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Michiel P. Brongers, PE, PMP
Principal Engineer
Materials, Corrosion, Failure Analysis

Education

BSc, MSc	Materials Science and Engineering Delft University of Technology, The Netherlands (1991, 1996)
Exchange Scholar	Department of Materials Science and Engineering The Ohio State University, USA (1994)

Areas of Expertise

Mr. Brongers has extensive experience in Asset Integrity Management (AIM), materials, and corrosion engineering for Oil and Gas, Pipelines, Chemical and Petrochemical Process, Manufacturing, and Power industries. His main areas of specialization are in forensic analysis and assessment of failures, materials and corrosion research, and custom laboratory testing. Mr. Brongers' interests include corrosion resistant alloys (CRAs), high temperature (HT) alloys, materials selection, fracture mechanics, corrosion, metallurgy, and failure investigations.

Technical Qualifications

Mr. Brongers' work concentrates on the assessment of aging and failed equipment, through forensic/failure analyses, Fitness-For-Service (FFS) Assessments, Engineering Critical Assessments (ECA), and the interpretation of inspection results. He has contributed to and managed large, multi-disciplinary projects, including inspection/assessment of process facilities, review and revision of Integrity Management Plans (IMPs) for transmission pipelines, and execution of large failure investigations. Mr. Brongers is familiar with international Codes and Standards and has conducted a wide variety of materials qualification testing per ASTM, NACE and other standards, and using custom-designed test set-ups.

Typical equipment investigated by Mr. Brongers includes pressure vessels and piping, transmission pipelines, reformers, boilers, heat exchangers, aboveground storage tanks (ASTs), underground storage tanks (USTs), chemical process and refinery equipment, steam turbines, and gas turbines.

In addition to solving immediate failures and materials problems, Mr. Brongers has performed contract research for different clients and industry and government organizations, including the Electric Power Research Institute (EPRI), American Petroleum Institute (API), the Pipeline Research Council International (PRCI), and the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA). He was one of the co-authors on the 2002 Federal Cost of Corrosion Study in the U.S. for the Federal Highway Administration (FHWA), and the Project Manager of the 2015-2016 National Facilities Audit of the Oil and Gas Industry in Trinidad and Tobago.

Certifications

NACE-Certified Materials Selection/Design Specialist (No. 24555)
PMI-Certified Project Management Professional (No. 1742470)

Registrations

Registered Professional Engineer: State of Ohio (No. E-68589)
 Registered Professional Engineer: State of West Virginia (No. 16928)

Professional Experience

Principal Engineer	Engineering Mechanics Corporation of Columbus	2019 – present
Principal Engineer	DNV GL USA, Inc.	2013 – 2019
Senior Project Manager	Det Norske Veritas (U.S.A.), Inc.	2011 – 2013
Senior Project Manager	CC Technologies Inc. (A DNV Company)	2006 – 2010
Senior Project Manager	CC Technologies Laboratories, Inc.	2003 – 2005
Group Leader	CC Technologies Laboratories, Inc.	2001 – 2003
Project Engineer	CC Technologies Laboratories, Inc.	1999 – 2001
Staff Engineer	CC Technologies Laboratories, Inc.	1997 – 1999
Technical Advisor	Ceramics Factory Koninklijke Porceleyne Fles	1996 – 1997

Professional Organizations

Fellow of the American Society of Mechanical Engineers (ASME)		since 2015
ASME International, Member		since 1997
<i>Pressure Vessels and Piping Technical Division</i>		
International Coordination Chair (two terms)	2012 – 2016	
Membership Chair (two terms)	2007 – 2011	
<i>Materials and Fabrication Technical Committee</i>		
Chair		since 2016
Vice Chair		2015
Communications Chair		2009-2014
Technical Program Representative	2006 and 2014	
Member		since 2001
<i>ASME Central Ohio Section</i>		
Section Chair	2000-2001	
Program Chair	1998-1999	
Executive Committee Member at Large	Since 2002	
<i>ASME Region V</i>		
Area Administrative Conference Chair	2001	
NACE International, Member		since 1997
ASTM International, Member		since 2003
NSPE/OSPE/20 Franklin County, Licensed Member (No. 104048749)		since 2004
Project Management Institute (PMI)		since 2012

Professional Recognitions

- ASME Pressure Vessel and Piping (PVP) Division: Track Organizer of the Materials and Fabrication Committee for Annual PVP Conference, Vancouver, BC, Canada, 2006.
- ASME Pressure Vessel and Piping (PVP) Division: Track Organizer of the Materials and Fabrication Committee for Annual PVP Conference, Anaheim, CA, United States, 2014.

