



A ROUNDTABLE CONVERSATION

EntellEon Power Panel Platform

Modular, Job-Site-Adaptable
Power Panel Solutions



Solving the Need for a Modular, Field-Fixable Power Panel



Every electrical contractor managing a low-voltage power panel installation knows the frustration of getting to the job site only to find a mis-ordered panel, last-minute change in the load requirements, or a top-feed power cable sitting atop a bottom-feed panel box.

Some of these challenges have partial solutions in the form of current modular components - circuit breakers or surge protection devices (SPD) - that can be changed out on site. However, the majority of power panels specified for commercial projects are still pre-configured, full-sized units that are not particularly friendly to “field-fixable” solutions.

We recently spoke with a group of electrical contractors from around the country about the challenges they face as they tackle the start-to-finish power panel process of specifying and ordering, managing units on the job site, installation and working around on-site fixes.



Our Roundtable Panelists



Mark Swafford
Wells and Tate Electric
www.wellsandtate.com

Based in Huntsville, Alabama, Wells & Tate Electric company specializes in design/build projects in commercial, healthcare and industrial facilities. The company prides itself on quality installations with a focus on employee safety.



Mike Dobert
Tech Electric
www.t-electric.com

A leading electrical contractor company in the Research Triangle area of North Carolina, Tech Electric has extensive experience in commercial and industrial electrical contracting, network and data infrastructure cabling design/installation.



Patrick Merrill
Bright Future Electric
www.brightfutureelectric.com

Established in 2006, Bright Future Electric specializes in large health care, commercial and industrial projects across five primary markets including Birmingham, Alabama; Orlando & Central Florida; Destin, Sarasota and Fort Meyers, Florida.



Ellen Zeidler
ABB
www.geindustrial.com

Since Thomas Edison patented the world’s first circuit breaker, Industrial Solutions has been transforming the future of electrification. We design electrical solutions at the crossroads of digital and industrial – smart, rugged and equipped to control electricity from the grid to its point of use. Every day, we partner with our customers to solve their toughest energy challenges and re-imagine industry in a way that only the world’s digital industrial company can.

Navigating What You Need, Vs. What You Get



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Ellen

So when the design and specification of the power panel is done, describe the typical ordering process, and any issues or “disconnects” – whoops, that’s a bad term in our business – you see between what you ordered and what you need day-of at the job site.



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Mark

Well, in my 35 years of experience we see some kind of change about 90 percent of the time. The breaker count changes, or a customer needs to add new circuits for additional HVAC or additional load.



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Mark

On a bid-to-build we get a price from the distributor, double-check the specs for things like top or bottom power feeds, and then let the distributor place the order.



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Ellen

... and the cost?



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Patrick

We try to spec products that offer some labor savings. So, it comes down to either the product costs or finding a suitable technology that offers some labor savings.



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Mark

If we need to change out a breaker quickly then we have to buy them over-the-counter and that can be five to ten times more expensive. We then either swap out the breaker, or install a new breaker in an empty slot, and leave the original breaker in as a spare.



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Mike

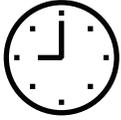
We do a lot of design-to-build, so our estimating department provides the specifications. On that side we have a lot of input about the type of equipment we order. But in an open competitive bid, we still go to several distributors representing different manufacturers.



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Ellen

That sounds like a process we see across the industry – contractor firms either specifying or acting as a check point in the process. Even with these checks, how often does the job requirement change between the order and installation? How does that impact time delays and labor costs?

Converting a Quarter-Hour Delay to a Few-Seconds Fix



The new Spectra for EntellEon line of pluggable circuit breakers, ranging from 15 amperes(A) to 1200 A, are easily plugged into the bus stack in approximately five seconds, compared with an average of 15 minutes to install the hardware and bus straps for traditional breakers.

EntellEon's modular design enables mixed breaker side-by-side installation with mix-and-match modularity in different height-and width-sized breakers mounted in the same row. Modular, pluggable breakers also mean any upgrade or changes in power load requirements can be made after first specifications or even initial installation.

Navigating What You Need, Vs. What You Get (cont.)



— Ellen

Mike, Patrick, do you see similar issues between the spec and the install?



— Mike

We see a change in specification happening more and more in the time between the release-for-fabrication and the release-to-job-site. That might be 30 percent of the time if we're involved in a fast-track project where we're bidding off documents that may only be 85 percent complete at the time of order. So, by the time the final job is designed there may be changes in things like HVAC capacity that need to be accommodated during installation at the job.



— Patrick

Yeah, the typical changes are breakers. Maybe upgrading to a 50 or 60 amp, or adding two 20s. We might have to switch out a 30 amp breaker to a 35 or 40. It's not a big deal if the panel hasn't been energized, but there is time and cost involved, especially if we have to wait three to four days to get a different breaker from the manufacturer.



— Ellen

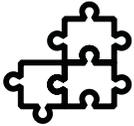
I want to talk further about ways to adapt to unplanned changes, but can you help us understand what happens first on a typical job site from when the fully assembled and configured power panel arrives on the job site? It's really a two-step process, isn't it?



