

Stephens, M., Peterson, R., **Wang, Y.-Y.**, and Horsley, D., An Experimental Basis for Improved Strain-based Design Models, Proceedings of the 19th International Offshore and Polar Engineering Conference (ISOPE 2009)

### **Abstract**

This paper provides an overview of the initial phase of a large-scale testing program that is associated with an ongoing, joint industry research program, which is intended to advance the state-of-the-art in strain-based design as it pertains to the tensile capacity of girth welds in steel line pipe. The testing program has been designed to explore a range of variables that are known to have a significant impact on axial strain capacity including the effects of internal pressure, the strain hardening characteristics of the pipe body material, the degree of weld strength overmatch and the location of the flaw. The paper describes the type of tests performed, the key considerations in the sizing and instrumentation of the test specimens, and provides an overview of the results obtained to date.

### **Keywords**

Pipeline, Girth welds, Strain capacity, Strain-based design, Large-scale test, Curved wide plate test, Biaxial loading