PowerGuard Control Box.







In Switch Position One

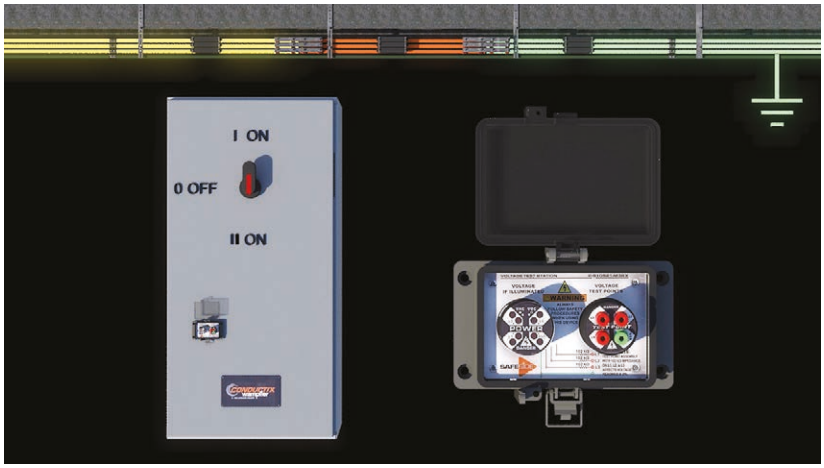
Power flows from the main runway to the "buffer zone" and the "maintenance zone." When the maintenance team wants to work on the last crane on the runway, they move it into the maintenance zone at the far right end.

In Switch Position Two

Power is turned off to both the buffer zone and the maintenance zone.

In Switch Position Three

The maintenance zone is grounded, but the buffer zone is not. Having the buffer zone and using the correct switching sequence is critical for creating safe maintenance zones since a "live" crane moving too close to the maintenance area can accidentally energize the buffer. If this happens, and the switches are properly wired and sequenced, the maintenance zone will stay grounded.



A maintenance zone solves common problems associated with maintenance, especially for systems that run multiple cranes on a single runway. Adding a maintenance zone switching system like PowerGuard provides a safe solution for conductor bar applications, and allows for maximum crane uptime while protecting both people and equipment.

Click Here to Download the PowerGuard Catalog