If It Worked When It Was Built, Why Doesn't It Work Now?

Oct 21, 2026 · *joeshaner@live.com* *or* joe@nahle.org if you want emails regarding this article at. A separate email.

A corporate chief engineer on why the most valuable tool in our trade is a simple question, and how it turned a $1.5 million proposal into a $40,000 fix.

Not long ago I was asked to look at a hotel where the guest room fan coil units would not heat. A consultant had already been through the building. His recommendation was to replace every fan coil unit, install electric heat coils with more BTUs, and upgrade the electrical service to carry the new load. The price was about $1.5 million.

I read the proposal, looked at the equipment, and said the first thing that came to mind: if it worked when the hotel was built, why doesn't it work now?

That question has saved the hotels I support more money than any tool in my truck. I want to explain why every engineer, from the line technician to the corporate office, should be asking it.

How I Got Here

My career did not start in a boiler room. In the mid-1990s I worked in business development and operations for a venture capital firm in New York. I handled strategic planning, P&L reviews, contract negotiations and hiring. It taught me to read a budget the way an owner does, and that lesson has followed me into every mechanical room since.

In 2000 I moved into building services with a national retailer, first as a building services supervisor and then as an assistant district supervisor. I ran preventive maintenance programs across multiple stores and worked on HVAC, refrigeration, fire suppression, forklifts and lift equipment. I also managed outside vendors and janitorial services, and traveled with my supervisor on special projects in the Florida district.

After that I ran my own construction company building houses, which gave me a builder's view of how structures go together. I then managed building services for a department store, overseeing vendors, janitorial services, purchasing and the facilities budget.

In 2010 I joined a private school campus as its building maintenance engineer and was promoted to manager of operations. I was responsible for multiple buildings and every trade: electrical, plumbing, HVAC, carpentry, masonry, grounds and snow removal. I scheduled sprinkler, fire alarm and backflow inspections, worked with the fire marshal, and brought in computerized work-order tracking so nothing fell through the cracks.

Into Hotels

I earned my National Association of Hotel & Lodging Engineers' (NAHLE) Certified Chief Engineer (CCE) designation ~~certification from~~ before I ever walked into a hotel engineering office. In 2017 I became chief engineer for two hotels at once. The most important thing I learned there was to look past

maintenance and upkeep. I learned to see each building the way the owner, the brand and the guest see it, and ~~that~~ this changes the goal of everything an engineering department does.

A year later I was offered a chief engineer position at another hotel with a different management company, and I took it. By doing HVAC repairs in-house instead of calling outside vendors, I saved the hotel over $40,000 in my first year. We kept room availability at 99.994 percent. Before long I was consulting on problems at several of the company's other hotels, showing them options that fixed the issue without spending more than needed. By the end of my time there, they were asking me to travel to those hotels to train their chief engineers and bring the buildings back to brand standards.

Then COVID hit. My hotel, a 140-room property that had not been renovated in ten years, went into mediation and back to the bank, along with many of the company's other hotels. My staff went from five engineers to one: me.

When new ownership and a new management company took over, they expected a building in trouble. Instead, they found a hotel in better condition than the others they had acquired. My dedication and knowledge of that building paid off. They told me that because it was in much better shape than the other hotels they had acquired, it would not need a PIP (property improvement plan) or a renovation any time soon.

Because the building was in such good shape, and because I knew it inside and out, the new company asked me to consult and travel to the other hotels in its portfolio. On my own initiative, I wrote a condition report on each building and its engineering department, with the problems I found and how to fix them. Some of those problems had stumped vendors and consultants for weeks or months. I was usually able to find a practical solution within an hour of investigating. Most importantly, when the hotels implemented them, they worked, and on average they cost about 70 percent less than what other vendors had originally quoted.

Becoming a Corporate Chief Engineer

In time I decided to leave New York and move to Florida. The company had no hotels where I was going, so I assumed my time with them was coming to an end.

Around then I noticed an opening for a taskforce chief engineer. I didn't apply. The corporate office was in another state, and I had no plans to relocate there. When I mentioned this to my regional vice president, he told me where I lived didn't matter for that role. Wherever I lived would be my home base. That changed everything, so I applied.

My interview was with the company's vice president. I didn't go in to talk about fixing boilers or chasing work orders. I told him what I wanted: a position where I could set engineering standards for the hotels, monitor how each property performed against them, and consult on the problems property teams couldn't solve on their own.

His answer was that this was exactly what he was looking for. Everything I had done up to that point, from the retail districts to the school campus to the hotels I had traveled to, had prepared me for that conversation.

Hiring decisions take time, and my move would not wait. While I waited for an answer, I relocated to Florida and took a position as a regional chief engineer with another company.

Then my previous company contacted me and asked me to come back. I said yes. Being asked back by people who had already seen my work, through COVID, the ownership change and the hotels I had visited for them, meant a great deal to me.

