



Welding & Joining Management Group

FORENSIC EXPERTS • METALS TESTING

Dr. Jesse A. Grantham Curriculum Vitae

EDUCATION:

Ph.D. Engineering, Ohio State University, 1992.
M.S. Welding Engineering, Ohio State University 1988.
M.B.A. University of Southwestern Louisiana, 1982.
B.S. Industrial Engineering and Management, Oklahoma State University, 1969.

EXPERIENCE:

1978 to Present

Expert in welding, brazing, soldering, cutting, metallurgy, corrosion, bolts and alloy verification. Welder and technician examinations and testing; develops metal testing instructions; and compliance reviews of cutting, welding, brazing and testing specifications. Welding Engineer for an ISO 9001:2000 certified metallurgical testing laboratory. Forensic welding specialist, nationally recognized. Analyzes and explains complex technical issues in clear, understandable terms.

1975-1978 & 1990-1992

Welding Supervisor manufacturing offshore petroleum equipment and surface mining machinery.

1969 - 1975

Industrial Engineer for processes, products, labor management and safety programs.

REGISTRATIONS:

Diplomate Member #597 of the National Academy of Forensic Engineers (NAFE).
Registered Professional Engineer in 5 states with current NCEES records.
American Welding Society (AWS) Certified Welding Inspector (CWI) 98041061.
AWS Certified Welding Educator (CWE) 9807029E.
American Society of Nondestructive Testing (ASNT) Level III 95605.

SPECIALTIES:

Expert testimony, litigation support and subrogation specialist in welding codes, contract compliance, construction defects, weld fractures, weld failures, accident investigations, product liability, corrosion assessments, warning labels, workplace safety, and hazards communications. Forensic cases include propane tank failures, acetylene cylinder explosions, refinery explosions, boiler failures, electrical failures, pipeline defects, industrial accidents, ladder failures, welding fumes and gases, welded equipment guards, pre-cast concrete defects, airplane component examinations, robot fixture defects, transmission tower collapse, personal injuries (burns), and OSHA interpretations.

TEACHING:

Active author and presenter.

Instructor - WJMG for AWS-CWI exam preparation, Magnetic Particle Testing (MT), Liquid Penetrant Testing (PT), Ultrasonic Testing (UT), and Radiographic Interpretations.

Instructor - ASM Int'l for metallurgy, processes, safety, and nondestructive testing (ndt).

Instructor - The Ohio State University for underwater welding, design, processes, safety and ndt.

Instructor - Columbia Basin College for metallurgy, welding processes, safety and ndt.

Instructor - Washington State University for manufacturing processes, welding, safety and ndt.



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HONORS:

American Welding Society - Private Sector Instructor Membership Award; 2002, 2003, 2004, 2006
American Welding Society - Dalton E. Hamilton Memorial CWI of the Year District Award; 1998, 2001
American Welding Society - District Director Certificate Award; 1999
American Welding Society - Arsham Amirikian Memorial Maritime Welding Award; 1995
Also serves on numerous collegiate welding advisory committees and welding handbook committees.

AFFILIATIONS:

Active member, locally and nationally, of professional societies, Colorado Bar Association, Colorado Safety Association, World Safety Organization, and Colorado Claims Association and the MetroNorth Chamber of Commerce.

PUBLICATIONS, ARTICLES & PAPERS:

JOURNAL ARTICLES:

