

Supply Chain Issues Won't Be Easing Anytime Soon. Time to Analyze Your Critical Spare Parts Before an Emergency Arises



In the pre-pandemic world, a customary (and ill-advised) practice for many facilities was to disregard critical spare parts lists and order replacements for failed parts only as needed. They gambled on being able to locate the parts *somewhere* and were willing to pay extra to have them expedited if need be.

Now, however, with supply chain shortages that aren't expected to ease until at least mid-2022, it seems the chickens are coming home to roost. Manufacturers and suppliers are struggling to accommodate requests for expedited shipment even for their best customers, and many businesses are paying an extremely high price for neglecting to keep an inventory of critical spare parts.



Case in point: two failed rupture discs recently shut down process systems at a northern New Jersey chemical plant. No spares had been kept on hand at the facility and replacements were nowhere to be found. The manufacturer offered two options: either wait 6-8 weeks for new discs to be produced and shipped, or pay an additional fee of \$950 per part to modify a similar pair of in-stock rupture discs to work with the plant's process system. Unable to wait, plant operators opted for the latter and wound up paying more than triple the normal cost. Stories like this have become commonplace and almost entirely preventable had critical spare parts been kept on hand.

Omni's advice to facility operators who can't afford prolonged disruptions, exorbitant expediting fees, or dubious workarounds is this: have facilities personnel scrutinize systems and equipment for single points of failure, compile a critical spare parts list if one doesn't already exist, and order parts that are lacking as soon as possible. These can include starter coils, overloads, VFDs, fuses, temperature and pressure sensors, floats for pumps, terminal blocks, solenoids, UPS batteries, HMIs, valve actuators for limit switches – the list goes on. Most aren't terribly expensive, and many can be found on websites like Amazon or eBay. Consider purchasing used or reconditioned parts from a reputable supplier. While it's possible these parts won't be needed any time soon, you'll certainly find they're worth their weight in gold if you do.

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Safe Practices for Startup and Commissioning



Safety is always paramount on any construction project, but increased diligence during startup and commissioning is crucial. With so many activities happening at once, the possibility of accidents occurring goes up significantly.

Having detailed commissioning and safety plans in place is the first and most important step in ensuring a safe process, followed closely by effective communication. In all likelihood, there will be problems that will require repairs, changes and workarounds, so clearly communicating any departures from the original plan to all parties involved is vital.

Here are some other key elements to ensuring safety during startup and commissioning:

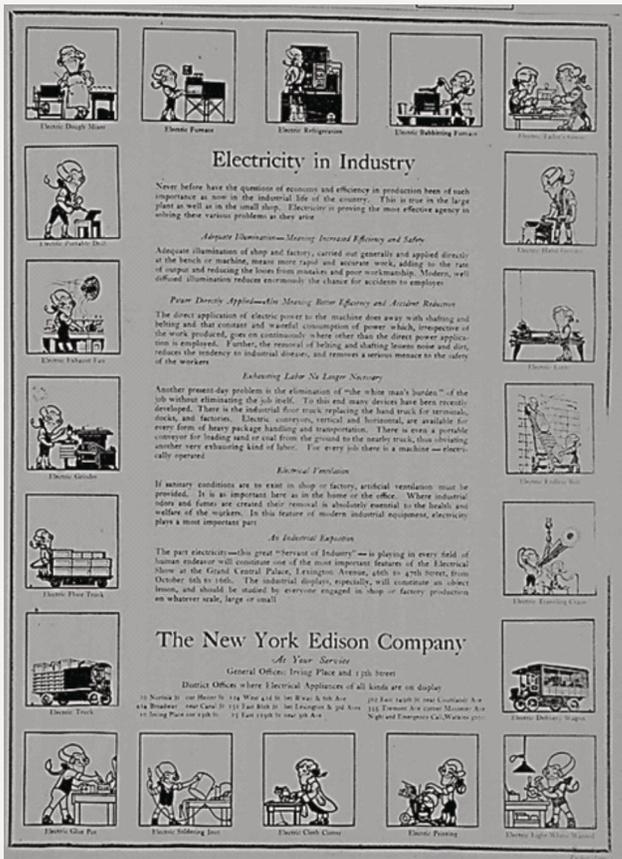
- Conduct safety walkdowns on a daily basis.
- Lockout/tagout must be followed to a “T” for all locking and unlocking of equipment ready for startup.
- Start off each day with an early morning huddle meeting with all lead MEP trade representatives to discuss who will be working on what systems that day, what support will be needed by each trade or vendor, and at what times.
- MEP leads must have constant radio communication to coordinate efforts and inform others of all progress, changes or setbacks to keep everyone safe and on the same page.
- Cross-check between all crews and trades on site to make sure a system is safely ready to go.
- Encourage workers to report any problems, safety issues, or anomalies as they can sometimes crop up in unexpected areas during startup and commissioning
- Trades should meet again at the end of each day to determine whether work should continue on a second shift, or whether new safety procedures need to be put in place before the next morning’s activities.

