# FINDING A BETTER WAY TO MAKE ANYTHING

## QualPro's Charles Holland explains his technique

Manufacturers often wish to improve some process that involves several parameters, such as temperature, pressure, and processing time. The usual approach is to make just one change and keep everything else constant. But if each parameter has more than a couple of settings, nailing down the best solution can be a monumental chore. For a total of 20 variables, it would take a million tests to try all possible combinations.

There's a shortcut, however. It's called design of experiments, or DOE. It uses fancy statistics to slash the number of experiments by varying more than one factor per run. With DOE, the optimum mix of 20 variables can be found with a mere two dozen tests. One longtime DOE advocate is QualPro Inc. Founded in 1982 by consultant Charles Holland, the consultancy developed a version of DOE called multivariable testing (MVT). It has been used to improve some 13,000 processes in more than 1,000 companies.


Senior Writer Otis Port dropped by QualPro's headquarters in Knoxville, Tenn., to chat with Holland.

**Why aren't these statistical tools more common in business?**

Mainly because engineers and managers don't get much advanced statistics in school. In fact, you can get an engineering degree without any statistics. That could never happen in Japan or Germany or almost anywhere else. But here, it can. So 99% of people here have no idea what we're talking about.

**Talk about the benefits you've seen.**

We've been unbelievably successful at improving throughput—at least 10% to 25% consistently—with no new equipment, no new spending. And we've always found that quality improves as well. The payoff is so big that just word of mouth keeps companies coming.

**Give me an example.**

There's Boise Cascade Corp. They had a $75 million pulp plant in Jackson, Ala., that they just couldn't get to work right. We got in there, and MVT found the problem. At their DeRidder (La.) newsprint plant, we worked with a team and found they could use less expensive wood and still maintain product quality. That's a savings of $3 million a year. We've seen similar successes at Zep Manufacturing, DuPont, Capstone Turbine, American Express, and hundreds of others. But 95% of our clients won't let us talk.

**What does American Express make?**

MVT isn't used only in manufacturing. We can use it to improve virtually any kind of process or activity, including services—marketing, sales, retailing, health-care, and financial services. American Express used MVT to improve their customer-care processes. They cut credit-card customer attrition by 18%.

**What does MVT involve?**

Typically, we come in with a small SWAT team, and we collect suggestions from everybody with an idea for improving operations. Usually, we'll come up with 50 to 100 ideas. Then we cull the ones that aren't practical, feasible, or cost-efficient, using our definitions. What's practical is what the people doing the actual work say can be done. Feasible relates to time: Can it be done next month or next quarter—in the short term? And cost-efficient means it can't cost even one dime more than the way it's done now.

Usually, we toss about two-thirds into the "not" box. Then we apply MVT to evaluate the rest. Invariably, we find that about one-quarter would help, about another one-quarter would actually hurt, and half wouldn't make any difference.

**How do you know the screening hasn't tossed out some even better ideas?**

We don't. But we want to concentrate just on those that are practical, feasible, and cost-efficient because we always get enough improvement to shock people, to wake up management to the potential of this methodology. MVT can analyze the other ideas later.

**What's next for QualPro and MVT?**

If we can get CEOs and chairmen to realize what would happen if they applied MVT everywhere, in all their activities and all their processes, that would have a really big impact on the bottom line. Toys 'R' Us could be the first company to optimize all its operations using MVT, and several other clients are considering a similar move. ■

### SUCCESS STORIES

*Multivariable testing (MVT) can boost the bottom line by helping to fine-tune operations*

**DUPONT** Rescheduled maintenance shutdowns at a polymer plant, increasing annual output by $18 million

**SOUTHWESTERN BELL** Analyzed factors influencing sales practices, boosting revenues 167%

**INTERNATIONAL SPECIALTY PRODUCTS** Improved manufacturing efficiency at a chemical plant, adding $1.5 million in profits

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