- *The History of Welding*, InterACTION, Spring/Summer 2007, pages 3-5
- *First Line of Defense - Educating Welders to Achieve Quality Welds*, The Fabricator, April 2007, pages 48-49
- *Lines of Defense Against Weld Defects*, Fabricating & Metalworking, May 2006, Phil Walters, page 58
- *Forensic Engineering Analysis of Welding Process - Refinery Explosion*, Journal of the National Academy of Forensic Engineers, Volume XVIII, No. 1, page 25, June 2001.
- *Interfacial Tension Effects on Weld Bead Profiles*, American Welding Society, International Welding and Fabricating Exposition and Annual Convention, Professional Program, Technical Sessions, Session 17A, Process Physics II, Chicago, IL, April 27, 1996.
- *Fitness-for-Service Design for Underwater 'Wet' Welds*, American Welding Society, Welding Journal, January 1994. C.L. Tsai, J. Grantham, Z. Feng, L. Soisson, L. Zirker, J. Papritan.
- *Effect of Surface Tension on SMAW Weld Profile*, American Welding Society, Welding Journal, Research Supplement, December 1992. L. Jiang, J. Grantham, C.L. Tsai, Z. Feng.
- *Development of an Electrode for Improved Fatigue and Impact Strength in Wet Welds*, American Welding Society, Granjon International Award for Student Research, October 15, 1991.
- *Design of Connection Pad for Underwater Welding Tubular Structure Using Finite Element Method*, American Welding Society, Welding Journal, 1991. J. Grantham, C.L. Tsai, Z. Feng, L. Soisson.
- *Evaluation of Design and Fabrication Methods for Underwater Welding in an Open Lake Environment*, The American Society of Mechanical Engineers, Proceedings of the Ninth International Conference on Offshore Mechanics and Arctic Engineering, Houston, TX, February 1990. J. Grantham, C.L. Tsai, Z. Feng, L. Soisson, F. Vendetta, R. Strohl.
- *Connection Pad Design for Underwater Tubular Structures*, American Welding Society, Welding Journal, 69(1), pages 53-57, January 1990. C.L. Tsai, J. Grantham, Z. Feng, L. Soisson.
- *Strain Gauge Pressure Transducer Utilization*, A study for measuring internal rod pressure to 1000 psig in nuclear fuel rods. Proprietary for Siemens Power Corporation - Nuclear Division, 1996.
- *Alternative Manufacturing Process Concepts* for fuel rod welding, the effects of end cap multiple welds on Zircaloy-2 and Zircaloy-4 nuclear fuel rods. Proprietary for Siemens Power Corporation - Nuclear Division, 1995.
- *Wet Welding Electrodes, Formulas and Rationale*, American Welding Society, Welding Journal, 1992.

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- *Design Guide for Wet Welding the Tubular Connection Pad*, The Ohio State University Development Foundation, Sea Grant Program, Center for Lake Erie Area Research, OSU Welding Engineering Department, Columbus, OH, September 1990. J. Grantham, C.L. Tsai.
- *Development of an Improved Underwater Shielded Metal Arc Welding Electrode with Improved Fatigue Characteristics*, State of Ohio, Department of Development, Thomas A. Edison Program, Columbus, OH, June 1990. J. Grantham, C.L. Tsai, L. Jiang, Z. Feng, L. Soisson.
- *Wet and Weld*, OSU News in Engineering, featured research report, Ohio State University, College of Engineering, Columbus, OH, Fall 1989. C.L. Tsai, J. Grantham, L. Zirker, B. Boyce.
- *Welding Predictability*, OSU News in Engineering, Ohio State University, College of Engineering, Columbus, OH, Summer 1989.
- *Evaluation of Design and Fabrication Methods for Underwater Welding*, The Welding Innovation Quarterly, Volume VI, No. 1, Cleveland, OH, 1989. J. Grantham, C.L. Tsai, Z. Feng.
- *OSU Proficiency in Submerged Arc Welding*, American Welding Society, Welding Journal, page 50, October 1988.
- *Fundamental Study of Interfacial Tension Effects on Weld Bead Profile in the Shielding Metal Arc Welding Process*, publishing of dissertation, in-process, for the American Welding Society, Welding Journal. Proceedings Papers
- *Development of Flux-Coated Electrodes for Underwater 'Wet' Welding*, ISOPE, Second International Offshore and Polar Engineering Conference, San Francisco, CA, June 14-19, 1992. C.L. Tsai, L. Jiang, J. Grantham, Z. Feng, W. Svekric, R. Holdren, L. Soisson.
- *Development of an Electrode for Improved Fatigue and Impact Strength in Wet Welds*, American Welding Society, Convention and Exposition, International Award for Student Research, Chicago, IL, March 26, 1992.
- *Wet Welding Electrodes, Formulas and Rationale*, American Welding Society, 72nd Annual Convention, Granjon International Competition, Chicago, IL, 1992.
- *Fitness-for-Service Design for Underwater 'Wet' Welds*, ASME Volume III-A, Materials Engineering, pages 197-204. Tenth International Conference on Offshore Mechanics and Arctic Engineering, Stavanger, Norway, June 23-28, 1991. C.L. Tsai, L. Zirker, Z. Feng, J. Grantham, L. Soisson, J. Papritan.
- *Evaluation of Design and Fabrication Methods for Underwater Welding in an Open Lake Environment*, American Welding Society, 71st Annual Convention, Anaheim, CA, April 22-27, 1990. J. Grantham, C.L. Tsai, Z. Feng, F. Vendetta, R. Strohl.
- *Evaluation of Design and Fabrication Methods for Underwater Welding in an Open Lake Environment*, ASME paper number OAME-90-861, Ninth International Conference on Offshore Mechanics and Arctic Engineering, Houston, TX, February 18-23, 1990. J. Grantham, C.L. Tsai, Z. Feng, F. Vendetta, R. Strohl.