Tech Talk: Top Five Tips for Selecting VFDs

1. Choose a quality drive from a reputable manufacturer as there are a multitude to select from. For multiple VFDs, try to stick with same manufacturer to make parts management, programming, and troubleshooting easier.
2. Select a VFD that is appropriated for the environment — indoor or outdoor, dry or wet, hot or cold, explosion-proof, etc. — in which it will be used, and verify HP ratings and other parameters prior to purchase.
3. Determine whether variable torque or constant torque is required. Variable torques is, by far, the most common.
4. Manufacturers now recommend using VFD cable rather than THWN/THHN for optimal performance and to support long-term motor life.
5. Install a grounding ring on the motor shaft to eliminate stray voltages that commonly occur in VFDs and can lead to bearing failure.



The New York Tribune 1920: *Electricity in Industry*



I remember the Saturday afternoon in 1984 when my family gathered to watch my older brother unpack the brand-new Commodore 64 he'd been saving up for. Our dad was intrigued by the boxy little computer as it whirred into action, but also a bit puzzled. "Very impressive," he said. "but...I'm still not understanding what we're actually supposed to do with it."

Dad's puzzlement about a technology that's now literally at the fingertips of nearly every human on Earth was much how people felt about electricity back in 1920. Electricity was interesting, certainly, but most business owners didn't recognize its potential or view it as something that was actually needed.

To convince businesses to adopt the new technology, the New York Edison Company published a large [advertisement in the New York Tribune promoting electricity's many benefits](#). According to the ad, among its many uses were lighting shops and factories to prevent accidents, powering machinery to increase output and prevent accidents, powering machinery to increase output and providing artificial ventilation.

The advertisement featured twenty hand-drawn illustrations depicting various electric-powered machines including a portable drill, dough mixer, hand grinder, traveling crane, and cloth cutter. You can read the ad in its entirety [here](#).

TREND LOGGING

Trend logging is a diagnostic method in which building or system parameters are recorded at regular intervals over a specified period of time, usually several days to a week, to help identify the source of efficiency problems. It's commonly used on existing systems as well as on new systems during commissioning when issues commonly occur. Trend logging is inexpensive, effective, and often succinct in the story it tells.

Trend logging can be highly useful when problems arise and a culprit can't be clearly identified through other measures. Charted system data can reveal patterns related to a variety of issues with temperature or humidity, leaks, abnormally high energy costs, improper airflow, devices tripping, equipment shutting down, etc. On the process side, problems with process cooling, heating, pressurization, ramp time, etc., can be pinpointed. Seemingly-isolated blips and anomalies can often be traced to their source with trend logging, as well.

Trend logging is also used to identify potential or existing efficiency issues in mechanical systems, even when they appear to be operating properly. System components meant to save energy such as economizer cycles, occupied/ unoccupied settings, lab airflow and temperature settings, etc., are frequently found to be functioning incorrectly. Oftentimes, trend logging can point to simple adjustments that can significantly and immediately reduce energy consumption, saving energy dollars that were previously being wasted.

