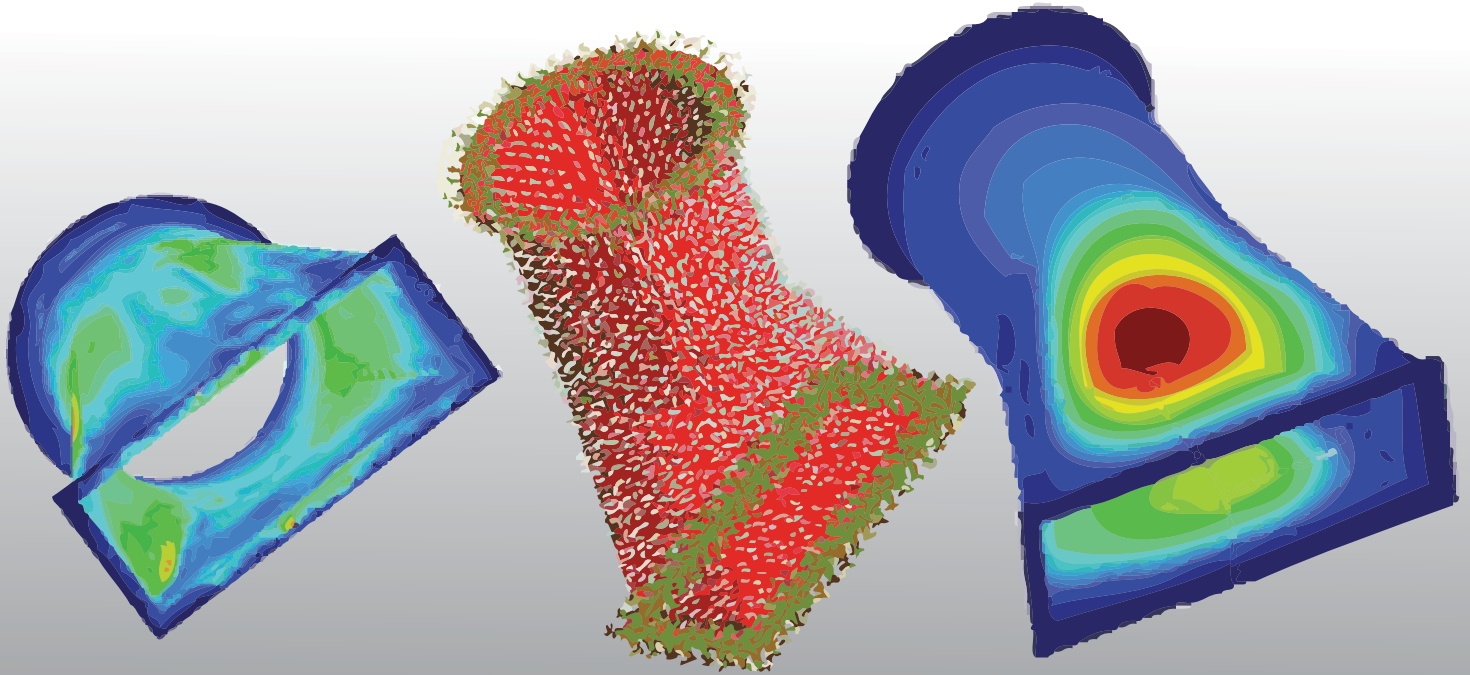
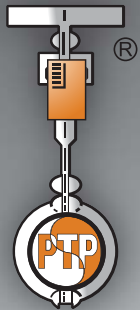