TECHNICAL ARTICLES:

- *Breaking the Rework Cycle, Identifying Factors for Improvement*, Practical Welding Today, April/May 1998.
- *Eliminating Rejects and Rework. Reducing Cost by Doing it Right the First Time*, Practical Welding Today, March/April 1998.
- *Training the Welding Manager*, Practical Welding Today, January/February 1998.
- *Providing Welders with Authority and Support*, The Fabricator, November 1997.
- *How to Totally Manage your Welding and Maximize Profit*, Welding & Joining Management Group, West, October 1997.
- *The Winner's Strategy - for Welding Management*, Welding & Joining Management Group, West, January 1997

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TECHNICAL REPORTS:

- *Qualification of Strain Gauge Pressure Transducer for Measuring Internal Rod Pressure in Nuclear Fuel Rods*, Siemens Power Corporation - Nuclear Division, EMF-PTA-574, November 11, 1994.
- *An Investigation of Alternative Manufacturing Processes used for Fuel Rod Welding*, Siemens Power Corporation - Nuclear Division, EMF-94-127 (P), Richland, WA, June 1994.
- *Wet Welding Electrodes, Formulas and Rationale*, The Ohio State University, Department of Welding Engineering, State of Ohio, Department of Development, Thomas A. Edison program, Columbus, OH, 1991.
- *Design Guide for Wet Welding the Tubular Connection Pad*, The Ohio State University Development Foundation, Sea Grant Program, Center for Lake Erie Area Research, OSU Welding Engineering Department, Columbus, OH, September 1990. J. Grantham, C.L. Tsai
- *Development of an Improved Underwater Shielded Metal Arc Welding Electrode with Improved Fatigue Characteristics*, State of Ohio, Department of Development, Thomas A. Edison Program, Department of Welding Engineering, OHSU-RS-139, Columbus, OH, June 1990. J. Grantham, C.L. Tsai, L. Jiang, Z. Feng, L. Soisson.
- *Connection Pad Design for Underwater Tubular Structures*, American Welding Society, Welding Journal, Miami, FL, January 1990. C.L. Tsai, J. Grantham, Z. Feng, L. Soisson.
- *Connection Pad Design for Underwater Tubular Structures*, The Ohio State University, Department of Welding Engineering, OHSU-TD-020, Columbus, OH, January 1990. C.L. Tsai, J. Grantham, Z. Feng, L. Soisson.
- *Determination of Residual Stress and Effects in Thick Section Weldments for Hydraulic Structures*, US Army Corps of Engineers, WI, 1989 - 1990. J. Jaeger, J. Grantham, C.L. Tsai, S.G. Lee, L. Shim, Z. Feng.
- *Evaluation of Residual Stress and Cracking in Weld Connections for Jumbo W-Shapes*, US Army Corps of Engineers, Mississippi River, Lock and Dam number 27, St. Louis, MO, December 1988 to December 1989. J. Jaeger, J. Grantham, C.L. Tsai, Z. Feng.
- *Evaluation of Design and Fabrication Methods for Underwater Welding*, Franz Theodore Stone Laboratory, Sea Grant Program, Center for Lake Erie Area Research, College of Biological Science, OHSU-TD-020-89, Columbus, OH, May 15, 1989. J. Grantham, C.L. Tsai, Z. Feng, F. Vendetta, R. Strohl.
- *Evaluation of Design and Fabrication Methods for Underwater Welding*, Welding Innovation Quarterly, Volume VI, No. 1, Cleveland, OH, 1989. J. Grantham, C.L. Tsai, Z. Feng, F. Vendetta, R. Strohl.
- *Structural Inspection and Evaluation of the Existing Lock Gates on Inland Waterways*, US Army Corps of Engineers, Mississippi River, Lock and Dam number 27, St. Louis, MO, Columbus, OH. J. Jaeger, J. Grantham, C.L. Tsai, Z. Feng.

