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How do you prevent single point of failures in your Power Equipment Center?

Apply a predictive maintenance approach to mitigate risk and unplanned downtime due to PEC failures

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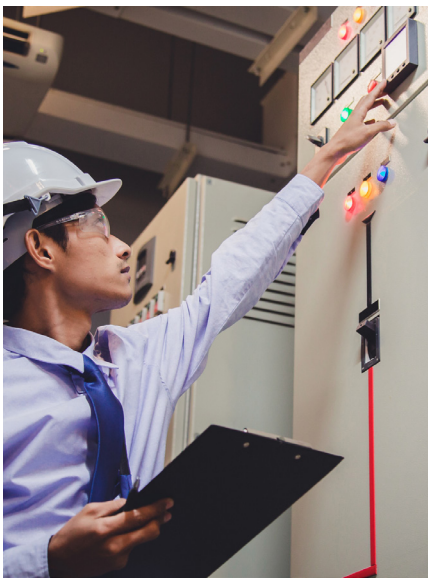


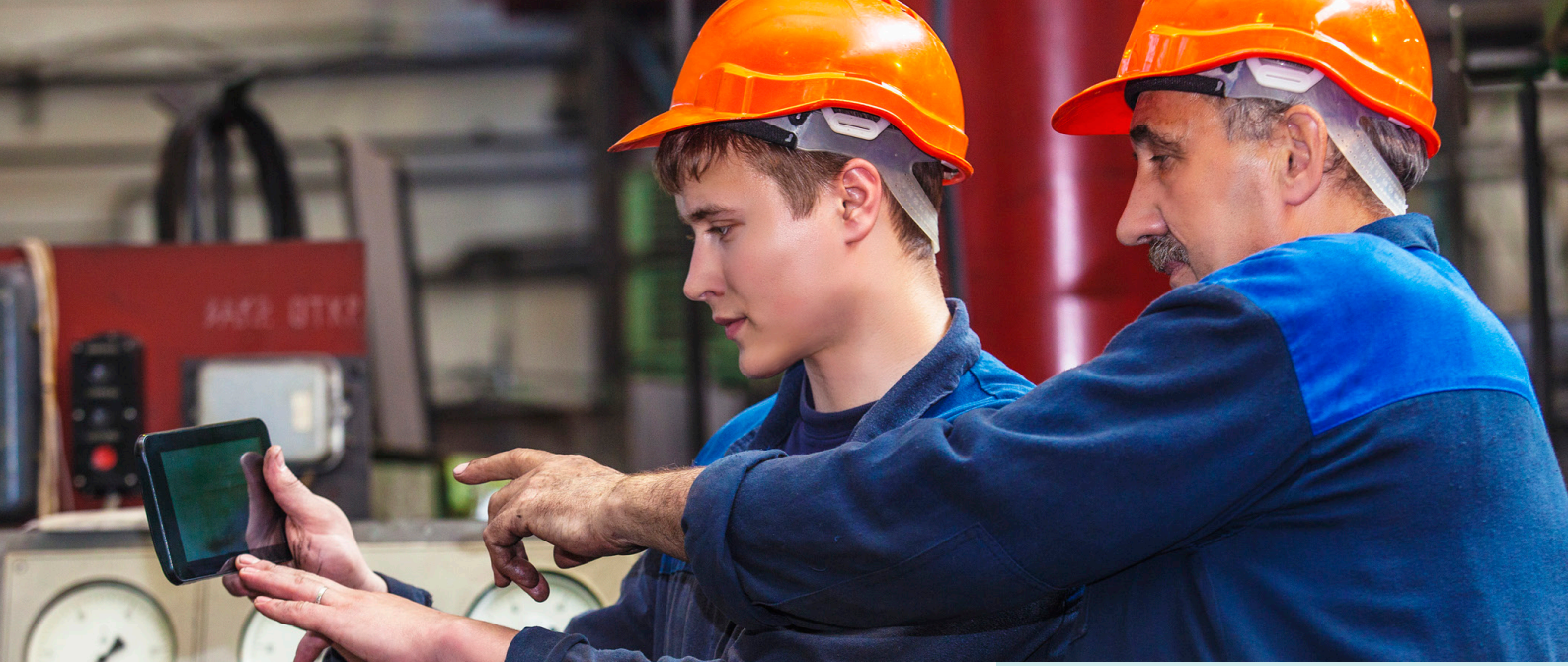
Engineer checks voltage in control panel.

Whether you call them Power Equipment Centers (PECs), e-Houses (electrical houses), portable distribution units or by any other name—their benefits continue to rank high in the oil, gas and petrochemical (OGAP) market. PECs come customized, pre-fabricated and pre-tested before they arrive on a site for final deployment. This results in reduced planning, construction and on-site installation work, in addition to cost savings, flexibility and ease-of-installation. With such benefits, it comes as no surprise that the global e-House market is forecasted to grow to USD $1.51 billion by 2023 (up from USD $1.09 billion in 2018).[1]

But not all PECs are created equal.

Consider this scenario. From a central exploration and production site, there are dual oil and natural gas pipelines that stretch 1,000 miles long, with numerous intermediate pumping, power and compressor stations that end at a liquefied natural gas (LNG) terminal and/or an oil refinery. And many of these pumping and compressor stations, and LNG terminals can have PECs, all which range in size—averaging approximately 20 wells per PEC and about 1,600 sq. ft. in the U.S. Some PECs have manpower to secure and maintain them, while others are remote and do not. Suddenly, an unforeseen risk occurs at one of these unmanned PECs, causing it to go down, and consequently, causing failure to numerous compressor stations along that pipeline. The result? Millions of dollars lost per minute of downtime, lost revenue due to lack of gas supply and transport from these compressor stations to key customers downstream, and risk to the integrity of the pipeline.