# TECHNICAL BULLETIN

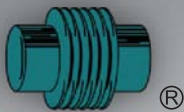


## FEA - SHOWCASE: TRANSITION PIECE

SERVICES



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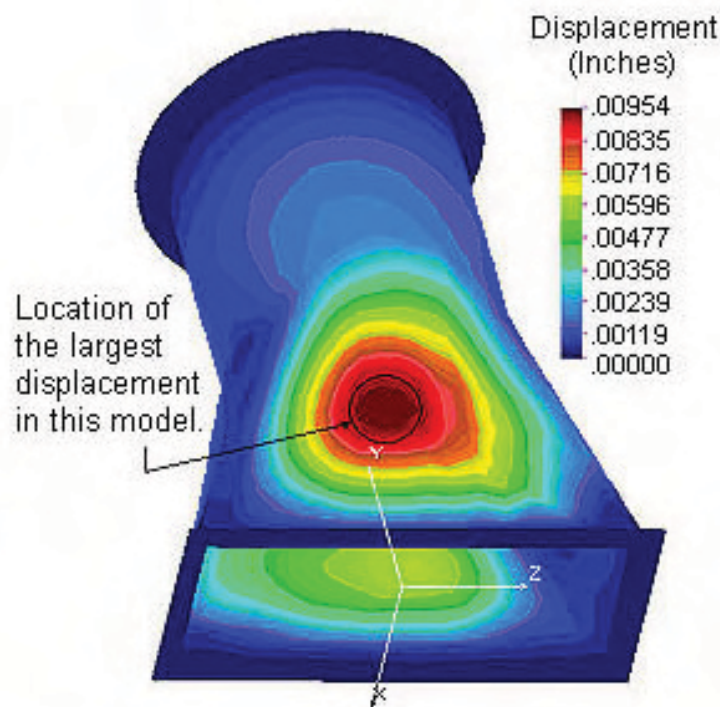
email: [info@pipingtech.com](mailto:info@pipingtech.com)

# TECHNICAL BULLETIN

## FEA: Case Studies

Product: Transition Piece

Technical Information: 3D Modeling Software, Parametric Technologies Modeler, Finite Element Analysis Software, COSMOS



## Case Study Information

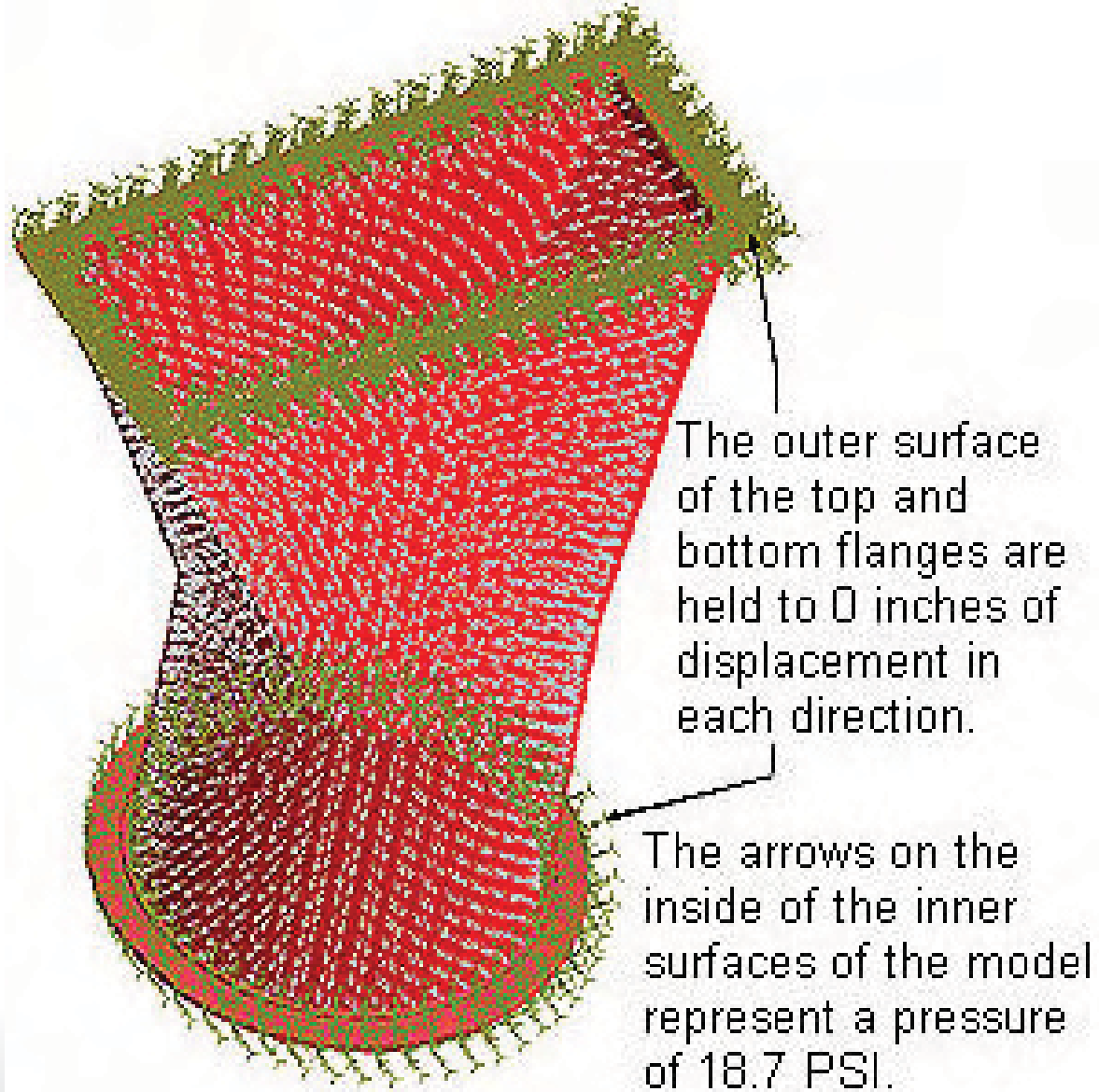
This item was modeled to the specifications included in drawing 6819001-159020. It uses a standard flange at the top as specified. It has been modified to include the extra length of pipe and to eliminate two flanges. The rectangular flange is fabricated of 1.25 x 5 inch stock and is made of A36 steel. The whole transition and pipe is fabricated of 3/8" thick A516 Grade 70 steel and this was expressed in the model. The model has a temperature condition of 105° C/221° F.