BROCHURES AND ARTICLES:

- *Principles of Welding Productivity*, Practical Welding Today, March/April 2001.
- *Welding Inspection for Nonwelder's*, Welding & Joining Management Group, February 2000.
- *Welding Inspection for Nonwelder's*, Welding & Joining Management Group, August 1999.
- *Dealing with Warranty Costs in Welded Products*, Practical Welding Today, July/August 1999.
- *Tips for Managing the GMAW Process*, Welding & Joining Management Group, June 1, 1999.
- *Supporting Welders with Sales, Estimating and Cost Accounting*, Practical Welding Today, March/April 1999.
- *Using the Correct Materials and Consumables Solves Welding Problems*, Practical Welding Today, January/February 1999.
- *How to Reduce Automated Welding Costs with Real-Time Welding Data*, FABTECH, 1999.
- *How to Estimate Direct Arc Welding Costs*, Practical Welding Today, September/October 1998.
- *The Welding Manager's Role in EHS Issues*, Practical Welding Today, July/August 1998.
- *Breaking the Rework Cycle*, Practical Welding Today, May/June 1998.
- *Following Welding Codes and Standard in Part Design*, Practical Welding Today, May/June 1998.
- *Eliminating Rejects and Rework*, Practical Welding Today, March/April 1998.
- *Training the Welding Manager*, Practical Welding Today, January/February 1998.
- *Renewing Manager Involvement in Welding Leadership*, The Fabricator, November 1997.
- *Why Do I Work?*, Welding & Joining Management Group, Volume 31, IX. *Expanding Core Competency of Your Managers*, Practical Welding Today. Bulletins
- *Design Guide for Wet Welding the Flexible Connection Pad*, The Ohio State University Development Foundation, Sea Grant Program, Center for Lake Erie Area Research, OSU Welding Engineering Department, Columbus, OH, September 1990. J. Grantham, C.L. Tsai

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- *Connection Pad Design for Underwater Tubular Structures*, The Ohio State University Development Foundation, Sea Grant Program, OHSU-RS-122, Columbus, OH, 1990. J. Grantham, C.L. Tsai, Z. Feng, L. Soisson.

PRESENTATIONS AND SEMINARS:

- *Forensic Engineering Assessments of a Robotic Welding System*, National Academy of Forensic Engineers Conference, Denver, CO, July 28, 2007.
- *Safety in Cutting and Welding with Acetylene and Oxygen*, World Safety Organization, 20th Annual Health and Safety Conference and Exposition, Denver, CO, May 14-16, 2007.
- *(Welding) Failures I have Known*, American Welding Society, Colorado Section 039, Denver, CO, May 10, 2007.
- *Forensic Engineering Investigations of Welding Code Compliance*, National Academy of Forensic Engineers, Ponte Vedra, FL, January 7, 2007.
- *Welding Hazards - Gases & Fumes*, World Safety Organization, 18th Annual Health and Safety Conference and Exposition, Denver, CO, May 2, 2005.
- *Forensic Engineering Analysis of Welding Process - Refinery Explosion*, National Academy of Forensic Engineers, Hawthorne, NY, January 20, 2001. J. Grantham, T. Beard
- *How to Reduce Automated Welding Costs with Real-Time Welding Data*, FABTECH International, Session on Automated Robotic Welding, November 14-18, 1999.
- *Business Strategies for Welding - the Nonwelder's Seminar*, The Fabricators and Manufacturers Association International, San Diego, CA, September 22, 1999.
- *Six Steps to World-Class Welding Management*, Fabricators and Manufacturers Association International, Technical Conference, March 23, 1999, April 14, 1999.
- *Tips to Showcase your Welding Operations for Customers*, FABTECH International, Conference Papers, Automated Robotic Welding, Session 302, Cleveland, OH, November 3-5, 1998
- *Six Steps to World-Class Welding Management*, Fabricators and Manufacturers Association International, Technical Conference, September 24, 1998, October 5, 1998.
- *How to Evaluate Welding Contractors for Your Project*, National Society of Professional Engineers, Continuing Education Program, Tulsa, OK, July 26, 1998.
- *Stainless Steel Pipe - Root Welds*, National Association of Corrosion Engineers, Annual Corrosion Short Course, Colorado Springs, CO, January 28, 1998. J. Grantham, D. Culbert.
- *How to Totally Manage your Welding and Maximize Profit*, Welding & Joining Management Group, West, October 1997.
- *The Winner's Strategy - for Welding Management*, Welding & Joining Management Group, West, January 1997.
- *Managers, Engineers and Welders*, Institute of Industrial Engineers, Columbia Basin Section, Richland, WA, March 16, 1995.
- *Wet Welding Electrodes, Formulas and Rationale*, American Welding Society, 72nd Annual Convention, Granjon International Competition, Chicago, IL, 1992. *Connection Pad Design for Underwater Tubular Structures*, American Welding Society, 72nd Annual Convention, Detroit, MI, April 15-19, 1991.
- *Evaluation of Design and Fabrication Methods for Underwater Welding in an Open Lake Environment*, American Welding Society, 72nd Annual Convention, Anaheim, CA, April 22-27, 1990. J. Grantham, C.L. Tsai, Z. Feng, F. Vendetta, R. Strohl.
- *Evaluation of Design and Fabrication Methods for Underwater Welding in an Open Lake Environment*, ASME paper number OAME-90-861, Ninth International Conference on Offshore Mechanics and Arctic Engineering, Houston, TX, February 18-23, 1990. J. Grantham, C.L. Tsai, Z. Feng, F. Vendetta, R. Strohl.
- *A Comparison of Magnetoelastic Testing/Measurement for Uniaxial Stresses*, Determined by Barkhausen Noise versus Measurement of Residual Stresses by the Blind Hole Drilling Method, The Ohio State University, Welding Engineering Seminar, 1989.

