

**David A. Schramm**  
 VP, Corrosion Control and Integrity Field Services, Integrity

Key Relevance
SME - Cathodic Protection Design
SME - Corrosion Control Field Assessments
SME - Cathodic Protection Trouble Shooting
SME - AC Mitigation Design and Analysis
SME -Atmospheric Corrosion Inspection
SME -Internal Corrosion
SME – Wall Loss Assessment (Corrosion)
SME – Coating Selection and Condition Assessment
Operator Qualification Program Management and Assessment
Corrosion Education and Training

**Overview:** Mr. Schramm has over thirty-five (35) years of extensive experience in the direct and practical application of corrosion control methods, cathodic protection assessment and design, and system integrity management and field services.

Direct experience with external, internal, and atmospheric corrosion control on natural gas and liquid transmission and distribution pipeline systems, underground natural gas storage, under-ground storage tanks, above-grade storage tanks, power plant structures, condenser/chiller/heat exchange equipment, production and injection/withdrawal wells, lead sheath cable, underground electric cable, water transmission systems, and fresh-water marine structures

Responsible for the technical performance, quality, and operation service offerings that provide:

- Corrosion engineering analysis and design
- Cathodic protection monitoring and assessment
- Process control and measurement
- Correlation of internal “smart” tool to indirection inspection survey data
- Cathodic protection design, installation and maintenance
- AC safety and AC corrosion assessment, modeling, and mitigative design
- Computerized close interval potential survey
- Direct current and alternating current voltage gradient survey
- Stray DC interference and telluric current monitoring, measurement, and mitigation
- Coating selection and inspection
- Material selection, specification and procurement
- Technical specification and procedure
- OQ qualification and training
- Corrosion related field failure, wall loss assessment, and remaining strength evaluation
- Indirect and direct inspection program support
- Field installation oversight and inspection
- Project management and commission services
- Operational support including:
  - Leak detection
  - Purge operations
  - Watch and protect and rights-of-way inspection
  - Locating
  - High Consequence Assessment and Class Survey

**Job Title:**  
 VP Corrosion Control and Integrity Field Services  
 Integrity

**Years with EN Engineering:**  
 13+

**Total Years of Experience:**  
 35

**Primary Office Location:**  
 Warrenville, IL, USA

**Education:**  
 B.S., Resource Management,  
 Iowa State University, Ames,  
 Iowa

- Professional Certifications:**
- NACE Institute No. 3178  
 Certified Cathodic Protection Specialist
  - NACE Institute No. 3178  
 Certified Corrosion Technologist

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**Professional Organizations & Affiliations**

NACE International Institute (NII)

- Chairman, Certification Committee (Board) (2012-2016)
- Audit Committee (Board) 2015-2016)

NACE International (NACE)

- Professional Activities Director (PDAC) (Board) (2011 to 2014)
- Audit Committee (Board) (2011 to 2014)
- Professional Activities (PDAC) Chair (2011 to 2014)
- Professional Activities (PDAC) Vice-Chair (2008 to 2011)
- Certification Committee Chair (2003 to 2006)
- Certification Committee Vice-Chair (2000 to 2002)
- T-10A-11: Gas Distribution Industry Corrosion Problems Chair (1997 to 2001)
- T-10A-11: Gas Distribution Industry Corrosion Problems Vice-Chair (1995 to 1997)
- SME Department of Defense (DoD) Panel on Training and Certification
- CP Interference Course Development Task Group: Cathodic Protection Interference (2006)
- Cathodic Protection Sub-Committee: Cathodic Protection Technologist (2004)
- Cathodic Protection Training and Certification Program Task Group: Cathodic Protection Level 1 (2000) and Cathodic Protection Level 2 (2000)
- Cathodic Protection Task Group: Cathodic Protection Training Program (1999 – 2000)
- Chicago Section – Special Events Chairman (1985-1986)
- Chicago Section – Membership Chairman (1986-1987)
- Chicago Regional Committee on Underground Corrosion (CRCUC) Chair and Vice-Chair
- Michigan Electrolysis Committee Chair and Vice-Chair

