

# QualPro and Multivariable Testing (MVT) – the amazing application of a Y-12 technology

(As published in The Oak Ridger's Historically Speaking column the week of January 22, 2024)

In the 47 years I worked at Y-12 which was first the Y-12 Electromagnetic Separation Plant, then the Oak Ridge Y-12 Plant, and later the Y-12 National Security Complex, I saw many changes and were involved in bringing about some of them. One was Foundations of Y-12 Supervision, another Targeted Selection and another the Pride Circle Program. Each of these initiatives were intended to bring about continuous improvement.

The Pride Circles (**P**roductivity through **R**ecognition, **I**nvolve**m**ent, and **D**evelopment of **E**mployees) were small groups of employees working together to measure and improve productivity in their own work areas using statistical process control. It was patterned after the Japanese originated Quality Circles.

This was happening at about the same time as Dr. W. Edwards Deming statistical process control was gaining much attention in the United States after he had successfully taught it to the Japanese. I well remember attending one of his seminars in Trenton, New Jersey. He was a unique lecturer who could really make his point.

One of the senior managers from Y-12 was in the same seminar and he asked Dr. Deming a question. I do not recall the exact question, but here is how Dr. Deming handled it. He said, "What is your name? And your position?" The senior manager answered and stated he was from Y-12 in Oak Ridge, TN. Dr. Deming said, "And you don't know the answer to that question? I am not going to tell you!" He then moved on and I watched as the manager's face got bright red. He did not ask another question.

The thing I also remember is statistical process control was not new to Y-12. Introducing it at the employee level across all portions of the plant was and that is what Pride Circles did. But that was just a small thing compared to what else resulted from the surge in interest and application of statistical process control.

One of the managers at Y-12 at the time was Charles (Chuck) Holland. He was the Quality Manager, and his focus was on assuring the nation's nuclear weapons program would achieve its intended mission. Y-12 is a vital part of that assurance. It is with pride that Y-12 can claim to never have missed a scheduled shipment of nuclear weapons secondaries during the entire Cold War.

Y-12 was already ahead of most if not all other manufacturing operations in the nation and likely the world. Chuck says of the article linked below: "Here is a recent success story written by the CEO of a QualPro client company. The procedure that he is describing is the same as we were using in A-Wing Machining, H-1 Foundry, and the different assembly areas in 1964." Of course, he is referencing operations at Y-12.

<https://qualproinc.com/wp-content/uploads/2023/08/qpchchemicalprocessing.pdf>

So, what is QualPro? The following explanation is found on the company's history website, [https://qualproinc.com/company\\_history/](https://qualproinc.com/company_history/)

It is the company that "During the 1980's, Dr Holland began working closely with Dr. W. Edwards Deming as Deming worked to revitalize the U.S. automotive industry and other manufacturing sectors. Deming urged Dr. Holland to start QualPro to help American companies improve their processes while Deming worked to transform the American style of management.

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“Many of QualPro’s earliest clients were direct referrals from Deming. Dr. Holland collaborated closely with Deming to develop QualPro. The two met frequently in Washington D.C. to discuss how to make process improvement techniques as effective as possible for U. S. and global corporations. Deming soon labeled Dr. Holland as one of his original Deming Masters, an elite group of process improvement specialists whom ‘you could count on your fingers.’” While this quote comes from QualPro’s Company History at: [https://qualproinc.com/company\\_history/](https://qualproinc.com/company_history/) even more information is available on the rest of the website: <https://qualproinc.com/>

Here are links to two other client testimonial videos citing successful significant improvements resulting from QualPro’s MVT (Multivariable Testing):

<https://www.youtube.com/watch?v=jYH8WQlc-50>

<https://www.youtube.com/watch?v=Pn9uFy1oNJk>

Just what is MVT? Dr. Holland took what he had been implementing at Y-12 for several years and along with the interaction with Dr. Deming took what Y-12 was doing and standardized it through designing experiments in which several variables were altered all at once. This varied from the more commonly accepted approach of examining only one variable at a time. Unfortunately doing one at a time allowed missing the interaction between multiple variables.

Dr. Holland is quoted in a Forbes magazine article entitled, “The new mantra: MVT” published in 1996, as saying, “If you test factors one at a time there’s a very low probability that you’re going to hit the right one before everybody gets sick of it and quits.”

