Saving energy: contractor's PC shows clients how

Saves contractor energy too

by Jim Matthews

Professional roofing contractors don't necessarily work harder, just smarter. At least that seems to be the philosophy of Charles "Rusty" Griffiths Jr. of Binghamton-Slag Roofing Co., Inc., Binghamton, N.Y.

Last year, Griffiths programmed the company's Apple Macintosh personal computer to analyze the energy conservation characteristics of his clients' roofs. Griffiths explains that the main purpose of his program, which incorporates all the data from the *NRCA Energy Manual,* "is to determine the amount of roof insulation needed in a commercial or industrial building." The program also estimates annual energy savings and the payback period.

By letting the machine do the tedious math, Griffiths found it much easier to show customers how having more efficient insulation installed could save them money.

The program, once Griffiths had it up and running, proved to be an effective marketing tool for the company as well. "It's been 100 percent successful," Griffiths claims. "It's helped us capitalize on every job where we've had the opportunity to help an owner understand how insulation works to his benefit."

Architects who call on Binghamton-Slag for roof design guidance or recommendations have also found the program's output pursuasive. Griffiths says that in many cases he has been able to convince architects that higher R-value insulation would perform better than the insulation specified. "To justify our recommendations," he says, "we encourage architects to make the calculations themselves. However, if they're not comfortable doing it, we'll do it for them."

The Apple program has enhanced more than Binghamton-Slag's insulation sales, however; the company's image has had a big boost as well. By providing useful and accurate information to its customers, the company has increased its status as a knowledgeable, professional organization. Griffiths believes this "puts us in a different class than the guy who just wants to sell a roof and make a quick profit."

Manual labor

Griffiths was analyzing roof energy use long before his computer program was developed. He began shortly after the *Energy Manual* was published in 1977, hand-calculating energy use according to the *Manual's* formulas. However, performing all the computations manually proved to be a very time-consuming task. "I wanted something that would do the math after I plugged in the variables," he says.

After investigating different possibilities, Griffiths decided a computer with spreadsheet software offered the quickest and simplest way to analyze roof data. He chose Apple hardware and *Multi-Plan* software because the combination wouldn't require a computer wizard to make it work. "I got the Apple because it's so easy to use," he confesses. "I didn't have much experience with programming computers, and I didn't want to re-educate myself."

The *Multi-Plan* software proved to be just as simple as the Macintosh. Griffiths claims it took him only a couple of days to get reliable results from the system. "You just keep playing with the data until it comes out right. You debug as you go, so there are no unpleasant surprises at the end. It's all part of the way the spreadsheet works," he says.

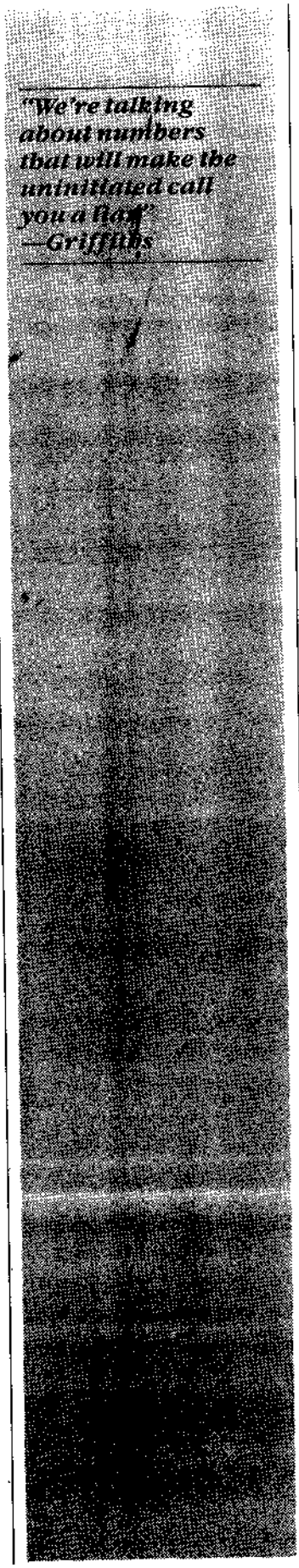
Spreadsheet offers calculated success

An electronic spreadsheet is a gigantic grid containing as many as 250 columns across and 1,000 rows down. When a column and row intersect they form a box, or cell. The spreadsheet user can place one piece of data, such as net sales for January or the R-value for a steel roof, in each cell.