When I returned, I was overseeing more than 100 hotels. That was more than one person could support well, so I was asked to train a counterpart to take half of them, and I did. Today we each support about 70 hotels across several major brands and independent properties, from select-service hotels to resorts.

The Fan Coil Case

Back to the hotel with the cold rooms. The building opened in 1986, and its fan coil units heated those rooms for decades. Nothing about the rooms, the climate or the guests had changed enough to make the original equipment suddenly too small. So the equipment was not the problem. Something in the system had changed.

I pulled the unit information and went back to how the system was designed to work. Within about 20 minutes, the answer was clear. The diverting valves in the fan coil units were no longer doing their job, so the units could not deliver heat the way they were designed to. The coils were fine. The electrical service was fine. The valves were not.

I told the hotel not to move forward with the replacement. Instead, I recommended replacing the valves to match the original design, at a total cost of about $40,000.

Ownership was understandably cautious. A consultant had told them one thing, and I was telling them another. So we did not ask them to take my word for it. We ran a test on ten units first. All ten performed perfectly. With that proof in hand, the decision was easy.

	Consultant's proposal	Engineering recommendation
Scope	Replace all fan coil units, larger electric heat coils, electrical upgrade	Replace diverting valves to match the original design
Cost	About $1.5 million	About $40,000
Proof before spending	None	10-unit pilot, all passed

Lessons for Fellow Engineers

Start with the original design. If a system performed when the building opened, it was sized correctly. Before you accept a proposal to make it bigger or replace it, find out what changed: a failed component, a control setting, a modification someone made years ago.

Don't take a vendor's or consultant's word as the final answer. One of the biggest mistakes in our industry is believing what vendors and consultants tell us without checking it. Most of them are honest,

but their answer is often the biggest job, not the right one. Treat their proposal as a starting point. Read the scope line by line, check the math, and ask what problem each item actually solves.

Prove it small before you spend big. A pilot on a handful of rooms costs little and answers the question for good. It also gives ownership something better than an opinion. It gives them results.

Speak the owner's language. When you bring a recommendation, put the dollars side by side: what they were told it would cost, what you recommend, and how you will prove it works. Owners approve faster when the comparison is clear.

Supporting 70 Hotels at Once

Here is how I keep a portfolio of about 70 hotels running from a home base in Florida.

Build your own tools. I created simple mobile and web apps so hotels can report issues and project status every month, and so I can run property assessments on my phone when I visit. Instead of chasing updates, I can see every hotel's open projects in one place and focus my time where the risk is highest.

Stay in contact. I talk with my chief engineers several times a month. Many problems get solved on a phone call before they ever turn into a capital request.

Audit housekeeping, too. I noticed that guest service scores combine housekeeping and maintenance into one result. A dirty vent or a stained ceiling tile hurts the engineering score as much as a broken PTAC. So I added housekeeping to my audits when I visit a property. The guest doesn't care which department owns the problem, and neither should we.

Continuing Education and Time Management

Supporting 70 hotels is a huge task. It would not be possible if I had stopped learning, and it would not be possible if I didn't manage my time carefully.

Continuing education. I earned my chief engineer certification (CCE) before I ever worked in a hotel, and I have never stopped adding to it. Over the years I have earned certifications in EPA 608 refrigerant handling, R-410A, green HVAC/R, preventive maintenance, indoor air quality, OSHA 30, mold remediation, and pool and spa operation. My chief engineer coursework covered everything from Legionella risk mitigation and PTAC units to elevators, fire and life safety, and building construction. Every one of those topics has come up at a hotel I support.

Education is what gives you the confidence to challenge a proposal. The engineer who stops learning has to rely on someone else's answer, and that is how a $40,000 problem becomes a $1.5 million one. Learning also means learning the tools. I learned everything I could about the technology available to me, which is how I was able to build the apps and reports I use every day.

Time management. When you are responsible for 70 buildings, everything feels urgent. I track my hours by property every month and log my calls; in one month alone, I logged more than 250 calls with property teams. That record shows me where my time is actually going and which hotels need more of it.

I also prioritize by risk. Life safety comes first, then anything that can take rooms or a whole building out of service, and then everything else. A list ranked that way tells me where to be next, and it tells owners why.

The only way to be successful in this role is time management, a continued thirst for knowledge, and using the tools available. Take away any one of the three, and the job can't be done.

One Question Worth Asking

The fan coil case is one example of many, but the lesson behind it applies at every level of our profession. Whether you run one hotel or seventy, you are the person ownership trusts to protect the building and their money. Before you sign off on the next big replacement, ask the question: if it worked when it was built, why doesn't it work now? The answer is usually smaller, and cheaper, than the proposal on your desk.

Joe Shaner is a corporate chief engineer supporting about 70 hotels across major brands and independent properties. He is a NAHLE certified chief engineer and holds EPA 608, OSHA 30 and Certified Pool & Spa Operator credentials. He can be reached at joeshaner@live.com.