



Process Improvement for Chemical Processes



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www.qualproinc.com

About Us

At QualPro's core is a relentless passion for continuous learning and growth. For the past 30 years, QualPro consultants have partnered with leading chemical companies on thousands of successful improvement projects to achieve operational excellence and maximize profitability. We pride ourselves on leveraging a powerful mix of traditional process improvement principles, including those of Dr. W. Edwards Deming, in combination with cutting-edge analytical tools and advanced statistical methodologies to help our clients realize opportunities for significant savings and improvement.

QualPro's ability to help clients achieve success has made us a world leader in the implementation of quality improvement programs and has solidified our reputation as the process improvement expert. Our vast experience in the chemical industry spans both batch and continuous processes and includes clients ranging from general and basic chemical manufacturers to polymers and plastics companies. Our training courses have been a pillar of our company since our beginning, arming companies with the ability to identify, prioritize, monitor, and control processes to achieve breakthrough results.

Our Expertise

Operational Excellence

- ◆ Plant Maintenance & Reliability
- ◆ Production Efficiency
- ◆ Product Yield
- ◆ Increase Line Capacity
- ◆ Decrease Cycle Time
- ◆ Increase Throughput
- ◆ Reduce Variation
- ◆ Reduce Product Defects
- ◆ Decrease Changeover Time
- ◆ Reduce Shipping Delays

Environment, Health & Safety

- ◆ Energy Efficiency
- ◆ Waste Reduction
- ◆ Reduce Emissions
- ◆ Reduce Energy Costs
- ◆ Reduce Labor Costs
- ◆ Reduce Inventory

"Because the QualPro Process is extremely versatile, it works equally well on batch or continuous processes. Its use can range from a single operator or laboratory technician doing a small experiment to an experiment that involves several different plants.

The technique scales beautifully."

– Vice President, DynoNobel



Process Improvement for Chemical Processes

Developed specifically for the chemical industry, this four-day seminar teaches the basic techniques of statistical quality control and provides training in QualPro's continuous improvement philosophy. Our seminar content is presented in a simple, step-by-step approach with minimal technical detail and emphasizes the use of basic statistical techniques to uncover opportunities for breakthrough improvement. Applications and examples are based on situations and processes common to continuous and batch processes. Participants should include managers, supervisors, foremen, process engineers, statisticians, and operations and quality control personnel in the chemical industry.

In This Seminar You Will Learn

- Status of quality improvement in the chemical industry
- How to monitor and control key product characteristics
- How to identify major causes of product defects
- How to sample multi-position processes
- Special techniques for monitoring and controlling batch processes
- Measurement assessment for destructive tests and visual tests
- Charting aesthetic and subjective measurements

"Oil Dri needs to be the everyday low cost supplier in each of the businesses where we compete and we're not going to get there with historic methods. You don't have to budget for the whole concept of using QualPro and MVT because it pays for itself and you'll get the payback within the fiscal year which is exciting so we're believers."

– CEO, Oil-Dri Corporation of America

"The simplicity of MVT methods means that QualPro consultants can teach people with high school math skills how to perform the design."

– Quality in Manufacturing

"We brought QualPro in and in less than six months, zero capital dollars, zero cost dollars expended, \$23M in terms of additional capacity and increased sales in a sold out business."

– Global Director, E.I. DuPont



Course Outline

Introduction

Targeting Business Results

- QualPro's Four Cornerstones
- Getting Started

Measuring and Assessing Performance

- Measures of Success
- Operational Definitions
- Basic Tools
- Capability Analysis

Validating Measurement Systems

- Measurement as a Process
- Measurement Capability Study
- Measurement Indices
- Measurement Study Tips

Monitoring and Controlling Processes

- Control Chart Theory
- Nonrandomness Tests
- Rational Subgrouping
- Variables Control Charts
- Attribute Control Charts
- Using the Control Chart for Process Improvement

Seeking Continuous Improvement of Results

- Special Cause Analysis
- Gimmes

Achieving Breakthrough Improvement

- Introduction to MVT® Methodology
- Qualpro's 12-Step MVT Process®

Summarizing Basic Concepts

- Case Study
- Finalizing the Initial Action Plan
- The Process Improvement Tracking Matrix®
- What's Next?



