ANSYS TUTORIAL
Nonlinear analysis of Reinforced Concrete Column using ANSYS Workbench 2019

Nonlinearity :

- Material nonlinear (Concrete, Rebars)
- Geometric nonlinear (Internal forces calculated from deformed geometry instead of initial geometry)

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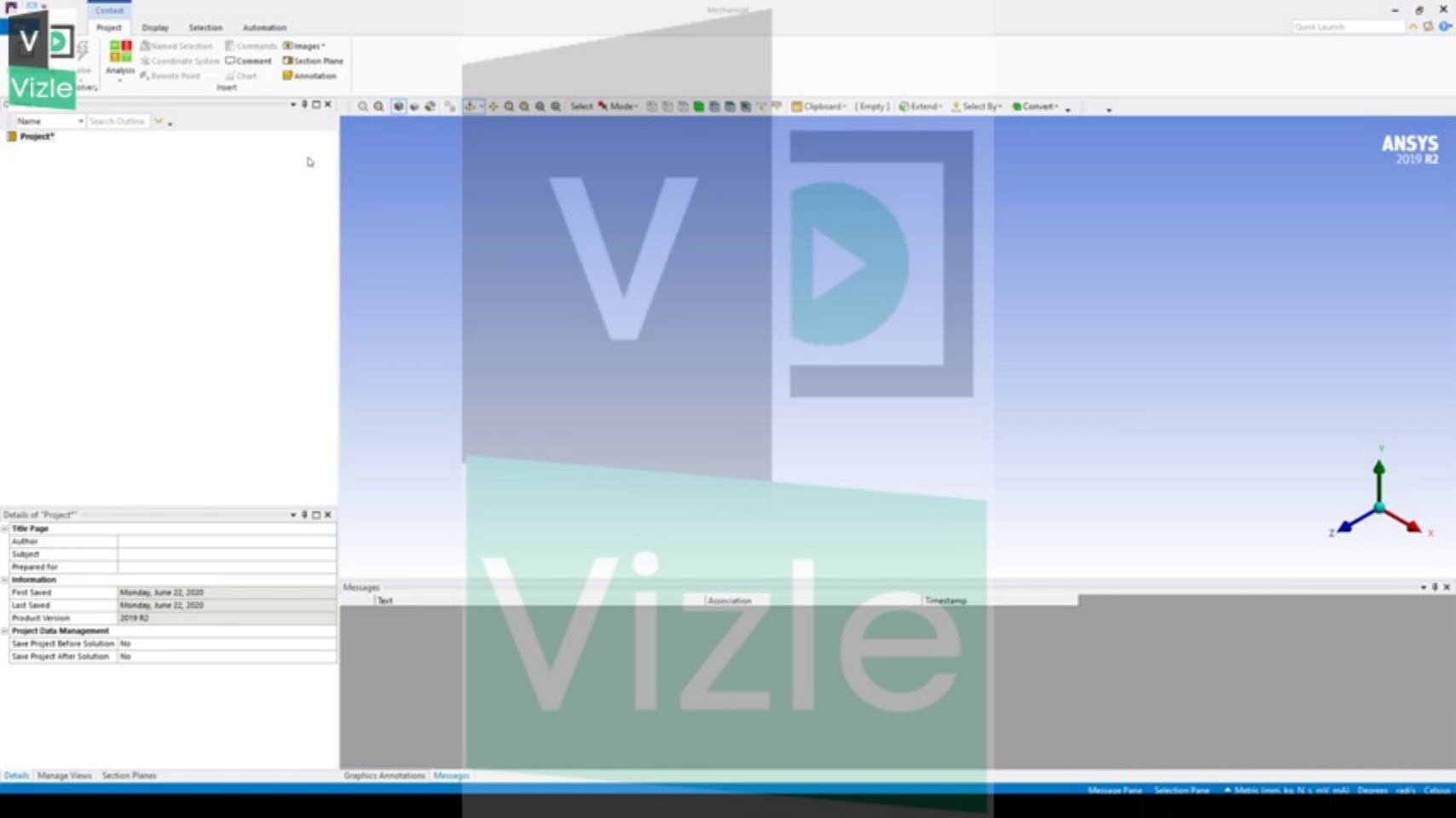
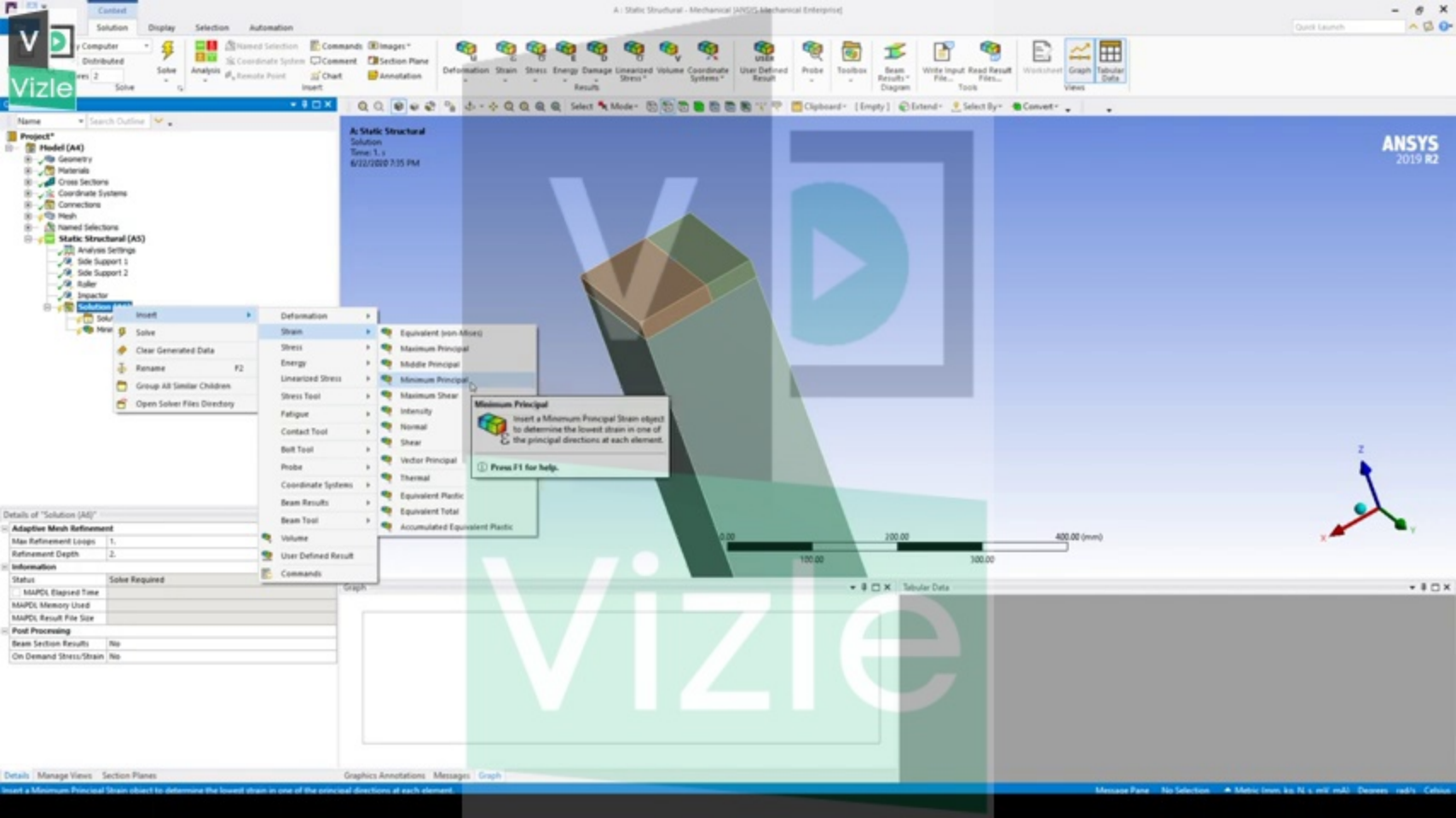
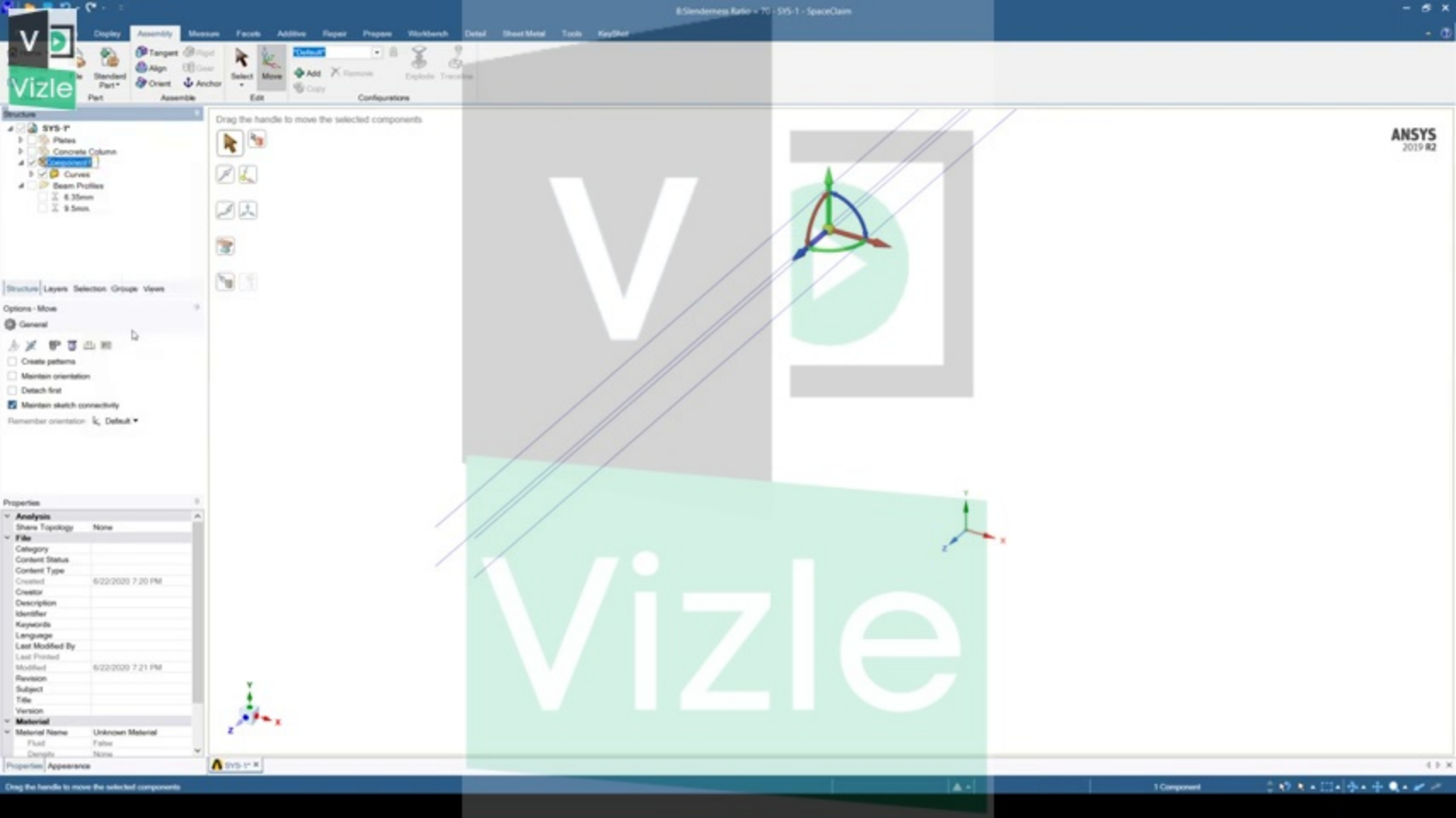

Vizle
Context
Project
Display
Selection
Automation
Named Selection
Coordinate System
Remote Point
Commands
Comment
Chart
Images
Section Plane
Annotation
Analysis
Insert
Name
Search Outline
Project*
Details of "Project*"
Title Page
Author
Subject
Prepared for
Information
First Saved
Monday, June 22, 2020
Last Saved
Monday, June 22, 2020
Product Version
2019 R2
Project Data Management
Save Project Before Solution
No
Save Project After Solution
No
Select Mode
Clipboard
[Empty]
Extend
Select By
Convert
ANSYS
2019 R2
Y
Z
X
Messages
Text
Association
Timestamp
Details
Manage Views
Section Planes
Graphics Annotations
Messages
Message Pane
Selection Pane
Metric (mm, kg, N, s, mV, mA)
Degrees
rad/s
Celsius


Vizle
Solution
Display
Selection
Automation
Deformation
Strain
Stress
Energy
Damage
Linearized Stress
Volume
Coordinate Systems
User Defined Result
Probe
Toolbox
Beam Results Diagram
Write Input File...