Two cases were modeled in which all references to pressure, PSI, refers to PSIG (PSI gage). The first was at operating condition when the transition piece experiences 18.7 PSI internal pressure. The second was at full vacuum when the transition piece experiences 15 PSI external pressure. The stress and displacement results are expressed in the following plots.

\*Note: All references to pressure, PSI, refers to PSIG (PSI gage)

## Illustration of Pressures and Displacements

Transition Piece: Internal Pressure = 18.7 PSI



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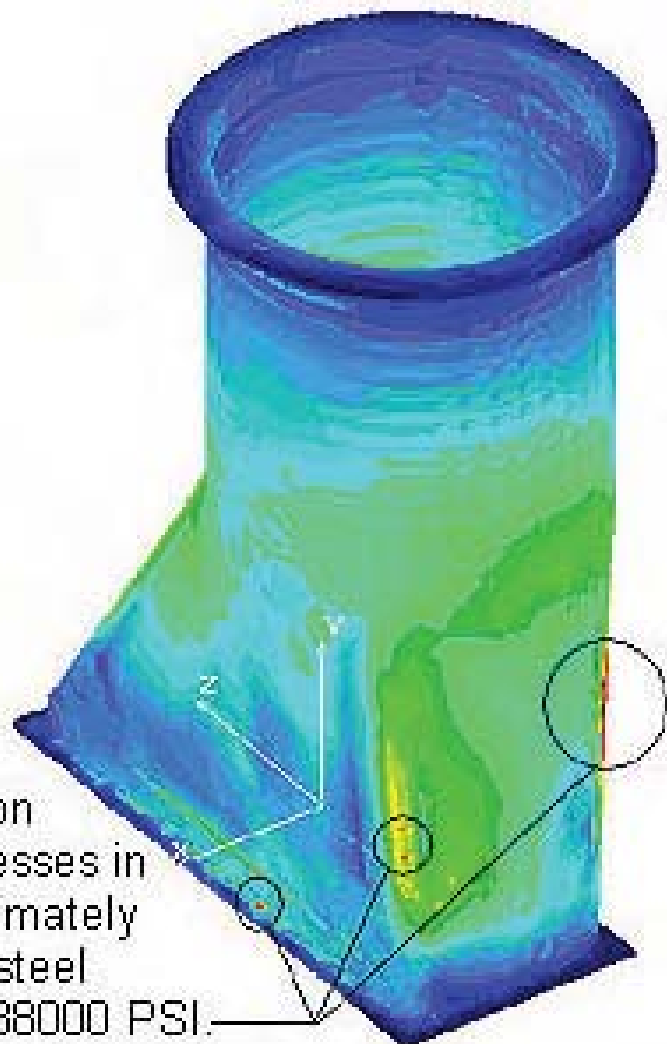
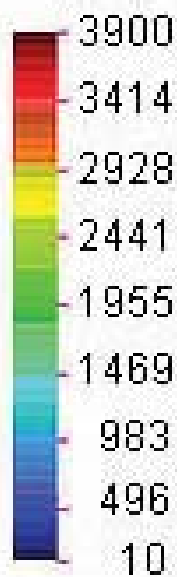
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## TECHNICAL BULLETIN

### Stress Plot #1

Transition Piece: Internal Pressure = 18.7 PSI

Von Mises  
Stresses  
(PSI)

