

How to Design a Power System that Saves You **\$4k Per Forklift**



If you're a decision-maker at a manufacturing plant or distribution center, your goals are simple: keep the plant running at maximum capacity, avoid unnecessary disruptions, and get your product shipped in a timely fashion. And if you're like a lot of decision-makers in your same position, then the one thing that is stopping you from fully optimizing your power management system is simple, too.

That one thing is data.

Specifically, the data that come from initial assessments and real-time monitoring.

Unless an innovative tech person is in place, most companies don't consider how their forklift power is set up. Or, their talented engineers/technologists are focused elsewhere. It's working, and that's enough.

The dominant "operational" approach most companies use is passive (aka static) forklift power management. Power is as an afterthought. No data within the design, installation or maintenance. These systems work well the first year and maybe even into the second. Then efficiency drops dramatically. Why?



Your forklift power shouldn't just be operational; it should be optimized.

"Operational" means that the job gets done. "Optimized" means a system is in place that results in the most facility uptime at the lowest costs.

The journey from operational forklift power to optimized forklift power starts and ends with the right data. But if you aren't sure yet that it's worth prioritizing, let's start with some very specific data -- specifically, cost-saving data.

Typical forklift acquisition costs equate to less than 30 percent of the <u>total cost of ownership</u> for a twoto three-shift operation, which means that power management is a significant portion of total costs.

Most importantly, passive power systems typically create about \$4,000 of hidden costs per forklift. That's the equivalent of \$45,000 - \$125,000 of lost revenue.

To explain the need for data-driven power management and how to incorporate it at your company, we'll start by addressing these five questions:

- 1. What is a power management system?
- 2. Why does a company's approach to power management matter?
- 3. What are the key considerations for power management?
- 4. What are the components of the Concentric power management process?
- 5. What measurements/metrics does Concentric use?

We cover the answers to each of those questions below – so if you want to understand how to incorporate data-driven power management decisions to improve your bottom line, read on.





What is a Forklift Power Management System?

To be clear, all companies with forklifts, chargers and batteries in place use a power management system of some kind. It just may be accidental, rather than intentional. Many companies lack a systematic, intentional approach to power management based on historic and real-time data. That's a key difference. Just because it works doesn't mean it's optimized.

A power management system consists of four things: an energy source, a charging source, a power management platform and a maintenance/engineering team. The best systems have these elements work together seamlessly in real time to achieve the highest level of uptime at the lowest cost of total ownership.



An energy source can refer to lead acid, lithium, thin plate pure lead, or hydrogen fuel cells. While a charging source refers to the type of power (and any chargers) required to refuel the battery.

A power management platform starts with data collection and uses a combination of technology, ideally,wifi, cellular or Bluetooth to collect it in real-time. This data then can go through a set of business rules, algorithms and Al/machine learning to provide insights and actions, as well as a dashboard to communicate to the maintenance team the health of the overall system. Those real-time data grabs should collect information ranging from amp hours, temperature and discharge rate. All of this data should communicate actions to your charging system as well as your maintenance team so you can not only maintain your batteries properly, but also adjust the power system to optimize equipment for longer life or higher charge rates, etc., during peak periods.

Finally, the best power systems are not set it and forget it. They intertwine with maintenance and engineering teams that utilize a structured approach to watering, PMs, safety improvements, power (charging) optimization, battery rotation, etc, to ensure lifespan and deliver on the same uptime requirements at the same pace from Day 1 through years 4 and 5.



Why Does Your Approach to Power Management Matter?

This may surprise you: your approach to power management matters because your approach to choosing a truck no longer delivers the same level of cost savings it once did.

For many years, distribution and manufacturing leaders focused heavily on their forklift choices, and the best brands were far above the rest. Today, the reality is that the top forklift brands are all quality. There isn't a wrong choice per se. When it comes to options among top brands, buyers aren't looking at real cost-saving advantages, but rather, "Do I want to work with the red team, black team, or gray team?" So when thinking about how to truly improve material handling and power, it's important to remember when it comes to supply, the market is on equal footing

Successful teams realize this and act on it. Only now do you see innovation when power management accounts for half of material handling costs. Power isn't standalone like a forklift, but dynamic with many moving parts, and an effective power management system reflects this.

To be truly competitive, take a deep look at your forklift and AGV power systems. Real cost reduction and competitive advantage lies in power management.

In other words, power doesn't just drive your forklifts and AGVs; power management, and how you approach it, drives your entire business.





What Are the Key Considerations for Changing Your Power Management Approach?

Companies change their power management approach for many reasons not solely financial. In fact, there are some considerations that lead companies to realize passive power management costs them in other realms of business. These three key considerations deal with operational efficiency, lowest cost of ownership, and environmental impact/safety.