Read Result Files...
Worksheet
Graph
Tabular Data
Project*
Model (A4)
Geometry
Materials
Cross Sections
Coordinate Systems
Connections
Mesh
Named Selections
Static Structural (A5)
Analysis Settings
Side Support 1
Side Support 2
Roller
Impactor
Solution (A6)
Insert
Solve
Clear Generated Data
Rename F2
Group All Similar Children
Open Solver Files Directory
Deformation
Strain
Stress
Energy
Linearized Stress
Stress Tool
Fatigue
Contact Tool
Bolt Tool
Probe
Coordinate Systems
Beam Results
Beam Tool
Volume
User Defined Result
Commands
Equivalent (von-Mises)
Maximum Principal
Middle Principal
Minimum Principal
Maximum Shear
Intensity
Normal
Shear
Vector Principal
Thermal
Equivalent Plastic
Equivalent Total
Accumulated Equivalent Plastic
Minimum Principal
Insert a Minimum Principal Strain object to determine the lowest strain in one of the principal directions at each element.
Press F1 for help.
A: Static Structural
Solution
Time: 1. s
6/22/2010 7:35 PM
ANSYS
2019 R2
0.00
100.00
200.00
300.00
400.00 (mm)
Details of "Solution (A6)"
Adaptive Mesh Refinement
Max Refinement Loops 1.
Refinement Depth 2.
Information
Status Solve Required
MAPDL Elapsed Time
MAPDL Memory Used
MAPDL Result File Size
Post Processing
Beam Section Results No
On Demand Stress/Strain No
Graph
Tabular Data
Details
Manage Views
Section Planes
Graphics Annotations
Messages
Graph
Insert a Minimum Principal Strain object to determine the lowest strain in one of the principal directions at each element
Message Pane
No Selection
Metric (mm, kg, N, s, mV, mA)
Degrees
rad/s
