

# Green Transformation Requires New Ways of Thinking

Green building is hot, and one of its leading evangelists is Jerry Yudelson, P.E. The founder of green-building consultancy Yudelson Associates in Tucson, Arizona, and author of the recently released *Green Building A to Z* shared his ideas with PE about the professional engineer's role in going green.

**PE: Why should PEs be interested in green building?**

**Yudelson:** My argument is that buildings use energy to serve people's needs. It's important to conserve energy, but more important for engineers to realize that their job is to promote health, comfort, and productivity, and to do those three things as economically as possible. Designing mechanical or electrical systems is just the method to achieve those goals.

The way engineers are going to do that is to demand a seat at the table when the architect first starts to think about designing the building. Engineers need to reconceptualize their role as true design partners with architects. That means they actually need to learn something about architecture!

**PE: Where can PEs best contribute?**

**Yudelson:** I think in the sense of how do we design high-performance buildings on conventional budgets. Green building won't move forward until we figure out how to do it on the same budget as we're doing the current "brown" buildings. And it is possible.

**PE: How?**

**Yudelson:** You have got to go back to basics and rethink how you design buildings. A good example of this was a project a firm I left was engaged with. It's now the world's largest LEED platinum building. The mechanical and electrical systems were designed at 12% less cost than the contractor's original budget for conventional systems.

The essence of it is that you have to nibble away at it. Engineers who worked on this project attacked it from basic principles and used real engineering. They actually calculated things; they didn't just use rules of thumb.

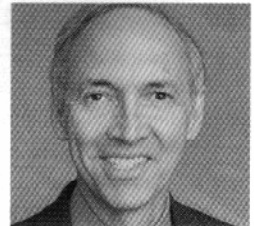
The essence is you've got to reexamine your practice. Look at European green buildings and see what the engineers there have done.

**PE: What is the role of integrated design in green building?**

**Yudelson:** You have to take off your expert's hat and listen to what the owners and architects are trying to accomplish. The skills of listening, teamwork, communication, and wanting to go outside your comfort zone so you can learn new things are important.

You're still going to be the expert on electrical circuiting, lighting, and HVAC systems. But that's late in the process. Earlier on, you have to work with the rest of the design team to think about the goals for the project and how to achieve them with different approaches on the same

It's important to conserve energy, but more important for engineers to realize that their job is to promote health, comfort, and productivity and to do those three things as economically as possible.



budget. Once you're out of the schematic design process, you should've made most of your critical decisions.

Of course most engineers want to hang back because their experience is that architects are still changing things at the 11th hour. But the earlier you're involved in the process, the more you can lock in certain approaches. For example, if they're going to use a double skin on a building, that's a huge architectural choice, but it also has significant implications for HVAC system design.

**PE: How can PEs and contractors collaborate to make buildings greener?**

**Yudelson:** The best projects are always where contractors are on board from day one. The contractors can do pricing and constructability reviews, and then it's not a surprise to them when they finally get the drawings.

So I think there has to be this dialogue, not only between architects, owners, and engineers, horizontally, but also vertically with specialty subcontractors. A good example is under-floor air systems. They're great, but they have to be installed carefully or else nothing works, which means the contractors and engineers have to be on the same page.

Engineers don't typically get paid much to do construction oversight. If you're going to do new green technologies, you have to ask for more time and money in the budget for construction coordination.

**PE: Where do most people get stuck?**

**Yudelson:** The biggest [place] is simply having to go back to basics in your design. It does take some time to analyze things, look

at options, and you may not get paid for all of it at the beginning. You have to make an investment in your future. You can't really hold back anymore because every sector is moving towards green.

I think the important thing is that people need engineers to step up. That's the most exciting thing. You're not pushing this on people; they're waiting for you to come up to speed.