What are the main things you want to consider when thinking about a conversion to active power management? Here are questions to ask:

- 1. Automated material handling management Are we currently using real-time data to automatically maximize our facility's uptime and manage our fleet maintenance?
- 2. Cost optimization Does my company truly understand the total cost of ownership for each forklift in our fleet?
- 3. Safer and more environmentally friendly Can a more efficient, data-driven approach to power management reduce our company's carbon footprint and give us a safer workplace environment?

If the answer to all of those questions isn't "yes," it's time to reconsider your forklift power strategy.

When it comes to environmental impact or safety, it's important to remember this, too: while customers cite all three considerations as important, most companies tend to prioritize considerations #1 and #2: improving operational efficiency and lowering cost of ownership. Environmental impact and safety are important to these customers, but they aren't always top priority. But remember this: lowering environmental impact can also reduce costs.

As just one example: if you utilize a power management system to decrease your lead acid footprint, then the first thing you've done is decrease your environmental impact, and make a smaller carbon footprint. Smaller carbon footprints almost always result in improved workplace safety, which is why lead acid reduction typically results in lower insurance costs and higher scorecard marks.





What's the Best Process to Design an Effective and Cost-efficient Power System?

If you've asked yourself the questions we laid out and know your company could be doing better, it's time to consider next steps. Here's how we recommend approaching a power management transformation:

1. Start with a Material Handling Operational and Power Assessment: At this stage of the process, conduct an intensive study to truly understand your applications, assets and issues. At Concentric, our assessments last a month to ensure they are comprehensive enough.

- 2. Prioritize Your Needs: Don't tackle everything at once if you don't have the bandwidth. Once you understand the issues holding you back, you can take simple actions with big payoffs, like swapping out old and inefficient chargers. Other ideas are: focus on changing out one application's power system equipment at a time starting with the most problematic, or adding a datadriven maintenance program and remote monitoring. Get on track with an initial change that delivers a quick win that creates momentum for bigger changes.
- **3.** Build a Roadmap: Once you have your priorities set, lay out a timeframe to phase in all the changes you'd like to see over several years. Build consensus with other key leaders across engineering, operations, finance, procurement, etc.
- **4. Implement the First Part of the Roadmap:** After creating a solution, plan for implementation with minimal disruption. Make the changes you've planned on.



5. Measure and Optimize: This part is key and often neglected. Remember that assessment you did? That's your baseline. Once you implement changes, it's essential to continue to measure and tweak anything that's not quite right or could be better. A forklift power system is going to evolve based on the way your company operates. While the assessment will predict much of that, you can't just "set it and forget it" (or be passive) for the next few years.



How is Concentric's Approach Different?

Other companies approach power equipment in this order: they choose the forklift equipment, the forklift dealer chooses a battery based on assumed hours per year, and then finally select a charger.

Concentric works differently and starts with operational data or assessment. That's how we find out what a customer's actual needs are. This data is then used to deliver a tailored solution for the customer. Only then are equipment decisions made. Too many companies make equipment decisions by saying, essentially, "Here is the kind of truck I have, and here's the biggest (or most inexpensive) battery that will fit." This approach gets the job done at a basic level, but it does not optimize the power needed for today's application—or provide flexibility for changes tomorrow. Concentric's approach is specific: it doesn't use just any battery that fits. But the specific battery that matches the specific requirements of the specific solution engineered to meet the customer's specific needs and wants.



Concentric also differentiates itself through its patented power management system, RAAMS[®], used to collect, normalize and analyze data. As well as make automated decisions, improve service and charging profiles for the battery, charger, accessories and forklift. Metrics include: how often the customer plugs up, how often they discharge past where they should be, how often they equalize (without appropriate equalization, forklift batteries slowly die), the average amp draw, peak amp draw, overall usage, and much more.



Concentric shares data as often or as rarely as you wish. During the assessment stage, you will determine how involved you want to be in managing your equipment. Some customers want to be updated every two months; others every six months. While some know that Concentric will handle the process and prefer to not be updated unless a decision is required. No matter where you fall on that spectrum, Concentric always has real-time data available to share at any moment.

When Concentric signs a customer to a guaranteed power contract, there's a guarantee that the power will work—over the 4-to-6 year term! That's why Concentric takes the real-time data and power management of RAAMS[®] so seriously.

In the end, effective, data-driven power management increases uptime and lowers costs. With the right system in place, you can optimize your power management system based on data.

Want to learn more? Find out all the benefits Concentric offers.

Concerned about your current power equipment and maintenance approach? Schedule a planned maintenance program today!