— Mark

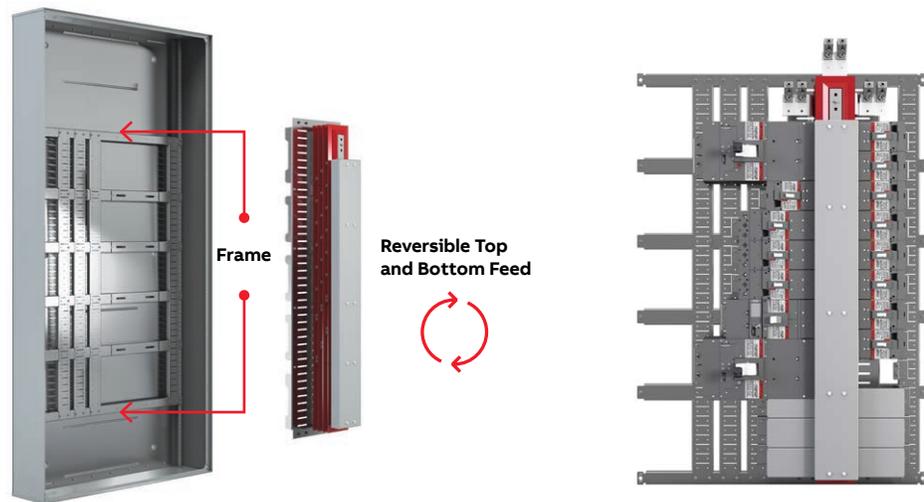
We can get the power panel exteriors, or cans, in about two weeks.

Modular and Flexible Power Panel Exteriors



GE's new EntellEon power panel platform begins with a range of power box sizes to accommodate a series of modular, site-configurable interior panels, bus stacks and circuit breakers. The mounting boxes come in four height configurations (60", 72", 84", or 96") and either 30", 40" or 45" widths, offer-

ing size options for a wide range of specifications. Each box can accept either a top or bottom power feed which, along with a reversible bus stack, eliminates costly rewiring and saves valuable installation time and costs.



Navigating What You Need, Vs. What You Get (cont.)



— Ellen

OK, so when you release-to-ship the fully-assembled power panel weeks later, and it arrives at the job site, how do you handle the physical size and weight of these units? I mean, some of these units weigh-in at 400 pounds, and can top out at 800 to 1,000 pounds.



— Mike

We do look at the size and weight of the panel, at the doorways it has to pass through, and what floor it has to be installed on, especially if the elevator is not yet operational. Sometimes we might bring in a rigging company, or we may pull some breakers and other components to reduce the weight.



— Mark

A 200-400 amp unit can be installed with two guys. Larger than that we might take out the breakers to shed some weight – because four guys during an installation are just a “bunch of feet” in the way.

One-Pallet Shipping, One-Person Handling and Installation



The Entelleon modular concept pre-packages every system element – box, panels, power components, installation parts – into two, compact cartons for shipment on a single pallet to the job site. Once moved to the final location – on pallet or by a person with a hand cart – the full panel is ready for installation by one person.

Palletized boxes containing some of the more expensive or precious-metal components – such as the bus bar or breakers – can also be stored in secure locations to reduce loss, theft or costly delays.

Navigating What You Need, Vs. What You Get (cont.)



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Ellen

Let me go back to the kind of unexpected changes you face when installing the panel interiors. We've been in the electrical panel business for a lot of years – and the biggest SNAFU we hear about from our customers is a mis-spec'd or mis-installed panel with a mismatched top- or bottom-feed. When they install the interiors, they find a top-feed power cable trying to match a bottom-feed box and bus panel.



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Mark

Yes, we may estimate and order a bottom-feed for a main distribution panel but when we do the final installation we might see an overhead feed. We can run the power cable along the side of the panel, but that means we lose space for breaker wiring. It also makes working with the breakers more complicated. It's generally not fixable unless we order a new panel, and that might take three to four weeks. As mentioned, we can move the cable but then we incur costs for materials and time.



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Patrick

It's a common oversight. If, for example, the bottom conduit is damaged – that can happen when the cement is poured for the floor – then we have to go with a top feed.



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Ellen

So what's the job site fix when that happens?



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Patrick

It certainly makes the installation harder. We need to pull a longer cable through the conduit to reach the lugs. It might cost \$200 to re-cable a single box, but that doesn't include the cost labor and delays. There are a lot of job variables that are difficult to predict.

Modular, Reversible Power Bus Is a 5-Minute Fix for a Mismatched Top- or Bottom-Feed Power Feed Headache



With EntellEon's modular design, regardless of the power feed orientation, the power bus panel can be reversed and mounted 180 degrees to accommodate either a top or bottom feed – without significant time or additional costs, and without adding

costly delays or rewiring. With its bolted/plug-in bus connection feature, the bus can be reconfigured in five minutes, with breakers removed and reinstalled in less than an estimated 15 seconds each.

Navigating What You Need, Vs. What You Get (cont.)



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Mark

As mentioned, when we have this problem we either order a new panel - that's 3 to 4 weeks—or we bear the time and expenses, about \$120 per unit, to rewire. And that doesn't include labor. With EntellEon's pluggable, reversible bus bar, fixing a wrong power feed becomes a five-minute fix.



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Mike

We are pleased to see a more modular solution. We particularly like the pluggable breakers because it's a safer option when we have to switch out a breaker. I like the flexibility for different-sized breakers on same panel. We just had a case where a panel needed a different-sized breaker, and with EntellEon I didn't have to replace the panel.



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Ellen

Speaking of EntellEon, you've all had a preview of this new platform. Any initial feedback? How does this pluggable, modular approach work for you in the field?



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Mark

For us it's all about the convenience – like being able to switch the bus. You just snap it out and put it back in. Basically, the EntellEon platform takes the 'Uh Oh' factor out of installation.



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Patrick

We like the fact that it's easy to add or change around breakers later. We used to have to order and use special mounting kits to change breakers, but that's eliminated with EntellEon.

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