Once all the numbers are entered into the cells, the software's real power becomes apparent. By applying pre-

Jim Matthews is a free-lance writer from Chicago and a frequent contributor to Roofing Spec.

"We're talking about numbers that will make the uninitiated call you a liar" —Griffiths



assigned formulas to the data, the program can calculate whatever results are needed. The formulas, which users insert wherever necessary, can be simple or complex. For instance, the program might be told to add all the numbers in a column or row, or to multiply the number in one cell by the number in a second cell and put the result in a third.

The formulas Griffiths incorporated into *Multi-Plan* were taken from the *Energy Manual*. To analyze a specific building's energy use with the program "all you have to do is input the variables—the building's dimensions, its use and the materials used in its roof," Griffiths says.

Even though automating the roof analysis has taken much of the tedium out of the process, collecting the raw data is still an important human function. To compute an overall R-value for the roof system, all the components in the system, from the interior ceiling to the roof deck, and their respective R-values must be determined. "Even trapped air spaces above suspended ceilings must be known and figured in," Griffiths says, "because they can provide insulating value."

Griffiths has simplified the data-gathering process somewhat by filing information from the *Energy Manual* in a separate section of the *Multi-Plan* program. He has entered the *Manual's* Table 9, which lists the R-values for the most commonly used roofing components, into this section. Now, when he analyzes a roof, he can select the R-values that apply to the roof's components from this electronic file and plug them directly into the spreadsheet's formulas.

Think of the possibilities

With the help of the computer program, showing an architect or building owner the cost and energy savings possible with different components is simply a matter of changing a few of the variables. "You can have existing insulation, and, say, a proposed higher R-factor insulation. Then you add up all the other components of the entire roof system. You put in the type and cost of fuel and that's basically all there is to it," says Griffiths.

Although the results of Griffith's calculations are only estimates, they can be quite close to the results of a more detailed analysis. After Griffiths presented estimates of how much a school board could save by installing roof insulation in one of its buildings, the board retained a professional engineer to verify his figures. According to Griffiths, "The PE's estimate, which was based on a complex heat transfer analysis, turned out to be just a few percentage points different than mine."

Selling more than price

Griffiths says that his program enables him to suggest options in his bids that other roofers don't consider because the added cost of the options would make their bids uncompetitive. Many roofers minimize the amount of insulation they'll install so their bids will be as low as possible, Griffiths believes. But, he asserts, if the contractor can present evidence in a bid that the added expense up front will actually save money in the long run, the building owner might consider him over lower bidders.

Consequently, Griffiths submits two quotes if an energy analysis indicates that insulation will benefit the owner. One quote is his price to install a roof with minimal insulation. He submits this bid to stay in the same ballpark as the other bidders. His second quote includes the cost of the insulation plus the projected annual operating savings it can provide. "We give building owners several options," Griffiths notes. "By showing owners the options, which come from our energy analysis program, we get them involved in the decision-making for their own project."

The money-saving information quite often comes as a pleasant surprise to the owners. It's been Griffiths' experience that before he submits his bid, most owners have absolutely no idea how much money roof insulation can save them. When they see Griffiths' figures they are often astounded at the difference. "We're talking about numbers that will make the uninitiated call you a liar," he says.

But because the formulas in the *Energy Manual* only yield estimates, Griffiths presents the information carefully. "I don't guarantee my estimates," Griffiths emphasizes. When building owners want more detailed energy cost savings estimates, he suggests they hire a specialist to conduct the necessary tests and perform the sophisticated calculations required for more precise results.

Griffiths believes that by providing services such as his roof energy analysis he is strengthening his company's image as a professional organization. When owners discover that added insulation can pay for itself as well as a new roof, they ask, "Why didn't those other roofers tell me about that? Don't they know what they're doing?"

This distinction between Binghamton-Slag and its competitors is important, Griffiths says. "We get the job and end up with a satisfied customer."