Further quoting from the Forbes article, “Using the MVT discipline, a factory, a utility, a retail chain, a hospital or almost any kind of organization can experiment with how changes in its processes affect the outcome. By tweaking the inputs, the factory gets a higher yield, or the open-heart surgery department gets a lower mortality rate, or the utility gets a faster collection of its accounts receivables.”

The first area of focus for QualPro was major automotive companies and their key suppliers. Soon it was apparent that consulting support was necessary to help the companies use the process improvement tools including MVT.

Within 10 years QualPro was ranked at number 80 on the Inc. “5,000 Fastest Growing Private Companies” list. The company continued to expand and ultimately has tested more than 250,000 business improvement ideas in over 17,000 improvement projects resulting in tens of billions of dollars in bottom-line improvements.

From the early efforts to improve automotive, chemical, paper, textile, electronics, oil and gas companies and mining industries, QualPro diverged into helping service organizations in sectors

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such as retail, insurance, telecommunications, financial services, and healthcare. Most recently MVT is even being applied to higher education, state and federal government, and public welfare.

QualPro has been featured in Forbes, BusinessWeek, Fortune, the Wall Street Journal, The Economist, the New York Times, the Washington Post, the Chicago Tribune, and more totaling over 200 publications. CNN, CNBC, and Fox Business have all featured QualPro.

So, while you may drive by QualPro's home office off state highway 161 just south of Solway, their efforts are not often there but are onsite with companies and organizations across the nation.

I am pleased to bring you details of QualPro working with various companies in a variety of fields using multivariable testing to bring about significant improvement:

### QualPro Client Successes

<u>Manufacturing</u>	<u>Mining</u>	<u>Retail</u>
<b>Valspar</b> 44% Reduction in Average Changeover Time	<b>OCI</b> 24% Increase in Tons per Shift	<b>AutoNation</b> Increased Retail Sales by 9% and Reduced Ad Spend by \$23 Million
<b>DuPont</b> \$208 Million in Cost Savings and Increased Production	<b>Tronox</b> 15% Increase in Tons per Shift	<b>Bridgestone Firestone</b> Increased Sales by \$22,000 per Store and Margins by \$14,000 per Store across almost 2300 Retail Stores
<b>Phillips 66</b> 100X ROI on 51 QualPro Projects	<b>Molycorp</b> 48% Increase in Product Recovery	<b>Lowe's</b> Reduced Advertising Expense by Nearly \$50 Million While Increasing Sales
<b>BASF</b> \$47 Million in Cost Savings at a Single Site		<b>Big Lots</b> Achieved a 14:1 Gross Margin ROI

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<b>DuPont</b> Reduced Solar Panel Film Defects from 3,000 to 0		<b>Williams-Sonoma</b> Increased Catalog Sales by 25%
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**Chuck Holland, CEO of QualPro as quoted in *BusinessWeek*:**

*"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."*

**Art Hammer, Vice President of QualPro as quoted in *The Wall Street Journal*:**

*"The MVT system can quickly and efficiently find the best ways for a company to make major improvements: increasing sales by 25%, for example, or cutting costs by one-third."*

**Bill McBee, General Manager, Pactiv Corporation (QualPro client at three companies)**

*"With MVT, you are going to improve the process, you are going to make it better, you are going to move it faster, you are going to make it cheaper, you are going to solve quality problems, improve products, whatever it is, but you are not going to spend any capital. You are not going to spend any money to do it, and you are not going to increase the operating cost. That is a pretty good deal. . . . QualPro. MVT. It works everywhere, it works on everything, everybody loves it, it produces results."*

There you have an example of one of the successful companies that have been formed over the years coming out of technologies first developed in Oak Ridge. There are others, of course, but as I am often known to say, Oak Ridge does not always do our best at promoting the successes we achieve. I believe we are getting better, but we still have a way to go!

I would be glad to feature any other businesses in Oak Ridge who have succeeded as has QualPro.

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Dr. Chuck Holland, Chief Executive Officer of QualPro, and Dr. W. Edwards Deming, who encouraged Chuck to begin the company

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A typical training session where clients are learning MVT (multivariable testing) from QualPro consultants in a practical application using the data from their own company to understand how to implement quality improvements