

Larry D. Hanke, P.E.
Metallurgical and Materials Engineer

Materials Evaluation and Engineering, Inc.
13805 1st Avenue N, Suite 400
Plymouth, MN 55441-5447
Phone: (763) 449-8870
FAX: (763) 449-8699
Email: hanke@mee-inc.com

SUMMARY

Metallurgical and materials engineer with over 40 years of experience in failure analysis, materials characterization, product evaluation, and research and development. Expert in engineering evaluation of failures in metallic and nonmetallic materials by deformation, fracture, corrosion, and wear. Skilled with a wide variety of materials evaluation laboratory methods and instruments. Experienced as an expert witness in forensic engineering cases.

EDUCATION AND PROFESSIONAL CERTIFICATIONS

Bachelor of Science, Metallurgical Engineering, 1978
Iowa State University, Ames, Iowa

Registered Professional Metallurgical and Materials Engineer

EXPERIENCE

December 1994 to Present

Materials Evaluation and Engineering, Inc.
Plymouth, MN
Principal Engineer

- Perform product failure analyses for a diverse industrial clientele and to support insurance investigations and product-liability litigation. Areas of expertise include fracture, deformation, wear, corrosion, and environmental degradation in metals and polymers.
- Perform materials engineering evaluations and materials characterization for new product development and product improvement projects for high-technology industrial clients.
- Assist high-technology industrial clients with materials selection and processing optimization.
- Design and perform specialized testing to evaluate product performance and simulate failure mechanisms.
- Provide expert witness testimony in the areas of materials science and failure analysis.

June 1991 to December 1994

Engel Metallurgical
St. Cloud, MN
Metallurgical Engineer

- Performed failure analysis for a wide variety of industrial and private clientele, including support for product-liability litigation.
- Consulted with industrial clients on materials selection and applications.
- Provided technical services to industry to solve materials-related manufacturing problems.
- Performed and directed materials evaluation testing, including microstructure evaluations, fractographic examinations, and physical and mechanical properties testing.

May 1986 to May 1991

Anamet Laboratories, Inc.
Hayward, CA
Senior Metallurgist

- Performed failure analyses for a wide range of engineering systems and consumer products, encompassing structural, corrosion, and tribological failures.
- Served as an expert witness in metallurgy and failure analysis for product-liability litigation.
- Principal investigator for a research project to design a new, computerized system for quantitative evaluation of surface defects in rolling-element bearings.
- Assisted in research projects investigating the use of fractals to predict soil properties and evaluating fracture propagation in engineered structural polymers.
- Developed equipment and techniques for specialized mechanical and corrosion testing for material and product evaluations.
- Directed and performed routine material tests based on ASTM, ASME, Federal, Military, and other industry standards and specifications.

August 1978 to May 1986

Anamet Laboratories, Inc.
Berkeley, CA
Metallurgist

- Conducted failure analyses for industrial clients and to support product-liability litigation.
- Performed routine materials testing, materials characterization analyses, and specialized product evaluations.
- Provided metallurgical consulting on materials and process selections for a wide variety of industrial clients.
- Participated in research projects related to the development of new, improved tool steel alloys.

August 1992 to May 1993

St. Cloud State University
St. Cloud, MN
Adjunct Instructor

- Taught introductory materials engineering course to undergraduate students in Manufacturing Engineering. Materials covered included: metals, polymers, and ceramics.
- Developed and taught laboratory course accompanying undergraduate materials engineering course.

AWARDS AND RECOGNITION

- Fellow of ASM International 2010

COMMUNITY ACTIVITIES

- YMCA of the Greater Twin Cities - Ridgedale Community Board Member 2017 - present
- University of Minnesota, Materials Science Industrial Advisor 2014 - present
- Minnesota ASM Materials Camp Mentor 2007 - present
- Iowa State University, MSE Industrial Advisory Council 1999 - 2005