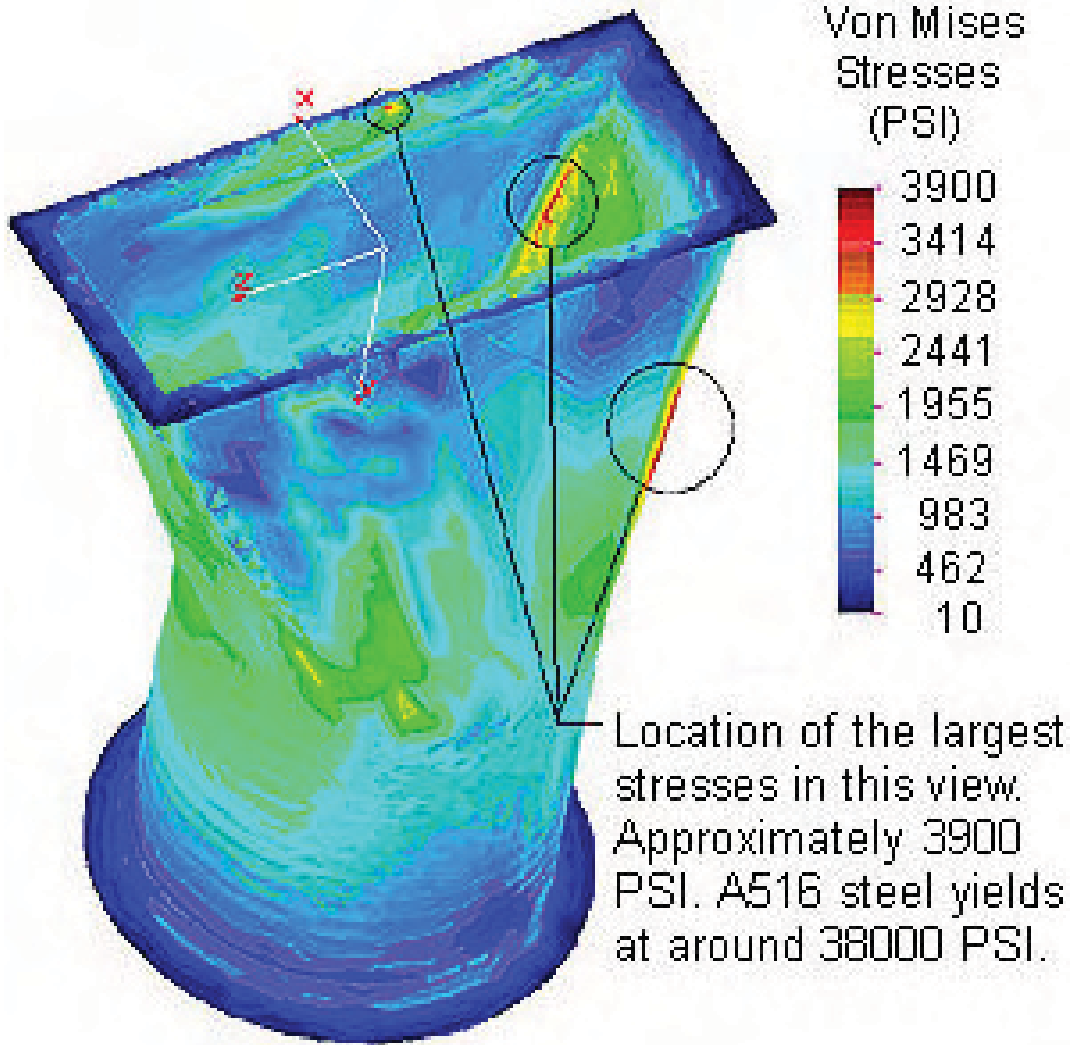


This is the location of the largest stresses in this view. Approximately 3800 PSI. A516 steel yields at around 38000 PSI.

This model has an internal pressure of 18.7 PSI on every internal surface. The chart on the left of the model shows the stresses at every point in the model by a color coding system.

## Stress Plot #2

Transition Piece: Internal Pressure = 18.7 PSI



This model has an internal pressure of 18.7 PSI on every internal surface.