Multivariable Testing Techniques for Chemical Processes Seminar

There are many things that might improve performance in a chemical company. Unfortunately, testing ideas one at a time is expensive and time consuming. QualPro developed a better way. Our proprietary methodology is designed to generate many innovative ideas for improvement, and then test them simultaneously to determine which ideas will have the greatest impact on performance. Developed to generate fast results without capital investment, our Multivariable Testing Techniques for Chemical Processes is a four-day seminar designed to teach the basic techniques of statistical process control and provide training in QualPro's MVT® Process.

Day 1

- Introduction to QualPro's Process Improvement Methodology
- QualPro's General Procedure for Experimentation

Day 2

- Fundamentals of Screening Experiments
- Applying Screening Experimentation

Day 3

- Fundamentals of Refining Experiments
- Applying Refining Experimentation

Day 4

- Practical MVT® Advice
- Action Plan & Conclusions

In This Seminar You Will Learn

- How to improve any process within a chemical company
- How to generate innovative, no-cost improvement ideas at every level – front-line workers, supervisors & management
- How to test 15, 20, 30 or more ideas simultaneously
 - Identify the 25% of ideas that will improve performance
 - Avoid the 22% of ideas that hurt performance
 - Avoid the 53% of ideas that have no effect
- How to view production as a system
- How to identify and prioritize systems that need improvement
- How to monitor and control key product characteristics
- Methods for improvement in both continuous and batch processes
- QualPro's 12-Step MVT Process®

Benefits of the MVT® Process

- Increased shareholder value
- Reduced unscheduled downtime, costs, and product defects
- Reduced emissions and waste
- Improved product performance, customer satisfaction, and employee productivity
- Increased throughput, yields, and quality

"The MVT® Process is the way that we improve the things that we do through testing and letting the process tell us the way it behaves – as opposed to the way we think it behaves. We're a commodity chemical company, so we use it in our manufacturing operation and it improves the way we run. It improves the quality of our products. It improves the cost. It helps us make more stuff, so we can sell more stuff. All those bring financial benefits for us."

– Director of Operational Excellence, Olin Chlor Alkali

"When QualPro is working in my organization they quickly become a significant member of the team. They're very collaborative. They're tremendously effective at getting folks to work and bringing out the best in the organization."

– Vice President of Group Safety, Operational Risk & Continuous Improvement, BP



Course Outline

Choose a High-Payoff Goal

- Project Groundwork
- QualPro's Four Cornerstones

Measure Success

- Measures of Success
- Operational Definitions
- Basic Tools
- Measurement Validation

Use Control Charts

- Control Chart Theory
- Control Chart Selection
- Types of Special Causes
- Special Cause Investigation

Use Other Statistical Techniques

- Historical Data Analysis
- Data Mining Methods
- Pitfalls

Brainstorm

- Brainstorm Suggestions for System Changes
- Tips for Brainstorming

Select Practical, Fast, and Cost-Free Ideas

- Purpose of Categorizing
- Practical, Fast, Cost Free
- Factor Levels

Design MVT® Screening Experiment

- Purpose of Screening Designs
- Language and Definitions
- Other Design Considerations

Execute MVT® Screening Experiment

- Prepare for Execution
- Measuring Compliance
- Collect Data

Analyze Screening Results

- Fundamentals of MVT® Analysis
- Analyzing Screening Designs
- Reflection
- Quasi-Interactions
- Dummy Factors
- Order of Preference for Screening Designs

Design and Execute MVT® Refining Experiment

- Purpose of Refining
- Factorial Designs

Analyze Refining Results

- Calculate Effects
- Comparing Refining and Screening Results
- Linear Model
- MVT® Analysis Flowchart
- Review Results with Management

Implement

- Prepare for Implementation
- Evaluate Effectiveness of Implementation
- Calculate Bottom-Line Impact
- EVOP

Practical Advice for MVT® Methods

- Final Tips
- Flowchart for Planning an MVT® Experiment
- The Process Improvement Tracking Matrix
- What's Next?



Contact

To learn more about QualPro's
Process Improvement for
Chemical Processes Seminar
please visit us online or call
the number below to request an
assessment.

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"I'm glad to know that QualPro continues to thrive and prosper. [QualPro Consultant] Kerry Stone's in-house training got rave reviews from our participants."

—SVP, Charlotte Pipe