Celsius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B:Slenderness Ratio = 70 | SYS-1 - SpaceClaim
Display
Assembly
Measure
Facets
Additive
Repair
Prepare
Workbench
Detail
Sheet Metal
Tools
KeyShot
Tangent
Align
Orient
Rigid
Gear
Anchor
Standard Part
Part
Assemble
Select
Move
Edit
Default
Add
Remove
Copy
Explode
Trace line
Configurations
Structure
SYS-1*
Plates
Concrete Column
Component 1
Curves
Beam Profiles
6.35mm
9.5mm
Drag the handle to move the selected components
ANSYS
2019 R2
Structure
Layers
Selection
Groups
Views
Options - Move
General
Create patterns
Maintain orientation
Detach first
Maintain sketch connectivity
Remember orientation
Default
Properties
Analysis
Share Topology
None
File
Category
Content Status
Content Type
Created
6/22/2020 7:20 PM
Creator
Description
Identifier
Keywords
Language
Last Modified By
Last Printed
Modified
6/22/2020 7:21 PM
Revision
Subject
Title
Version
Material
Material Name
Unknown Material
Fluid
False
Density
None
Properties
Appearance
SYS-1*
Drag the handle to move the selected components
1 Component
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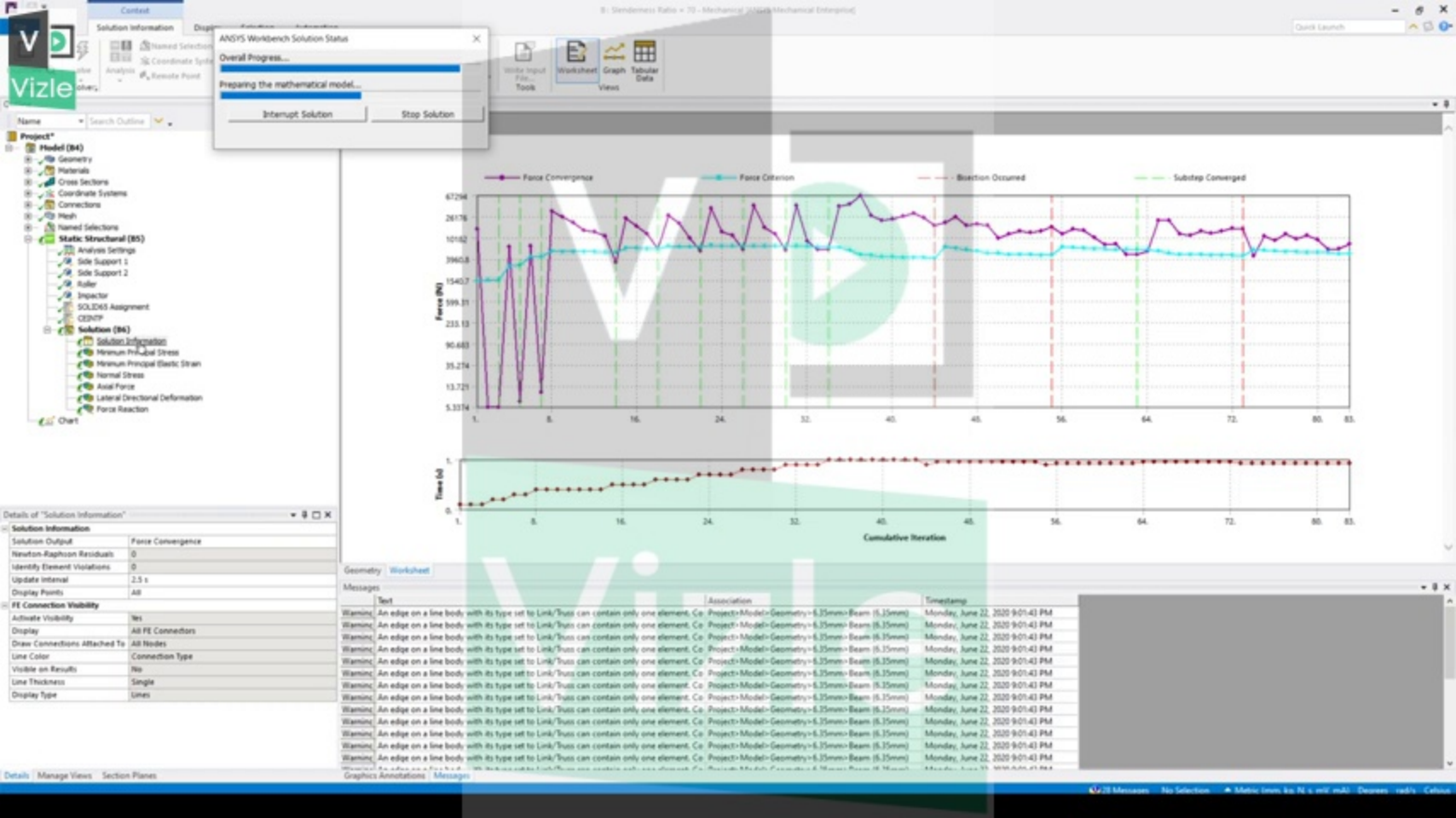
ANSYS Workbench Solution Status
Overall Progress...
Preparing the mathematical model...
Interrupt Solution
Stop Solution
Force Convergence
Force Criterion
Bisection Occurred
Substep Converged
Force (N)
Time (s)
Cumulative Iteration
Project*
Model (B4)
Static Structural (B5)
Solution (B6)
Solution Information
Details of "Solution Information"
Solution Information
Solution Output
Force Convergence
Messages
Text
Association
Timestamp
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