PROFESSIONAL AFFILIATIONS

- ASM International Member 1975 - present
 - Golden Gate Chapter Chairman 1990 - 91
 - Minnesota ASM Chapter Chairman 2000 - 01
- ASM International Board of Trustees 2016 - 2019
 - Finance Committee Member 2017 - 2019
 - Investment Committee Member 2017 - 2019
- ASM International Failure Analysis Society Member 2016 - present
 - Liaison to Society Board - 2016 - 2019
 - Awards Committee Chair - 2016 - 2017
- ASM International Handbook Committee Member 1994 - 2013
 - Vice Chairman 2004 - 2006
 - Chairman 2006 - 2008
- ASM International Failure Analysis Committee Member 1998 - 2016
 - Secretary 2009 - 2010
 - Vice Chairman 2010 - 2011
 - Chairman 2011 - 2012
- ASM International Technical Books Committee Member 2009 - present
- International Metallographic Society Member 1996 - present
 - Society Board of Directors- 2020 - present
- Minnesota Microscopy Society Member 1996 - present
 - Vice Chairman 2012 - 2013
 - Chairman 2013 - 2014
- International Organization on Shape Memory and Superelastic Technologies Member
- Metallography, Microstructure, and Analysis Journal Editorial Board 2019 - present
- ASTM International Member
 - Forensic Sciences Committee Member
 - Forensic Engineering Committee Member
- American Welding Society Member
- National Association of Corrosion Engineers Member
- Society of Plastics Engineers Member

PUBLICATIONS

BOOKS

- Hanke, Larry D., “Wear Failures - Fatigue,” *Understanding How Components Fail*, Third Edition, Edited by Brett Miller, ASM International, pp 189 - 209, 2013 (Chapter reviewed and revised from *Understanding How Components Fail*,” Second Edition by Donald Wulpi, 1999)
- Hanke, Larry D., “Surface Characterization for Medical Devices”, *ASM Handbook Volume 23 - Materials for Medical Devices*, pp 331-342, 2012
- Chumbley, L. S., Hanke, L. D., “Scanning Electron Microscopy”, *ASM Handbook Volume 11 - Failure Analysis and Prevention*, 516-526, 2002

PROCEEDINGS AND JOURNALS

- Hanke, Larry D., "Variable Pressure Scanning Electron Microscopy for Nonconductive and Volatile Samples," *Microscopy Today*, Issue 95-9, November 1995, Pages 20-21
- Hanke, Larry D. and Smith, Gary, "Electron Microscopy of Ni-Ti Alloys for Medical Devices," *Microscopy and Microanalysis* 96, 1996
- Hanke, Larry D. and Schenk, Kurt, "Sputter Etching for Microstructure Evaluation of Small Diameter Corrosion Resistant MP35N Wire," *Microscopy and Microanalysis* 96, 1996
- Hanke, Larry D. and Smith, Gary, "Electron Microscopy Ni-Ti Alloys for Medical Devices," *American Laboratories*, June 1997
- Rodnyansky, A., Warburton, Y. J., Hanke, L. D., “Segregation in Hot-dipped Galvanized Steel”, *Surface and Interface Analysis*, 29, 215-220, March 2000
- Hanke, L and Bayha, E., “Surface Characterization for Optimizing Electropolishing for Medical Devices,” *Medical Device Materials - Proceedings of the Materials and Processes for Medical Devices Conference*, 81-86, 2004
- Hanke, L and Schenk, K., Characterization of Secondary Phases in Nitinol,” *Proceedings of the International Conference on Shape Memory and Superelastic Technologies*, 164-165, 2010
- Haase, Ryan J. and Hanke, Larry D., "Boiler Stack Economizer Tube Failure," *Journal of Failure Analysis and Prevention*, Vol 13 (No. 5), 2013, p 513-520, <https://doi.org/10.1007/s11668-013-9717-y>.
- Hanke, L. D., Schenk, K. H., and Scholz, D. R., "Broad Beam Ion Milling for Microstructure Characterization," *Materials Performance and Characterization*, Vol. 5, No. 5, 2016, pp. 767-779, <https://doi.org/10.1520/MPC20160049>. ISSN 2165-3992

- Haase, Ryan J. and Hanke, Larry D., "Alkaline Carbonate SCC Failures at a Refinery," *Journal of Failure Analysis and Prevention*, Vol 18 (No. 1), 2018, p 153-161, <https://doi.org/10.1007/s11668-018-0391-y>