Corporate program support:

- ENE Health, Safety, and Environmental Committee – member
- OSHA Safety Training Programs
  - Development and documentation of program safety documents.
  - Initial creation and training of Level 0 OSHA training presentations (PowerPoint)
- Vision Accounting and Project Documentation:
  - Part of management team charged with the development of project management and project set-up (2014/2015) Vision EWMS project.
  - Developed IN proposal documentation and procedures under Opportunity section of Vision
  - Automation of reports and training of Vision to departmental Project Mangers
- Operator Qualification and Safety Records
  - Administrator for ISNETWORLD software and NCCER program audit and oversight.
  - Initial development and submittal of safety programs for RAV review
  - Initial support for Client response and safety program update.
  - Set-up and established support for Veriforce OQ programs.
- ISO 9001: 2000 Certification
  - Part of team tasked with the initial development and completion of ISO 9001 policy and procedures within EN Engineering; leading to, ISO9001: 2000 certification for the corporate office.

**Relevant Projects:**

**Valero Energy Corporation**

SME project direction for AC Threat Assessment on 150-mile pipeline as an “active” high level management approach to evaluate both present “threat area” and future AC “threat” risk. Project included the gathering of AC voltages on the pipeline and soil resistivity at intervals not exceeding 1000-ft. AC Threat calculation, research and inclusion of historic data obtained from other sources (DFOS), generation of plots and graphs, scenario or sensitivity analysis, report, observations and recommendations.

**Southern Star Gas Central**

SME project support for 20-inch diameter natural gas pipeline damaged by 12kV AC power line arc near Joplin, Missouri including: assessment of condition, documentation of event, wall loss discovery, assessment and written report, and Client support with regulatory oversight and questions.

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**Professional Organizations & Affiliations, cont.**

National Center for Construction Education and Research (NCCER)

- Certified Master Trainer (2010)
- Certified Administrator (2010)
- Certified Craft Trainer/Evaluator: Core Curricula, Gas Pipeline Operations, Liquid Pipeline Control Center Operations, Liquid Pipeline Field Operations, Pipeline Core, Pipeline Corrosion Control, Pipeline Electrical and Instrumentation (E&I), Pipeline Maintenance, Pipeline Mechanical, Specialty Craft

Veriforce

- Authorized Evaluator

Midwest Energy Association (MEA)

- Administrator

The Society for Protective Coatings (SSPC)

- Member

Additional

- API 1161 – Task Group on Operator Qualification, Pipeline Segment – Resolution of Appreciation for contributions to the Task Group
- OSHA 510 Certified “Occupational Safety & Health Standards for the Construction Industry”
- TWIC (Transportation Workers Identification Credential)
- Clockspring Trainer/Installer Certified (2002)
- Administration Training: Assessor Training (Nicor Gas-1994)
- Quality Awareness Training (Nicor Gas- 1993)
- Basic Corrosion Course (NACE-1983)

**Exxon Mobil Refinery**

SME technical project support assessment of condition (cathodic protection systems), annual survey, remediation, and recommendation.

**United States Gypsum**

Develop, perform training, assessment and evaluation for operator qualification of Client employee resources, assess natural gas pipeline system and plant facilities, and develop initial pipeline normal operation system drawing format.

**United States Gypsum**

SME level support for isolation flange failure in Washington, PA including: assessment of condition, purge out of product, oversight of repairs, purge in of product, and restoration of service.

