



NOVEMBER 27, 2017 | Heidi Vella

## 6 Problems Keeping Power Plant Managers up at Night and How to Solve Them

*Power plant management challenges can keep you from getting a restful night, unless you know how to tackle them.*

There are many power plant management challenges that, if not adequately prepared for, keep plant leadership up at night. Here's a look at which issues are the most common and how plant managers can solve them.

### 1. Balancing Baseload Power and Renewables

One of the challenges faced by power plant managers is balancing baseload power with intermittent renewables. In some regions, such as heavily renewables-focused South Australia, this has resulted in coal-fired power plants dropping out of the sector at an alarming rate, creating an insecure energy supply.

Power plant managers can help mitigate this problem by ensuring their plant has a high level of flexibility and agility, including a high ramp rate, fast start-up and shutdown capabilities, and the ability to operate at lower loads. This way, the plant can better adapt to varying demand.

Fortunately, there are now many internet of things-based software solutions that can use sensor data to help operators better understand how their plant works, to create savings and manage assets more efficiently. Such solutions include digital twin technology and other network management platforms.

These solutions can increase a plant's operational efficiency by up to 10 percent, enable predictive maintenance, and generally allow leadership to identify where improvements can be made, so the plant can better take advantage of new revenue opportunities when they arise.

### 2. Disruptive Technologies

Like many other sectors, the energy industry is being disrupted by new technologies—as is the business model of incumbent suppliers. Renewables, an increase in decentralized energy supply, cheap shale gas, large-scale and in-home energy storage, and demand-side response are all impacting the sector.

This can cause leadership to worry about staying ahead of the curve to keep their business relevant. Plant managers should consider partnering with new energy startups and remain open to adopting new technologies, while always increasing their plant's flexibility, so it can be more agile in times of change.

To achieve this, utilities in the UK and elsewhere are deploying smart meters and using the data to better predict future demand models. In California, PJM Interconnection is working with AES Energy Storage to balance supply and demand.

### 3. Recruiting and Retaining Staff in a Competitive Environment

Every year, one of the most crucial power plant management challenges is recruiting the best millennial talent to the sector. How do you attract a new generation to an industry that has a less-than-modern image—especially with growing competition from a myriad of newer energy and technology companies?

Traditionally, millennials—the next workforce generation—have been a hard group for employers to hire and retain, because they want different things from previous generations.

Millennials want access to innovative technology, which they work best with; training opportunities; one-on-one mentoring; and regular feedback. Not shying away from new technology, embracing the

digital plant transformation, and proactively managing staff are the best ways to compete with the likes of Google, Facebook, and other energy companies, such as BP and Shell, to hire and retain the next workforce generation.

### 4. Health and Safety of Staff

Keeping a healthy and safe workforce and working environment is always a priority for plant managers, who are ultimately responsible for any major problems that may occur.

The biggest threat to safety is complacency. Fortunately, there are new ways to make health and safety training better and more engaging. Virtual reality training systems are one way. Virtual reality offers a hands-on training experience by simulating realistic and hazardous situations in the power plant without needing to go through the arduous task of gaining security clearance and completing rigorous safety trainings. French 3D designer Kevin Dubray is helping develop 3D representations of steam turbines that spin generators inside nuclear power plants in France.

Other safety innovations include wearable technology for remote communication, so assistance from experts is always available, as well as data-driven fault detection, which uses real-time utility data to simulate problems.

### 5. Cybersecurity

Nowadays, every sector worries about cybersecurity, but for power plant managers in charge of costly and critical assets, the concern is heightened.

Cyberattacks in the energy industry are becoming more common and, as some major incidences have shown, the impacts can be both costly and hugely disruptive. For example, when the Pivnichna substation in Kiev, Ukraine, was besieged by a spear-phishing attack in December 2016, the city experienced a widespread blackout that affected 230,000 people for around an hour.

GE offers operational technology services and products that help customers design, test, certify, and secure their internet-connected devices, networks, and control systems.

### 6. Increasing Environmental Regulations

In most nation states, environmental regulations limiting emissions are increasing. This will most likely drive investment in utility-scale renewables, energy storage, and other clean energy initiatives.

Such developments can pose a threat to traditional coal or nuclear power plant operators and even gas-fired power plants, particularly as they may prompt a move to a more decentralized energy supply, such as rooftop solar.

To compete in such an environment, power plant operators can turn to technology, whether software or hardware, to lower costs. For example, post-combustion CO2 capture technology can be retrofitted to coal plants to reduce their emissions. Furthermore, the EU Framework Programme for Research and Innovation is working on developing new precombustion technologies that could lead to significant CO2 reductions from fossil-fueled power plants by 2020 and reduce the carbon capture costs.

Other ways to lower emissions include adopting predictive maintenance technology to improve the plant's overall efficiency and upgrading aging hardware.

The power sector is facing new and increasing challenges, like many other sectors, but it is also finding more innovative ways to overcome these hurdles. The security of supply provided by baseload power plants will be needed for the foreseeable future, but the most flexible plants will win the highest spots in the dispatch order. Overall, shoring up operations through digitization can help plant managers not only increase flexibility, but also win talent, prevent future threats, and—hopefully—rest easy at night.