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Jeong K. (J. K.) Hong

Senior Researcher Engineer
Engineering Mechanics Corporation of Columbus (Emc^2)

Education

B.S., Mechanical Engineering, Yonsei University, Seoul, Korea 1987
M.S., Mechanical Engineering, Yonsei University, Seoul, Korea 1989
Ph.D., Welding Engineering, The Ohio State University, Columbus, Ohio 1996

Qualifications and Technical Expertise

Dr. Hong joined Engineering Mechanics Corporation of Columbus in December 2018, after a 21-year career at Battelle where he was a Technical Lead of Center for Welded Structures Research at Battelle. Dr. Hong has extensive experience directing and managing engineering research and development programs in the Offshore, Oil and Gas, Nuclear, Heavy Machinery, Automotive industries.
Dr. Hong's research interest areas include advanced design method and analysis procedure development for welded structures using computational and analysis methods. Developed unique analysis tools for characterizing residual stresses, distortions and weld fatigue in welded structures. Extensive research experience in weld-related issues such as mitigation techniques, repair welds, fitness for service (FFS), etc. As a co-inventor of Verity® mesh-insensitive structural stress procedures, Dr. Hong holds three patents on Verity® technology and one patent on Path-dependent maximum range (PDMR) multi-axial cycle counting technology.
Some of his computational analysis procedures, the Verity® technologies have been adopted by Industry Codes and Standards, including:

- 2007 ASME Boiler and Pressure Vessel code, Section VIII Division 2 (2007)
- API 579-1/ASME FFS-1 Fitness-For-Service (2007)
- Bureau Veritas (BV) NT 3199: Guidance for application of the mesh insensitive methodology-welded plates of ship and offshore structures (2013)

Professional Achievements

Selected Recent Publications

- Hong, J.K., and Cox, A. (2018) "Incorporating Weld Residual Stress Effects into Fatigue Life Predictions using the Battelle Structural Stress Method," *SAE Technical Paper*, 2018-01-1212, SAE.
- Kwak, S.Y., Hwang, S.C., and Hong, J.K., (2018) "Fatigue Life Prediction of 7075 Notched Specimens by Master S-N Curve based Structural Stress Method," *Trans. Korean Soc. Mech. Eng. A*, Vol. 42(2), 133-141, KSME
- Hong, J.K., Cox, A. (2017) "Application of Weld Fatigue Evaluation Procedure for Considering Multi-Axial Stress States Using the Battelle Structural Stress Method," *SAE Technical Paper*, 2017-01-0338, SAE.
- Dong, P., Cao, Z., and Hong, J.K., (2016) "Calculation of Weld Residual Stresses and the Effects of Local Post Weld Heat Treatment," *Welding Research Council Bulletin*, Vol. 552, Welding Research Council.

Jeong K. Hong (continued)

- Hong, J.K. (2016) "Study on Weld Fatigue Evaluation Incorporating Welding Induced Residual Stress Effect," OMAE 2016-55024, *Proceedings of the ASME 2016 35th International Conference on Ocean, Offshore and Arctic Engineering* (OMAE 2016), Busan, South Korean, June 19-24, 2016
- Hong, J.K. (2016) "Crack Extension Effects on Welding Residual Stress in Fitness for Service Assessment of Crack-like Defect in Weld," OMAE2016-55023, *Proceedings of the ASME 2016 35th International Conference on Ocean, Offshore and Arctic Engineering* (OMAE 2016), Busan, South Korea, June 19-24, 2016.
- Cox, A. and Hong, J.K. (2016) "Fatigue Evaluation Procedure Development for Self-Piercing Riveted Joints using the Battelle Structural Stress Method," *SAE Technical Paper*, 2016-01-0384, SAE
- Hong, J.K. and Forte, T.P. (2015) "Fatigue Evaluation Procedures for Bi-axial Loaded Plate Joints using the Battelle Structural Stress Method," *Procedia Engineering*, 133, pp 410-419.
- Hong, J.K. and Forte, T.P. (2015) "Fatigue Evaluation Procedures for Multi-Axial Stress State in Welded Joints," OMAE2015-41412, *Proceedings of the ASME 2015 34th International Conference on Ocean, Offshore and Arctic Engineering (OMAE 2015)*, St. John's, Newfoundland, Canada, May 31-June 5, 2015, ASME
- Hong, J.K., Brodzinski, R. P., Vargas, P.M., Rhee, H.C., Young, K.-J., and Penso, J.A. (2015) "Issues in Welding Residual Stress model in Fitness For Service Assessment of Crack-like Defect in Weld Area," OMAE2014-23459, *Proceedings of the ASME 2015 34th International Conference on Ocean, Offshore and Arctic Engineering* (OMAE 2015), St. John's, Newfoundland, Canada, May31-June 5., 2015, ASME.
- Hong, J.K. and Forte, T.P. (2014) "Fatigue Evaluation Procedures for Multiaxial Loading in Welded Structures Using Battelle Structural Stress Approach," OMAE2014-23459, *Proceedings of the 2014 ASME 33rd International Conference on Ocean, Offshore and Arctic Engineering* (OMAE 2014), San Francisco, California, USA, June 8-13, 2014, ASME.
- Hong, J.K. and Forte, T. P. (2014) "Development of Friction Stir Weld Fatigue Evaluation Procedure Using Battelle Structural Stress Method," *SAE International Journal of Materials and Manufacturing*, Vol. 7 (2), 2014, (*SAE Technical Paper* 2014-01-0909), SAE
- Hong, J.K. (2013) "Evaluation of Weld Root Failure using Battelle Structural Stress Method," *Transactions of ASME, Journal of Offshore Mechanics and Arctic Engineering*, Vol. 135(2), Paper # 021404, ASME.
- Hong, J. K. and Forte, T. P. (2013) "Fatigue Evaluation of Notched Plate Specimens by the Battelle Structural Stress Method," *SAE International Journal of Materials and Manufacturing*, Vol.6 (2), (*SAE Technical Paper* 2013-01-1011), SAE

Awards

- R & D 100 Awards, R&D Magazine, 2006
- Prof. Dr. Rene Waserman Memorial Award, American Welding Society, 1999
- F. Davis Silver Medal Award, American Welding Society, 1998

Professional Affiliations

- U.S. Delegation in C-XIII of International Institute of Welding (IIW): 2014 – Present
- Member of Society of Automotive Engineers (SAE): 2010 – Present
- Member of Korean Welding and Joining Society (KWJS): 1997 – Present
- Member of American Welding Society (AWS): 1994 – Present