**Corrosion Control Operations**

Managed and directed the Corrosion Control Service Group for Nicor Technologies and Nicor Gas providing corrosion control consulting services to distribution and transmission pipelines, municipal and utility organizations, and commercial and industrial customers. Responsible for the performance of all operating corrosion control programs (internal, external and atmospheric) on the Nicor Gas pipeline system including specification, performance and day-to-day operation. As a member of the Nicor Gas welding and joining, system integrity, and code committee operating task groups provided technical expertise in pipeline integrity, research and testing, corrosion control and cathodic protection issues. Having responsibility for the due diligence corrosion control and cathodic protection evaluations on acquisition projects in Argentina and Tennessee. Developed risk, quality, and integrity management programs related to corrosion control and cathodic protection operations. Location: IL

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**Additional, Cont.**

- Goodall Rectifier School: Goodall Electric, Inc. (1982 –
- Managing Cultural Diversity (Coleman Management Consultants (1994)
- Control, West Virginia, University (1985)
- Corrosion Prevention by Cathodic Protection (NACE–1983)
- Effective Business Communication (IWCC – 1990)
- Appalachian Underground Course: Advanced Corrosion

**Expert Witness Testimony:**

- South Dakota Public Utility Commission - Testimony
  - Keystone Pipeline, October 2007- Corrosion and Protective Coating Sections and Related Code
  - Keystone XL, September 2009 – Corrosion and Protective Coating Sections and Related Code
  - Keystone XL, March-July, 2015 – Corrosion Protective Coating Sections and Related Code
- State of Iowa Utilities Board
  - 2002, Testimony related to AC Interference, assessment, and mitigation as it relates to: proposed pipeline construction beneath overhead AC transmission systems, Iowa.

**Corrosion Control Services**

Directed and coordinated the Nicor Gas corrosion control programs for distribution, transmission, and storage facilities. Directly supervision responsibility for the completion of annual corrosion control and corrosion control activities which include: annual reading programs, close interval survey, stray current interference, and impressed current rectifier system replacement.

**Research Services**

Managed and directed the research lab for Nicor Gas and was responsible for day-to-day operation, quality performance, testing, recommendation and approval, including the performance and analysis ASTM and ANSI test standards and methods. Directly responsible for the purge routine process for all large-diameter high- pressure pipelines. Conducted, analyzed and developed corrosion control action and recommendation for all wall loss and field failure events. Locations: IL

**Lakehead Pipeline Company**

Directed the completion of all annual cathodic protection reading programs, close interval survey, stray current interference, impressed current rectifier system replacement, and field failure investigations for the Lakehead Pipe Line Company over a six (6) year period on facilities that include pipeline, compression, substation, and storage facilities. Locations: ND, MN, WI, IL, MI, NY.

**Portal Pipeline Company**

Supervised and completed the annual cathodic protection reading program for the Portal Pipe Line Company including pipeline, gathering and wellhead systems. Location: ND

**Alyeska Pipeline Service Company**

In-state direction, supervision and related to the process of conducting, analyzing and performing telluric based close interval surveys for the Trans-Alaska Pipeline System (TAPS) over a four (4) year period. Direct responsible for the performance, provision, data quality, data analysis and report recommendations. Location: AK

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**Technical Presentations:**

- Baltimore-Washington Corrosion Committee (BWCC) – Technical Presentation on AC Interference and Mitigation- May, 2015
- PG&E – February, 2015  
Technical Presentation on AC Interference and Mitigation
- NACE International, January-2015 Northern Plains Corrosion Control Short Course, Omaha, Nebraska – Speaker and presentation on AC interference and Mitigation and case examples
- USG – January, 2015 – Technical Presentation on Plant Audit Inspections
- NACE San Antonio Section Meeting, May-2014 – Speaker and presentation on AC interference and mitigation and case examples
- NACE International, January-2014 Plains Short Course (Omaha), Nebraska – Speaker and presentation on AC interference and Mitigation and case example
- NACE Wisconsin Short Course, September, 2013 – Cathodic Protection Design and Practical
- NACE Wisconsin Short Course, September, 2013 – Casings: Design and Regulations
- NACE International, August – 2013 Central Area Conference, Little Rock – Speaker and presentation on AC interference and Mitigation and case example
- Northern Natural Gas (NNG) Spring Corrosion Round Table – 2013: AC Interference and Mitigation Training (Minneapolis, Des Moines, El Paso)
- Northern Natural Gas (NNG) Spring Corrosion Round Table – 2013: CIS/ECDA Defect and Interpretation
- AGA/SPE, March 2012 – Identification and Prevention of Corrosion in Gas Storage Gathering Facilities

