

Stress Analysis Report

Analyzed File: Stage Assembly.iam

Autodesk Inventor Version: 2012 (Build 160160000, 160)

Creation Date: 10/29/2014, 12:47 PM

Simulation Author: crollins

Summary:

Project Info (iProperties)

Summary

Title

Subject

Project

Part Number Stage Assembly

Designer crollins

Date Created 10/29/2014

Status

Design Status WorkInProgress

Physical

Mass 151.31 lbmass

Area 17254.3 in²

Volume 4188.26 in³

Center of Gravity

x=2.48329 in

y=24 in

z=47.9902 in

Note: Physical values could be different from Physical values used by FEA reported below.

Simulation:1

General objective and settings:

Design Objective Single Point

Simulation Type Static Analysis

Last Modification Date 10/29/2014, 12:44 PM

Detect and Eliminate Rigid Body Modes No

Separate Stresses Across Contact Surfaces No

Motion Loads Analysis No

Advanced settings:

10/29/2014 Stress Analysis Report

file:///C:/Users/crollins/Desktop/MSTA%20Stage%20FEA/Stage%20Assembly.iam%20Stress%20Analysis%20Report%2010_29_2014.html 2/33

Avg. Element Size (fraction of model diameter) 0.1

Min. Element Size (fraction of avg. size) 0.2

Grading Factor 1.5

Max. Turn Angle 60 deg

Create Curved Mesh Elements No

Use part based measure for Assembly mesh Yes

Material(s)

Name Aluminum-6061

General

Mass Density 0.097905 lbmass/in³

Yield Strength 39912.9 psi

Ultimate Tensile Strength 44992.7 psi

Stress

Young's Modulus 10000 ksi

Poisson's Ratio 0.33 ul

Shear Modulus 3759.4 ksi

Stress Thermal

Expansion Coefficient 0.00004248 ul/f

Thermal Conductivity 312.765 btu/(ft hr f)

Specific Heat 0.972467 btu/(lbmass f)

Part Name(s)

96 in Angle.ipt

96 in Angle.ipt

48 in Angle.ipt

48 in Angle.ipt

Rect Tube.ipt

Rect Tube.ipt

Rect Tube.ipt

Vertical Pipe Leg.ipt

Vertical Pipe Leg.ipt

Vertical Pipe Leg.ipt

Vertical Pipe Leg.ipt

Name Wood (Oak)

General

Mass Density 0.0202313 lbmass/in³

Yield Strength 6763.43 psi

Ultimate Tensile Strength 798.258 psi

Stress

Young's Modulus 1349.78 ksi

Poisson's Ratio 0.35 ul

Shear Modulus 499.919 ksi

Stress Thermal

Expansion Coefficient 0.00000882 ul/f

Thermal Conductivity 0.262199 btu/(ft hr f)

Specific Heat 0.929034 btu/(lbmass f)

Part Name(s) Stage Floor.ipt

Operating conditions

Pressure:1

Load Type Pressure

Magnitude 1.736 psi

Selected Face(s)

10/29/2014 Stress Analysis Report

file://