Languages

English, Dutch, Spanish, French, German

Computer Skills

Microsoft Project, Word, Excel, PowerPoint, Access, Outlook. Canvas, Visio

Publications

1. Asset Integrity Management System Audits for the National Gas Company of Trinidad and Tobago, Paper IPC2018-78632, M.P. Brongers, S.J. Weichel, R. Mohammed, A. Kissoon, ASME International, International Pipeline Conference (IPC), Calgary, Alberta, Canada, September 2018.
2. Asset Integrity Management Programs for Ammonia Plant Facilities, Paper 3C, C.E. Jaske, S.J. Weichel, M.P.H. Brongers, AIChE Ammonia Safety Conference, Toronto, Ontario, Canada, September 2018.
3. Interaction of Longitudinal Corrosion Defects on a Pipeline, Paper PVP2018-84773, J.C. Land, T. Yahner, W.V. Harper, M.P.H. Brongers, J. Kobs, ASME International, ASME 2018 Pressure Vessels & Piping Conference, Prague, Czech Republic, July 2018.
4. Quality Assurance and Technology Qualification for Additive Manufacturing of Metallic Pressure Components, Paper Number PVP2017-65827, M.K. Mandeville Jr, M.P.H. Brongers, F. Tang, ASME International, ASME 2017 Pressure Vessels & Piping Conference, Waikoloa Village, Hawaii, USA, July 2017.
5. Essential Elements of an Asset Integrity Management Program for Ammonia and Methanol Plants, Paper Number PVP2017-65977, C.E. Jaske, S.J. Weichel, M.P.H. Brongers, ASME International, ASME 2017 Pressure Vessels & Piping Conference, Waikoloa Village, Hawaii, USA, July 2017.
6. Facility Integrity Management and Assessment of Associated Risk Conditions, C.E. Jaske and M.P.H. Brongers, ASME International, Journal of Pressure Vessel Technology, Vol. 138, August 2016.
7. Integrity Management and Life Extension for a CALM Buoy Oil Export Terminal, Paper Number IPC2016-64495, R.B. Gordon, M.P.H. Brongers, J. Ruiz-Rico, and J.D. Gomez Martinez, ASME International, Proceedings of the 11th International Pipeline Conference, Calgary, Alberta, Canada, July 2016.
8. Facility Integrity Management and Assessment of Associated Risk Conditions, Paper Number 2015-45926, C.E. Jaske, M.P.H. Brongers, ASME International, Proceedings of 2015 ASME PVP Pressure Vessels & Piping Conference, Boston, MA, USA, July 2015.
9. Failure Analysis and Fitness-For-Service Assessment of Nickel 200 Baffles in PVC Reactor, Paper Number PVP2009-77961, M.P.H. Brongers, C.S. Scott, F. Gui, R. Thodla, ASME International, ASME PVP 2009 Pressure Vessel and Piping Conference, Prague, Czech Republic, July 2009.
10. Prevention of Internal SCC in Ethanol Pipelines, Paper Number 08153, J.A. Beavers, M.P. Brongers, A.K. Agrawal, F.A. Tallarida, NACE, Corrosion 2008 Conference and EXPO, New Orleans, Louisiana, USA, March 2008.
11. Inhibition of Stress Corrosion Cracking of Carbon Steel Storage Tanks at Hanford, Paper Number 07606, C.S. Brossia, C. Scott, J.A. Beavers, M.P.H. Brongers, G.L. Edgemon, H. Berman, G.S. Frankel, L. Stock, B. Wiersma, NACE, Corrosion 2007 Conference & EXPO, Nashville, TN, USA, March 2007.
12. Stress Corrosion Testing of SA455 Carbon Steel in Meth-Reaction Inhibited Agricultural Ammonia Solutions, Final Report 80537701, M.P.H. Brongers, W. Kovacs, J.A. Beavers, A.K. Agrawal, DNV Report to Iowa Department of Transportation, August 2006.
13. Stress Corrosion Cracking in Fuel Ethanol: A Recently Recognized Phenomenon, R.D. Kane, N.S. Sridhar, M.P. Brongers, J.A. Beavers, A.K. Agrawal, L.J. Klein, NACE International, Materials Performance, pp. 50-55, December 2005.
14. Cost of Corrosion in the United States, Handbook of Environmental Degradation of Materials, pp.3-24, G.H. Koch, M.P.H. Brongers, N.G. Thompson, Y.P. Virmani, J.H. Payer, Ed. M. Kutz, William Andrew Publishing, January 2005.
15. Review of Test Methods For Evaluating Hydrogen Embrittlement Susceptibility of Materials, Paper Number 2563, D.J. Burwell, M.P.H. Brongers, J.A. Beavers, ASME International, ASME 2004 Pressure Vessels & Piping Conference, La Jolla, CA, USA, July 2004.