**Desert Generation and Transmission Company**

Supervised, conducted and performed the design and testing services for the Deseret Generation and Transmission Company. Planned and performed a wide variety of duties involving the evaluation, design, and installation of cathodic protection systems to inhibit corrosion on pipelines, tanks, and similar underground and submerged structures including electrical continuity and protection of concrete steel cylinder pipe. Locations: UT

**Mobil Oil**

Conducted and analyzed all underground facilities for the potential application of cathodic protection for the Mobil-Joliet Refinery. Operational and performance responsibilities related to installation of new and existing cathodic protection systems: design, redesign, and installation of impressed current systems for tank bottoms. Location: IL

**Montana Power**

Conducted, analyzed and performed close interval and leak detection surveys on large diameter - high pressure – natural gas transmission pipelines owned and operated by Montana Power near Helena, Montana. Location: MT

**Northern Natural Gas**

Conducted, analyzed and performed close interval surveys on large diameter - high pressure – natural gas transmission pipelines owned and operated by Northern Natural Gas (NNG) in the Upper Peninsula of Michigan. Location: MI

**Mountain Bell Telephone**

Supervised, conducted, analyzed and performed the corrosion control and cathodic protection analysis of the Mountain Bell Telephone lead sheath cable running between Evanston and Cheyenne. Locations: WY

**Coffeen Power Plant**

Supervised, conducted, analyzed, designed and installed cathodic protection systems for the Coffeen Power Plant Facilities operated by the Central Illinois Light Company (CILCO). Location: IL

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**Technical Presentations, cont.**

- NACE Wisconsin Section – Annual Short Course – 2013: Speaker and presentation on Cathodic Protection Design and Practical's and Casings: Design and Regulations
- NACE Wisconsin Section – 2012: Speaker and presentation on AC interference and Mitigation and a case example related to a 12-inch and 20-inch pipeline system.
- 51<sup>st</sup>. Annual Underground Corrosion Short Course: Speaker and presentation on AC issues on Pipelines presented under the System Integrity section, Purdue University, 2012
- 51<sup>st</sup>. Annual Underground Corrosion Short Course: Pipeline Casing Presentation, 2012
- 51<sup>st</sup>. Annual Underground Corrosion Short Course: Station Assessment Procedures, 2012
- EPRI/Southwest Research: June 2010, Copper Grounding Presentation
- China International Oil and Gas Pipeline Conference, Langfang, Hebei, China, November-2009: Safety and Operability Assessment Report and HAZOP Study Report (PetroChina),
- China International Oil and Gas Pipeline Conference, Langfang, Hebei, China, November-2009: ECDA Implementation Case Study – Pipeline Integrity and Corrosion Control Technology
- NACE International, March, 1991 – The Development and Conversion to an “On-line” Corrosion Control Records System Using a Burroughs Mainframe Computer, Corrosion 91, Paper Number 346, NACE International

**LaGrange Hospital**

Designed, analyzed and supervised the installation of galvanic anode systems designed to protect the interior water box of condenser/chiller units operated by the LaGrange Hospital. Location: IL

**Union 76**

Supervised, conducted and analyzed the cathodic protection systems installed on over 250 underground gasoline and waste oil storage tanks systems owned and operated by Union 76. Locations: IL, KY, IN

**O'Hare Airport**

Designed and supervised the installation of galvanic anode protection systems for aviation fuel pipelines related to jet-way expansions. Responsible for the cathodic protection assessment, design, and mitigation on jet-way expansions of the G & H terminals as well as field supervision on the United Airlines terminal 1 construction project. Locations: IL

**City of Viburnum**

Designed and supervised the installation of down-hole impressed current systems for the City of Viburnum including the protection of water well casing, column and bowls. Location: MO