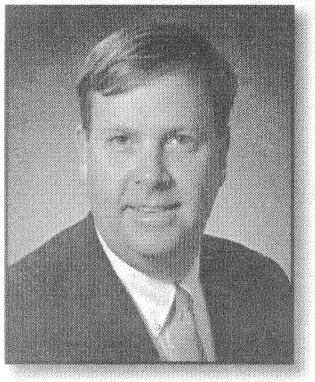

Interview with
Stephen Archer, LEED AP, Vice President of Commissioning-
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San Antonio, TX

What are the challenges of building green?

There are two components of a green building: static features and dynamic features. Static features include materials of construction, site location, materials re-use, windows, etc. Dynamic features include HVAC systems and controls, lighting systems and plumbing systems. The dynamic systems are the industry's real challenge.

That surprises me. The static systems are the ones you always hear about in green or LEED articles.

It's true that static systems pose a real and significant challenge to the design professionals, so that's why they are featured more often.

However, I have to say that the creativity that I see in this marketplace by the local architectural community with respect to site development, materials re-use, and use of green building materials and concepts blows me away.

Most people think that if you want to build green, you must hire a design team from Oregon or Washington.

I encourage the readers to check out the websites of our fantastic local architectural community. What these folks do on a local and national basis is exciting and dynamic.

Many of the clients we work with have also embraced green building practices. Look at our local corporate stewards such as Clear Channel Communications, Valero, HB Zachry and USAA. They are all fine examples of leadership in building green.

Can you believe that we even have developers in San Antonio who are building green?

Talk to us about the dynamic features and the problems that these systems pose:

Your readers in the construction, engineering and design industries know that dynamic systems play a major role in a green building's energy efficiency.

Let me use an analogy to illustrate. Your automobile is rated to perform at xx miles per gallon. How do you know that it performs as advertised?

You can perform a self test by taking an odometer reading and monitor the gasoline consumption through the meter on the pump. These two variables allow you to calculate the actual fuel performance of your vehicle.

We do the same thing with building systems performance. We take measurements of the system variables and calculate performance against a theoretical design value and prove up your buildings performance.

To continue with the car analogy, you have an accelerator that allows you to vary your car's speed form 0 mph to the legal speed limit. You could achieve the same results by engaging the accelerator to the maximum value and controlling your speed by varying the pressure on your brake pedal.

Can you imagine operating your car in this manner? It clearly would not be very efficient.

Well, guess what? Most building HVAC systems work in a similar manner.

The challenge here is to control the HVAC systems from 0 to the desired value with the least amount of energy consumption.

Building automation systems are installed to accomplish this task. The problem is that a typical 100,000-sf building could have as many as 300 different input variables that the computer analyzes to make control decisions.

How do you know that the system is wired, programmed, and functioning correctly?

The solution is to have a third-party professional verify that these control loops are tuned correctly by utilizing certified and calibrated instrumentation to compare measured results versus the design performance criteria.

Remember, a control system that does not respond and react correctly results in poor comfort performance and poor energy performance.

The last hurdle that we face in high performance buildings is training our operating and maintenance (O&M) staff. The O&M staff must understand the building systems and be trained to correctly maintain and operate the equipment and control systems. *–kf*

Stephen Archer is vice president of Commissioning for Cleary Zimmermann Engineers – the only mechanical, electrical and plumbing building design firm in Texas certified by the National Environmental Balancing Bureau for Building Systems Commissioning and Test & Balancing of Indoor Environmental Systems. Archer can be reached at stephena@clearyzimmermann.com or 210-447-6100.