



J.T. THORPE & SON, Inc.

Established 1906

ENGINEERS and CONTRACTORS

Petrochemical Hydrogen Transfer Line Custom Engineering, Design and Fabrication Services—Hydrogen and Ammonia Services

J.T. Thorpe & Son, Inc. provides a wide range of Custom Fabricated Equipment for the Industrial Market on Schedule, with High Quality and at a Low Cost

J.T. Thorpe & Son, Inc.'s Fabrication Division supply high quality ASME B31.3 hydrogen transfer lines to the Petrochemical Marketplace. We provide Engineering, Design and Fabrication of Hydrogen Transfer Lines for both Hydrogen and Ammonia service. JTT offers proprietary engineering and design fixes to eliminate failures. We create detailed steel and refractory CAD drawings, perform design calculations, Finite Element Analysis, piping stress analysis, thermal calculations, thermo-mechanical calculations and design your refractory lining. JTT has multiple fabrication locations throughout North America with the ability to ship worldwide by sea, rail and truck. At JTT we can solve many of your Hydrogen Line problems:

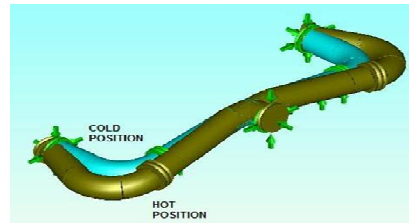
- Internal diameter too small to allow access for repairs.
- Refractory lining failing (mainly at elbows and T's).
- Poor refractory lining design.
- Line Overstressed with inadequate support system (sliding supports, fixed supports, spring cans etc.)

JTT offers engineering fixes all above problems. We offer both single component refractory lining systems and dual component lining systems. Our designs allow for thinner linings thus helping increase ID of line, allows for greater product throughput and drops pressure; allows for easier future field repairs and permits formed and poured field joints. JTT completes Finite Element Analysis of your entire system (from waste heat boiler thru entire line, headers and counter weights) and will recommend set limits of movement for headers etc to prevent future failures. In many cases existing lines fail our analysis allowing JTT to work within your parameters and confines to design new mechanical supports and linings to reduce overall stresses and improve both the reliability and quality of your equipment.

Example 1: Refractory Failing throughout line causing hot spots. Line moving in 3 axis. Switched fixed support to Spring Can support (designed by JTT). Redesigned complete lining to prevent failure of insulating castable in 2 component design by crushing and Steam/CO2 attack.

Example 2: Refractory Failing at Elbows & T's. Refractory lining design not "at fault" – Steel design issues. Fixed supports existed instead of sliding supports and the line had under designed steel at elbows.

Example 3: Line diameter too small to allow for refractory repairs – 34" Line with 10" two component refractory lining . JTT re-designed refractory lining to continue to meet process and temperature requirements. Lining changed to 6" thick single component lining. Allows for access to line for inspection, repairs and also completing field joints. Flanges were previously used at field joints and left hot spots. JTT proprietary design eliminates need for flanges without compromising refractory lining design or installation technique.



J.T. Thorpe & Son, Inc.
Fabrication Division

Richmond, CA 94801
Phone: 510-233-2500
Fax: 510-233-2901

Contact: Khalid Jiha
KhalidJ@JTThorpe.com

www.jtthorpe.com

SAN FRANCISCO, CA LOS ANGELES, CA SALT LAKE CITY, UT TUCSON, AZ BATON ROUGE, LA
CHICAGO, IL ST. LOUIS, MO MAYSVILLE, KY PITTSBURGH, PA HOUSTON, TX

