

Fluke remote monitoring empowers energy analyst-solar systems contractor

Name: Ken Dodds, Owner and Energy Analyst

Company: NuEra Energy Designs

Tools: Fluke 3540 FC Three-Phase Power Monitor, Fluke Connect® app and software, Fluke Condition Monitoring software subscription

Key benefits: Remotely track equipment performance.
Know when issues happen.
Monitor 3-phase equipment to get to root cause.

NuEra Energy Designs is a Southern California based contracting firm that works with industrial and commercial businesses to improve their energy efficiency and to find ways to save money, typically by designing and installing solar systems and associated electrical equipment. NuEra's work starts with load studies as well as extensive evaluation of building power systems and equipment, all to recommend changes and upgrades based on energy consumption patterns. Then, if appropriate, solar solutions as well as backup and demand control systems are designed and built based on those studies.

A key selling point of NuEra services to customers is an often near-immediate return on investment—in services and upgrade costs—by substantially reducing energy bills and the potential receipt of energy credits, tax credits and depreciation. In some cases, the installation of solar systems as well as electrical upgrades even brings in net revenue for clients who are putting power back into the energy grid.

Contractor and problem solver

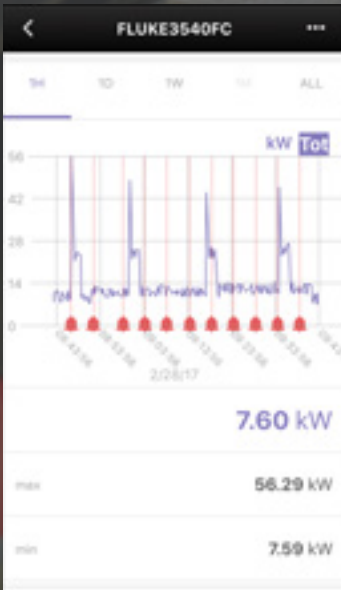
Ken Dodds, the company owner and chief energy analyst, has established himself over the years as an electronics and electricity problem solver. He became a contractor licensed in California in the 1970s. His early projects were bringing power to remote ranches and other installations in the Mojave Desert, where it can be cost prohibitive to run traditional electrical lines. He has designed and built portable and off-the-grid solar systems to run well pumps and power ranch homes as well as bring street lights to remote military bases, complete with battery or multi generator backup systems.

Though he started NuEra in Arizona more than six years ago, Dodds does the bulk of his business in California where the high cost of power helps makes solar systems an extremely viable option for commercial customers. Add in energy savings through lighting, HVAC and other electrical upgrades and the cost savings becomes substantial.

“One manufacturing facility customer went from paying what would be \$23,000 per year at today's rates for energy, (their old rate was a bit less) to getting \$90 in return from the utility less than two years later,” Dodds says.



“The convenience of monitoring energy consumption from anywhere is huge. ... I can use it if in the car, when I'm on a roof, or in the office or at the coffee shop or at home, wherever.”



Power monitoring and documenting with Fluke 3540 FC

In order to more efficiently document studies and identify such savings for customers, Dodds is using the Fluke 3540 FC Three-Phase Power Monitor to monitor three phase system at his client’s plants. The new monitor takes power analysis and logging to a new level by putting the data stream onto data servers. Dodds is able to read and analyze these power measurements remotely, depending on the configuration:

- Current (A)
- Voltage (V)
- Frequency (Hz)
- Power (W)
- Apparent power (VA)
- Non-active power (var)
- Power factor (PF)
- Total harmonic distortion voltage (%)
- Total harmonic distortion current (%)
- Harmonic content current (A)

The data is streamed from the Fluke 3540 FC to secure cloud servers where the measurements can be analyzed via the Fluke

Connect mobile app or the Fluke Condition Monitoring desktop software. Graphs show trends and fluctuations during the monitoring period. Dodds sets up alarming to show him when the power is outside certain thresholds.

Monitoring the Fluke 3540 FC data gives Dodds a signature of the building, from the main feeders and on into critical pieces of equipment.

“First, it lets us know where to best to attack the building to make changes, or see if we can fix something, upfront” he says. “We look at kilowatts, we monitor the voltage, we look at use times. We can tell if the loading is off on different legs of the three phase, important because if it’s not uniform, you’re going to have issues.”

Reliable data is easy to share

The data is useful to a wide range of workers.

“The power monitoring system not only educates our electricians to a problem,” Dodds says, “if I’m worried about a motor or another big expensive piece

of equipment, I can see trend graphs on what’s happening with the machine on my tablet or phone”

Dodds connected a Fluke 3540 FC at one manufacturing plant recently so he could watch in real time the power going into the building as well as the power going back to the grid from the solar system.

“This is really valuable to me, especially for knowing what happened to the power I sent back to the utility. That is what they are paying my customer for so it’s verifying that,” he says. “If my data shows I’m sending 15 kw and the utility only shows 5 kw, I can question that and we can figure what’s going on.”

Discovered compressor kicking on

Recently, while monitoring with the Fluke 3540 FC he was able to identify energy waste.

“I discovered the other day a compressor was kicking on in the middle of the night. I called the building supervisor to see if anyone was working at that



time. He said 'no,' and so we knew having the compressor on was a waste of money. You are paying for air to go leak around the plant. So these are some of the types of savings we find."

The Fluke 3540 FC also provides power factor, a measure of real and apparent power, which can be a reason for the demand charges being high. When Dodds found out the Fluke 3540 FC can calculate power factor he said, "holy cow this is awesome."

"The convenience of monitoring energy consumption from anywhere is huge," Dodds says.

"I can use it if in the car, when I'm on a roof, or in the office or at the coffee shop or at home, wherever. My phone goes whoop whoop, when an alarm goes off, I check and I know what an asset is doing. It only takes a second to look at and read it. Anywhere you can answer a text or send an e-mail. It's really cool and it's getting better. It's exciting to see it develop," Dodds says.

FLUKE®



What is Fluke Condition Monitoring?

Fluke Condition Monitoring gives you the complete performance picture on any asset in your plant. Access continuous real-time data from your desktop or handheld device. Track events—including troublesome intermittent conditions—and issues alarms triggered by your preset thresholds to help avoid unplanned downtime. The system captures a complete data log of measurements, so you can measure the history of equipment performance before, during and after an event. No costly retrofits required. You can be monitoring in minutes.