16. ILI Reporting for Pipeline Integrity Management Programs, M.R. Phillips, D.A. Soenjoto, M.P. Brongers, and P.H. Vieth, Paper No. 04182, Corrosion/2004 Annual Conference and Exposition, NACE International, New Orleans, LA, March 28 – April 1, 2004.
17. Failure Analysis of a Leaking Slab Valve, M.P. Brongers, G.H. Koch, and M.M. Nour, Paper No. 04115, Corrosion/2004 Annual Conference and Exposition, New Orleans, LA, March 28 – April 1, 2004.
18. ASM Handbook Volume 13A: Fundamentals, Testing, and Protection, Direct Cost of Corrosion in the United States, G.H. Koch, M.P.H. Brongers, N.G. Thompson, Y.P. Virmani, J.H. Payer, ASM International, Materials Park, OH; 2003, pp. 959-967.
19. New Study Reports Corrosion Costs to Drinking Water Systems, M.P. Brongers, Water Conditioning and Purification Magazine, March 2003, pp. 40-43.
20. Corrosion Costs And Preventive Strategies In The United States, G.H. Koch, M.P.H. Brongers, N.G. Thompson, Y.P. Virmani, J.H. Payer, Report by CC Technologies Laboratories, Inc. to Federal Highway Administration (FHWA), Office of Infrastructure Research and Development, Report FHWA-RD-01-156, September 2001.
21. Tests, Field Use Support Compression Sleeve for Seam-Weld Repair, M.P. Brongers, C.J. Maier, C.E. Jaske, P.H. Vieth, M.D. Wright, R.J. Smyth, Oil & Gas Journal, PennWell Corporation, Houston, Volume 99.24, June 11, 2001, pp. 60-66.
22. Evaluation and Use of a Steel Compression Sleeve to Repair Longitudinal Seam-Weld Defects, M.P. Brongers, C.J. Maier, C.E. Jaske, P.H. Vieth, M.D. Wright, R.J. Smyth, 52nd Annual Pipeline Conference, San Antonio, TX, USA, April 17-18, 2001.
23. Creep-Rupture of Service-Exposed Base Metal And Weldments Of Alloy 800H, M.P.H. Brongers, C.E. Jaske, American Society of Mechanical Engineers, ASME International, PVP 2000, Seattle, WA, 2000, PVP-Vol. 409, pp. 143-153.
24. Influence Of Metallurgy On Ductile Tearing During Hydrostatic Testing Of Line-Pipe Steels With Stress-Corrosion Cracks, M.P.H. Brongers, J.A. Beavers, C.E. Jaske, B.S. Delanty, American Society of Mechanical Engineers, ASME International, International Pipeline Conference, Paper IPC00-0048, Calgary, Alberta, 2000.
25. The Use Of Atomic Force Microscopy To Detect Nucleation Sites Of Stress Corrosion Cracking In Type 304 Stainless Steel, M.P.H. Brongers, G.H. Koch, A.K. Agrawal, Environmentally Assisted Cracking: Predictive Methods For Risk Assessment And Evaluation Of Materials, Equipment and Structures, ASTM STP 1401, R. D. Kane, Ed., American Society For Testing And Materials, West Conshohocken, PA, 2000.
26. Effect of Hydrostatic Testing On Ductile Tearing Of X-65 Line-Pipe Steel With Stress-Corrosion Cracks, M.P.H. Brongers, J.A. Beavers, C.E. Jaske, B.S. Delanty, Corrosion, Vol. 56, No. 10, 2000, pp. 1050-1058.
27. Effect of Hydrostatic Testing on Ductile Tearing of X-65 Line-Pipe Steel With Stress-Corrosion Cracks, M.P.H. Brongers, J.A. Beavers, C.E. Jaske, NACE Corrosion/2000, Paper No. 355, Orlando, Florida, 2000.
28. Characterization of Intergranular Stress-Corrosion Cracking Initiation in Type 304 Stainless Steel Using Scanning Probe Microscopy, G.H. Koch, A.K. Agrawal, M.P.H. Brongers, NACE, CORROSION/99, Paper 450, San Antonio, TX, 1999.
29. Characterization of the Early Stages of Stress-Corrosion Cracking in Type 304 Stainless Steel, G.H. Koch, A.K. Agrawal, M.P.H. Brongers, A.W. Phelps, Electric Power Research Institute, Palo Alto, CA, Report TR-112117, 1998.
30. HREM Investigation of the Constitution and the Crystallography of Thin Thermal Oxide Layers on Iron, P.C.J. Graat, M.P.H. Brongers, H.W. Zandbergen, M.A.J. Somers, and E.J. Mittemeijer, Microscopy of Oxidation 3, Cambridge, UK, 1996, 503 – 514.
31. Investigation of Iron Oxide Layers on Iron using High Resolution Electron Microscopy, M.P.H. Brongers, P.C.J. Graat, H.W. Zandbergen, NEVAC Magazine, The Netherlands, 1996, 59 – 65.