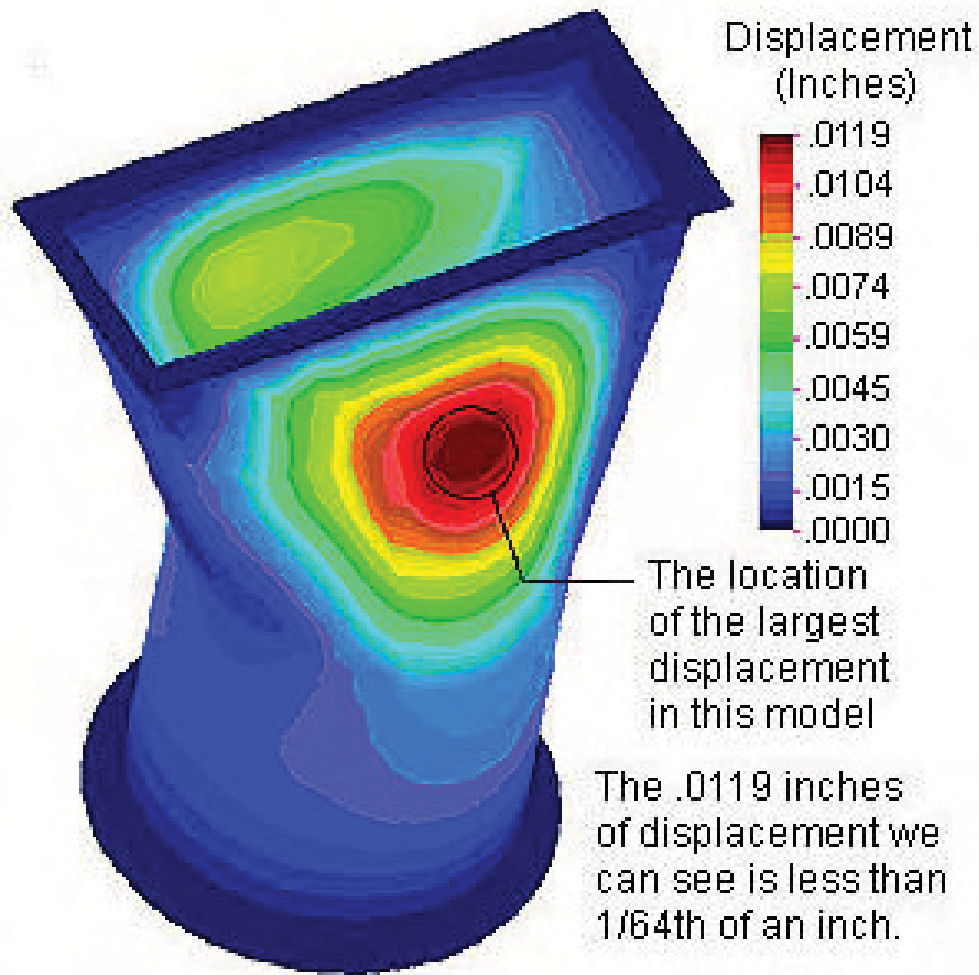
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# TECHNICAL BULLETIN

