



MIDLAND ENGINEERING, LTD.

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Midland Engineering, Ltd.

Lowell L. Youngquist

SUMMARY OF EXPERTISE

I have over 35 years of Chemical Manufacturing Experience with recent specific training in HAZOP (Hazard and Operability analysis) plus other PHA (Process Hazard Analysis) techniques along with LOPA (Layers of Protection Analysis). Also, I served on Dow's Michigan Operations Reactive Chemicals Committee for 14 years as a Manufacturing Representative responsible for reviewing on a regular basis existing and new Process plants to assure proper safeguards are in place to prevent reactive chemicals incidents.

I am a certified Six Sigma Black Belt from Dow Chemical and Project Management Professional (PMP) from Project Management Institute with expertise in the following:

- Capital and Work Process Projects
- Process Control and Technology Strategies
- Process Technology Improvements
- Team building and mentoring
- Stakeholder Analysis and Communications
- Environmental, Health & Safety Standard adherence
- Raw Materials, Water, & Energy Conservation
- Six Sigma Methodology
- Direct Digital Process Control
- Work Process standardization

AREAS OF ACCOMPLISHMENT

Facilitate and scribe PHA Reviews of existing and new plants at Dow Corning's Midland Site and a Dow Corning Joint Venture Sites in Michigan. Co-led a pilot LOPA analysis at Dow Corning.

Co-led a project team to design, construct, and start-up a new alloy process piping systems at Dow's MethocelTM Plant to reduce incident potential in a compressed time schedule.

Followed through on implementing small capital projects at Dow's MethocelTM Plant during turnarounds with focus on safety, scope, budget, and meeting their Management of Change (MOC) documentation requirements

Utilized Six Sigma methodologies and leadership skills to reduce planned versus actual time gaps by 50 to 70% in Dowpharma's Campaign Preparation Work Process

Provided leadership to define and implement Technology Strategy and Plans for reducing production costs in Specialty Monomers by over \$1 Million annually and increasing Vinylbenzyl Chloride (VBC) capacity by 30%

Led a Project Team to design, install, and start-up a greater than \$15 M Divinylbenzene (DVB) Plant expansion doubling capacity and meeting customer expectations of improved product purity

Formed and supervised an internal Dow technical team providing software and hardware support to globally sustain Dow's internal, direct digital, process control system called MOD operating a majority of legacy Dow's manufacturing facilities

Led a team to design, install, and start-up Dow's first commercial scale, Ion Exchange, MonosphereTM Plant in one year that improved yield from 65 to +80%; met commercial launch timing; and stayed within the greater than \$5M budget

PROFESSIONAL WORK EXPERIENCE

Midland Engineering, Ltd. – Midland, Michigan	2006 - Present
Midland Energy, LLC – Midland Michigan	2005 – Present
The Dow Chemical Company – Midland, Michigan	1972 – 2004
Manufacturing Associate/Project Leader – Dowpharma	2000 – 2004
Man. Representative – MI Operation’s Reactive Chemicals Committee	1989 -- 2003
Technology Leader for Specialty Monomers	1997 - 2000
Project Manager – Divinylbenzene (DVB) Plant Expansion	1995 – 1997
Operating Discipline Leader for North American Styrene Polymers	1993 – 1995
Technical Associate for Specialty Monomers/Styrene Polymers	1989 – 1993
Manager of Dow’s Global MOD Process Control System	1985 – 1989
Manufacturing Representative for Monosphere™ Plant	1983 – 1985
Manufacturing/Process Control/Research Engineer	1972 -- 1983

EDUCATION AND PROFESSIONAL REGISTRATION

- **M.B.A.** Finance University of Michigan-Ann Arbor 1978
- **M.S.E.** Water Resources Engineering University of Michigan- Ann Arbor 1972
- **B.S.** Chemical Engineering Cornell University 1971

- **Layer of Protection Analysis** 2010
- **HAZOP and other PHA Techniques** AIChE/ASME 2008
- **Project Manager Professional (PMP)** Project Management Institute 2001/04/07
- **Certified Six Sigma Black Belt** – Dow Chemical Company – Midland, Michigan 2004
- **Competent Toastmaster (CTM)** – Midland Toastmasters – Toastmasters International 2004

AFFILIATIONS

- Member of the American Institute of Chemical Engineers (since 1990)
- American Wind Energy Association (AWEA) – Member
- Great Lakes Renewable Energy Association (GRLEA) – Member
- Project Management Institute – Member
- Toastmasters International – Member