RECENT DEPOSITION AND TRIAL EXPERIENCE

- Complaint of Jack Tanner Towing Company for Exoneration from or Limitation of Liability, United States District Court for the Central District of Illinois - Peoria Division, 2016 Deposition
- William Parker v New Hampshire Insurance Co/Sappi Cloquet et al, State of Wisconsin Circuit Court for Chippewa County, 2016 Deposition
- Douglas Bowman et al v Dometic Inc., United States District Court for the District of Iowa, Central Division, 2016 Deposition
- Farmers Ag of Lebanon, LLC et al, vs. Norcold, Inc. et al, United States District Court for the Western District of Missouri, Western Division, 2016 Deposition
- Mitchell Nasers et al, vs. Rick's Tank Wagon Service et al, Iowa District Court for O'Brien County, 2016 Deposition
- PM Ag Sources, et al vs. Premiere Electric, State of North Dakota District Court, County of Cass, East Central Judicial District, 2016 Deposition, 2016 Trial
- Bruegger's Bagels, Liberty Mutual Ins, et al vs. Hellwig Electric, District Court of Iowa in and for Johnson County, 2016 Deposition
- Hovelsrud vs. C&R Discount, LS Distributing, S&L Outlet of Park Rapids, State of Minnesota, District Court, Hubbard County, 2017 Deposition for Trial
- Canadian Pacific Railway vs. Knoedler Manufacturers, Inc and Knoedlers Manufacturers Canada, LTD, Hennepin County, Fourth Judicial District, Minnesota, 2017 Trial
- Matthew Carnicle et al vs. Kraemer North America LLC, State of Wisconsin, Circuit Court for Dane County, 2017 Deposition
- Mark Merfeld et al v Dometic Inc., United States District Court for the Northern District of Iowa, Eastern Division, 2017 Deposition
- Delaware and Hudson Railway et al vs. Knoedler Manufacturers, Inc and Durham Industrial Sales, United States District Court for the Western District of Pennsylvania, 2017 Deposition, 2018 Trial
- State of WI Local Government Property Insurance Fund v. Lexington Insurance Company et al, United States District Court for the Eastern District of Wisconsin, 2017 Deposition

- Repsher and Bowe (consolidated case) v. Air Methods Corporation, Airbus Helicopters, SAS, and Airbus Helicopters, Inc., District Court, County of Summit, State of Colorado, 2017 Deposition
- Travelers Property Casualty Co. as subrogee of McFarlane Mfg Co. v. Briggs and Stratton Power Products Group LLC et al, Circuit Court, State of Wisconsin, Sauk County, 2017 Deposition
- Nelson Century Farms Inc. and John E. Nelson v. RuB, Inc., District Court, Fifth Judicial District, State of Minnesota, Brown County, 2018 Deposition
- Arcelor Mittal Burns Harbor et al v Rockwell Automation, Inc et al, Indiana State Court, Porter County, 2018 Deposition
- Reviva, Inc v Class C Components, Inc. and Elgin Fasteners Group, LLC, Minnesota State Court, Anoka County, 2018 Trial
- Harleysville Lake States Insurance Co as subrogee of Lancor Equities, LTD v Zeigle Consulting Associates, Inc, Circuit Court, Cook County, IL, 2019 Deposition
- Cassell v Newmar Corporation and Spartan Chassis, Inc., Texas Department of Transportation, 2019 Hearing
- American Family v Glen Pelke Plumbing, Chippewa (WI) County, 2019 Deposition
- McNeilus Truck and Manufacturing Inc v Swagelok et al, United States District Court, District of Minnesota, 2019 Deposition
- Wilks v BNSF Railway Company, United States District Court, Eastern District of Oklahoma, 2019 Deposition
- Sunset Stone v Union Insurance Co., United States District Court, District of Colorado, 2019 Deposition
- Ferrer v Pass and Seymour, Inc, Circuit Court for the 16th Judicial Circuit, Monroe County Florida, 2019 Deposition