WORKSHOPS AND VIDEOS:

- *Underwater Welding, Cutting and Inspection Workshop*, short course at the Franz Theodore Stone Laboratory, The Ohio State University, Columbus, OH, Summer 1992. C.L. Tsai, J. Grantham.
- *The Ohio State University Welding Engineering Recruitment Video*, distributed to area high schools, colleges and universities throughout the United States and abroad, The Ohio State University, Columbus, OH, Summer 1989. Production and coordination, C.L. Tsai, J. Grantham.

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- *Underwater Welding Video of Lake Erie Underwater Welding Field Tests*, The Ohio State University, Columbus, OH, Winter 1989. Production and editing, J. Grantham, C.L. Tsai.
- *Commentary Video on Nuclear Reactor Underwater Repair at the Susquehanna Plant for Pennsylvania Power and Light*, The Ohio State University, Welding Engineering and Nuclear Engineering, Columbus, OH, Winter 1990. J. Grantham, J. O'Sullivan.
- *ASME Section VII Pressure Vessel Manufacturers and Quality Assurance Personnel*, GESI, Lafayette, LA and Tyler, TX, 1978-1987. Development of course materials and syllabus.
- *Corrosion Problems Concerning Welding*, IEEE, ASME, ASNT, Columbia Basin College, Applied Technology Division.

PATENTS:

- Underwater SMAW electrode, formula G4, Welding Consultants Inc. and OSU Engineering
- Experiment Station, in conjunction with the Thomas A. Edison Program, Ohio Department of
- Development, 1991. C.L. Tsai, J. Grantham, Z. Feng, L. Soisson, L. Jiang.

RESEARCH CONTRACTS:

- *Enhancing the Theoretical and Practical Competence of Welding Engineering*, Design Curriculum, International Association for Great Lakes Research, IAGLR/MOTT Fellowship Program, Ann Arbor, MI, 1989-1998. C.L. Tsai, J. Grantham.
- *Development of Designs for Mechanized Underwater 'Wet' Welding Processes*, Sea Grant, NOAA, The Ohio State University, Columbus, OH, April 16, 1994. C.L. Tsai, J. Grantham.
- *Development of an Engineering Database for New Underwater Flux-Coated Welding Electrodes for Use by Industry*, NOAA, Sea Grant Program, 1994. C.L. Tsai, J. Grantham.
- *Development of an Underwater Shielded Metal Arc Welding Electrode with Improved Fatigue Strength in Wet Welded Joints*, State of Ohio, Thomas A. Edison Program, Ohio Department of Development and Welding Consultants Inc. 1989-1990. (\$50,000 + \$50,000 in-kind)
- *Design Guide, Wet Welding, Flexible Tubular Connection Pad*, R/OE-8PD, The Ohio State University Development Foundation and Center for Lake Erie Research (CLEAR), Spring, 1990. (\$5000)
- *Evaluation of Design and Fabrication Methods for Underwater Welding in an Open-Lake Environment*, a program of research and improvements in underwater fabrication technology R/OE-5. Sponsored by Sea Grant, NOAA, Arcair Company, September 1987-August, 1989. (\$50,000)

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