## Displacement Plot #1

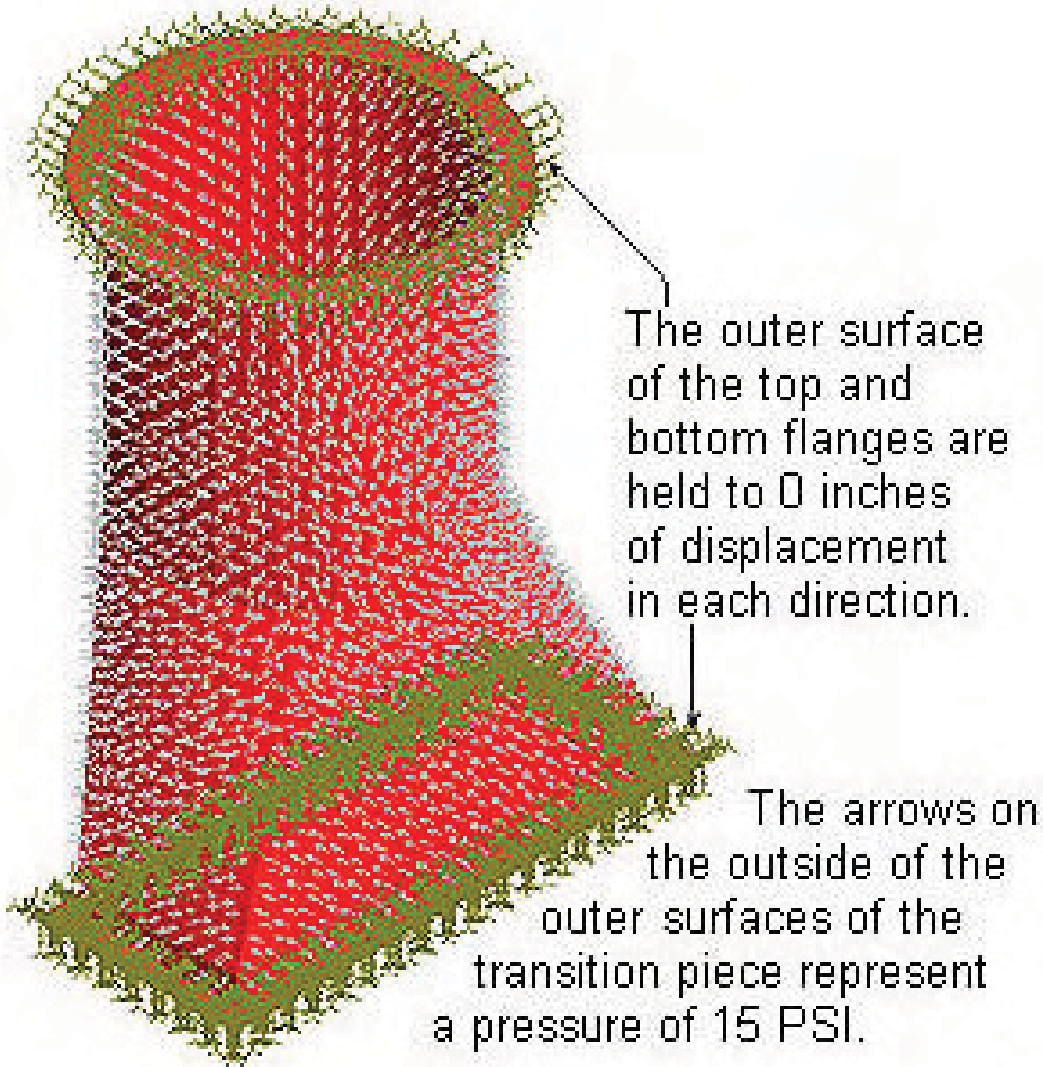
Transition Piece: Internal Pressure = 18.7 PSI



This model has an internal pressure of 18.7 PSI on every internal surface. The chart shows the displacement at every point in the model by a color coding system which represents inches of displacement.

