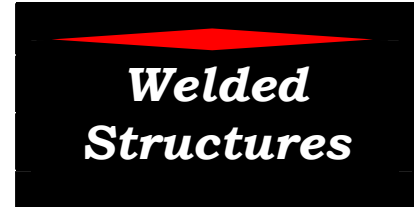


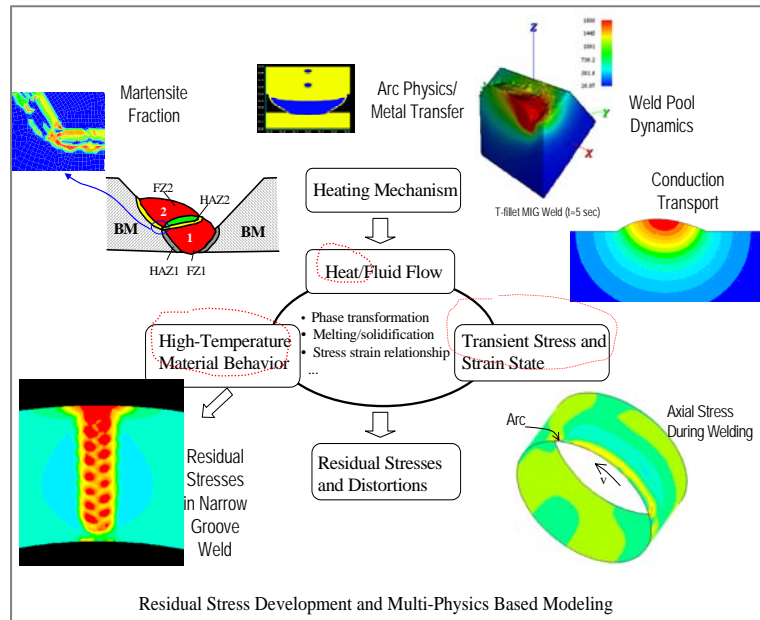
# Residual Stress/Distortion Prediction and Practical Mitigation Techniques



## Your Challenge

Welding-induced residual stresses can significantly impact the fracture and fatigue behavior in welded structures. There is an increasing demand in a better understanding of the residual stresses for a given engineering design and fabrication procedure so that effective mitigation techniques can be developed. However, welding processes are highly complex. Reliable computational simulation techniques require adequate considerations of the associated multi-facet physics and multi-scale mechanics in highly non-linear regime.

At present, there exists no general purpose commercial codes that can be used to address today's day to day needs in residual stress and distortion predictions of actual engineering components.



## Our Solution

Battelle's Center for Welded Structures Research has been the leader in this field, serving both US and International clients in developing effectively modeling

tools and implementing practical residual stress/distortion mitigation techniques. In addition to a unique suite of advanced computational modeling tools which can be used to elucidate some of the fundamental phenomenon associated with residual stress development mechanisms, Battelle has also developed a series of simple but effective estimation schemes so that rapid engineering solutions can be obtained for day to day applications in actual engineering and production environment.

## The Battelle Difference

Over the last 10 years, the Center for Welded Structures Research has conducted a large number of projects with a total of funding of about \$15M in the area of residual stress and distortion modeling and control for applications ranging from automotive, aerospace, offshore/marine, petrochemical, to nuclear utilities. As a result, the most comprehensive database for residual stress distributions and material properties has been developed. The database has been used by various national and international codes and standards.

## Contact

For more information, please contact:

Dr. Pingsha Dong

Technical Director, Center for Welded Structures Research

Phone: (614) 424-4908, Fax: (614) 424-3457, e-mail: [dongp@battelle.org](mailto:dongp@battelle.org)

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505 King Ave, Columbus, OH 43201-2693