What if you could mitigate PEC failures and unplanned downtime with a predictive maintenance approach that goes beyond alerts, fault conditions or standby units?



Understanding PEC needs

In today's oil and gas industry, not only does PEC design need to be even more compact and modular, but a more integrated, bundled package of controls will be needed to protect and maintain the numerous electrical components inside a PEC.

Such components can include:

- Low- and medium-voltage switchgear
- High-voltage gas-insulated switchgear (GIS)
- Low- and medium-voltage motor control centers
- Protective relay panels
- Remote terminal units
- Instrument control panels
- Heat trace panels
- Uninterruptible power supply (UPS) systems
- SCADA systems
- Analytics monitoring
- Fire & life safety solutions

Additionally, more compact design and greater integration will create demand for a more proactive approach in today's recovering oil and gas market. Many companies will increasingly turn from a reactive approach—taken as a means to reduce costs.

Would one PEC failure or downtime incident be enough for you to rethink going from a preventive to predictive maintenance approach?

Why a proactive approach to PECs now?

The 2014 downturn of the oil & gas industry forced many companies to do more with less. Reducing costs, delaying capital expenditures (CAPEX) and taking a reactive approach to equipment maintenance were just a few of the ways exploration and production (E&P) companies took to remain competitive.

But stronger oil prices, as well as forecasted drilling growth and oil & gas exploration and production in the U.S., leave opportunity for companies to reassess aging equipment for improved equipment reliability, uptime and optimal PEC performance, and adopt a proactive maintenance approach going forward.

Your challenges

As a Power Equipment Center (PEC) manager or engineer, you're tasked with a variety of challenges:

- Limited space
- Maximizing uptime of electrical equipment
- Analyzing structural design
- Ensuring fabrication and design compliance
- Various liability depending on rate of occupied or unoccupied PECs
- Regulatory pressures
- Monitoring and servicing remote assets
- Equipment modularity and mobility
- Maintaining security of remote PEC facilities

***In fact, industry reports show that predictive maintenance can reduce the time required to plan maintenance by* 20–50%,**

increase equipment uptime and availability by* 10–20%,** ***and reduce overall maintenance costs by 5–10 percent.[2]

How we can help

Services

There is no "one size fits all" solution when it comes to maintaining or lowering your operating costs. But through a value-based approach to service, Siemens can help you plan for your organization's maintenance needs over the entire lifecycle of your Power Equipment Center.

Our strategic planning services can help you:

- Manage system operation and compliance
- Optimize performance and productivity
- Meet your operational and environmental sustainability goals
- Better manage energy in your PEC
- Reduce costs
- Avoid unscheduled downtime with preventive maintenance

Service capabilities we offer include:

- Testing, inspection and maintenance
- Repair and maintenance
- Energy monitoring and reporting
- Benchmark reporting
- Energy budgeting and forecasting
- LEED requirements planning

Startup and commissioning services from Siemens will provide you with proven expertise to verify that your power distribution system and electrical components conform to design specifications and confirm the integrity and calibration of all system components. Our local and remote support ensures we stay with you every step of the way through all phases of the project—from engineering to installation and commissioning.

Power Distribution

In addition to our preventive service maintenance capabilities, our approach to power monitoring and energy management can help you analyze, identify and correct power issues before they become critical. We understand that maximum uptime and reliability are key factors for your high performance PEC and can provide a turn-key, sole source re-sponsibility PEC solution to fit your needs.

Through our various power distribution offerings and industrial capabilities, we can help you prevent expensive power interruptions, equipment breakdowns and start-up costs—and instead increase energy efficiency and reliability of your PEC.

Fire detection foundation to prevent PEC downtime and interruption

With Desigo Fire Safety Modular, you can benefit from:

- A complete solution for early detection, alarm and suppression
- Very early warning fire detection with highly sensitive ASA technology™ detection that meets applicable NFPA and UL standards
- The power of FireFinder XLS fire panels, detection technologies and management stations. (note: Desigo Fire Safety Modular is fully backward compatible with MP12 of XLS)
- Sinorix™ fire suppression that protects mission critical areas and prevents collateral damage

Additional benefits

By using our complete services and solutions for your PEC, you can benefit from an integrated approach that is custom-tailored to your application, and ensures you remain industry compliant.

To ensure safe operation, we also can equip PECs with fire and smoke detection systems, fire suppression systems, emergency exits, and access control. A heating, ventilation and air conditioning system (HVAC) for smooth and efficient operation at high ambient air temperatures can be installed on the roof, inside or outside of any PEC. Air filtration, gas detection and pressurization systems can be added as well.

Achievable results:

- CAPEX reduction as a result of entire system integration
- Increased profitability due to lower OPEX through single-source, system integration
- Lowering of cost of conformation to government, compliance and regulations
- Stronger company reputation as a result of environmentally responsible actions
- Safer environment for employees and surrounding population
- Increased value for shareholders due to strategic business sustainability and growth model, resulting in possible shareholder investment

References

1. ReportBuyer Ltd., "E-House Market by Type, Application and Utilities) and Region - Global Forecast to 2023" Jan. 2018

2. Deloitte, "Making maintenance smarter," May 2011

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