## Illustration of Pressures and Displacements

Transition Piece: External Pressure = 15 PSI



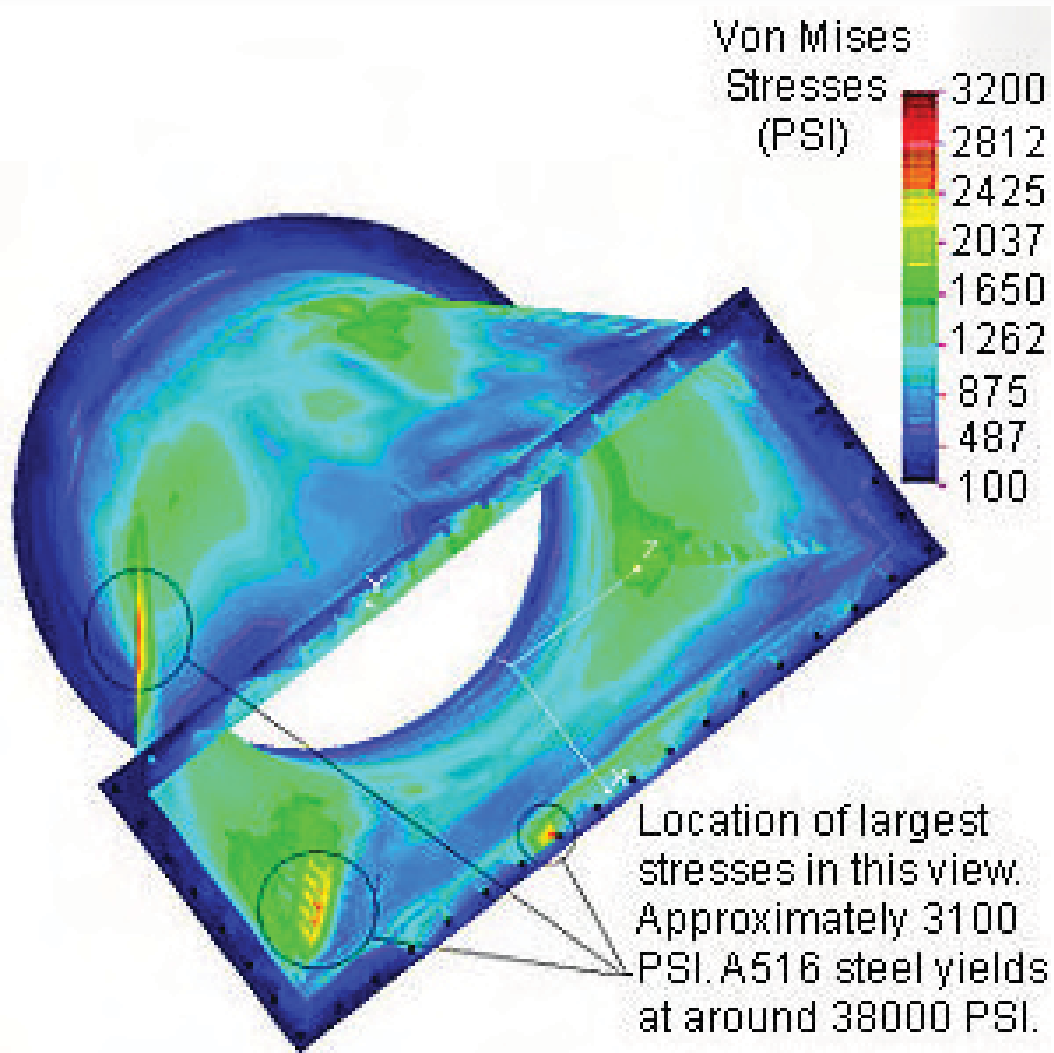
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website: [www.pipingtech.com](http://www.pipingtech.com)

# TECHNICAL BULLETIN

## Stress Plot #1

Transition Piece: External Pressure = 15 PSI

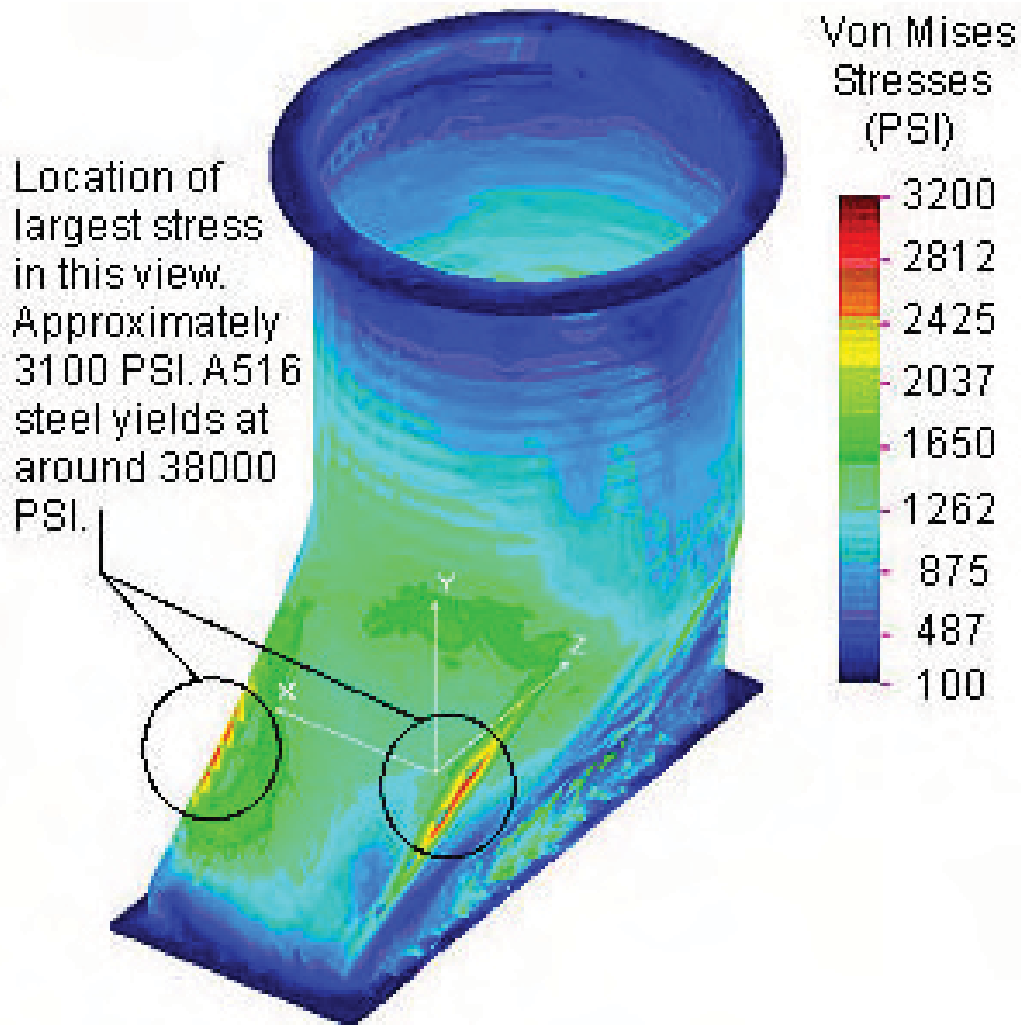


This model has an external pressure of 15 PSI on every external surface. The chart above shows the stresses at every point in the model by a color coding system.



## Stress Plot #2

Transition Piece: External Pressure = 15 PSI



The chart above shows the stresses at every point in the model by a color coding system. This model has an external pressure of 15 PSI on every external surface.

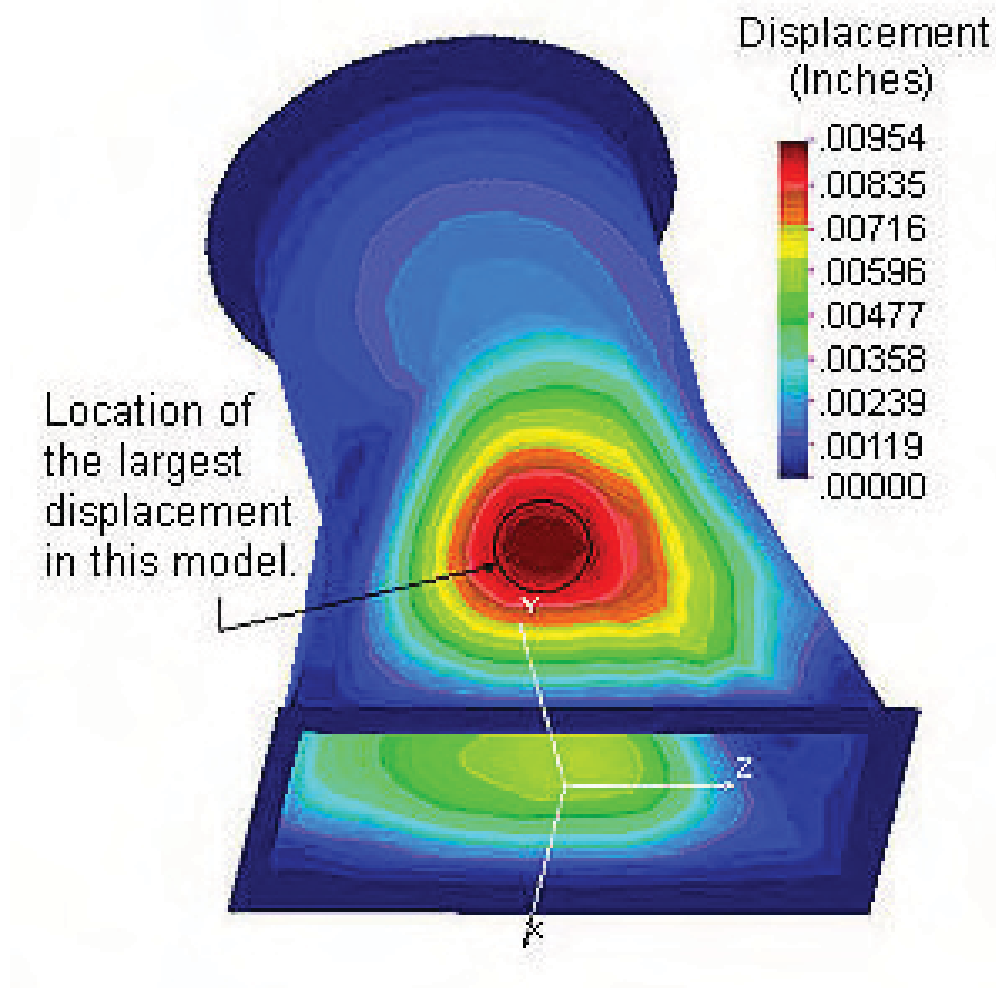
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# TECHNICAL BULLETIN

## Displacement Plot #1

Transition Piece: External Pressure = 15 PSI



The chart above shows the displacement at every point in the model by a color coding system which represents inches of displacement.