



Trimble Engineering Solutions

AISC Student Steel Bridge Competition

Presented By: Danny McPheron, PE

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Agenda

- 01** Introduction
About Trimble
- 02** Tekla Structural Designer
Analysis & Design modeling
- 03** Tekla Structures
BIM modeling & drawing production
- 04** Example Projects
How engineers are using Tekla software
- 05** Resources
Download and support



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Danny McPheron, PE



Purdue University, West Lafayette, IN

- BSCE, MSCE Structural Engineering

Ruby+Associates, Bingham Farms, MI

- Steel building design & detailing, connection design, construction engineering
- Used Tekla Structures for project work

Trimble, Kennesaw, GA

- Tekla Structures specialist for engineering firms
- Steel buildings, bridges, concrete & rebar



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Trimble



Structures

Engineering,
Construction,
Fabrication



Geospatial

GPS, Surveying, Laser
Scanning



Transportation

Shipping, Navigation,
Safety



Agriculture

Farming, Water,
Sustainability

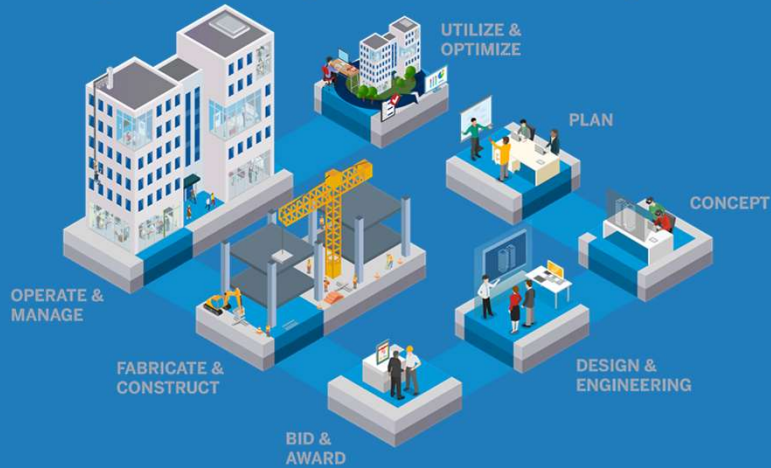


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Structures

Supporting Every Phase of the Life Cycle



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Our Customers



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Engineering Software

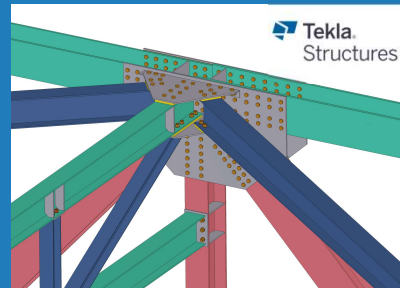
Tekla Structural Designer

- Analysis model for member design
- Apply loads to structure
- Analyze stresses, deflection, etc.
- Design & optimize members
- Produce reports & calculations from results



Tekla Structures

- BIM model with fabrication-level detail
- Accurately model structure with connections
- Measure material quantity, weight, center of gravity, etc.
- Create design & fabrication drawings
- Export fabrication data



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Tekla Structural Designer



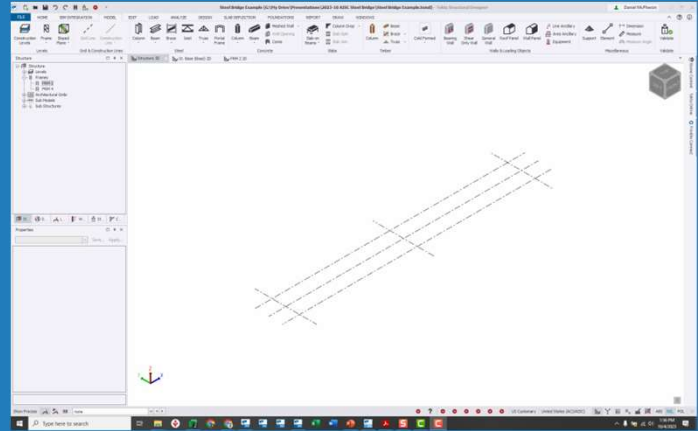
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Tekla Structural Designer

Modeling a truss

- Import Tekla Structures model (or model from scratch)
- Import DXF to trace geometry
- Model internal, top and bottom chord members; Copy truss
- Use AISC shapes or custom sections
- Add beams and horizontal braces
- Define fixity



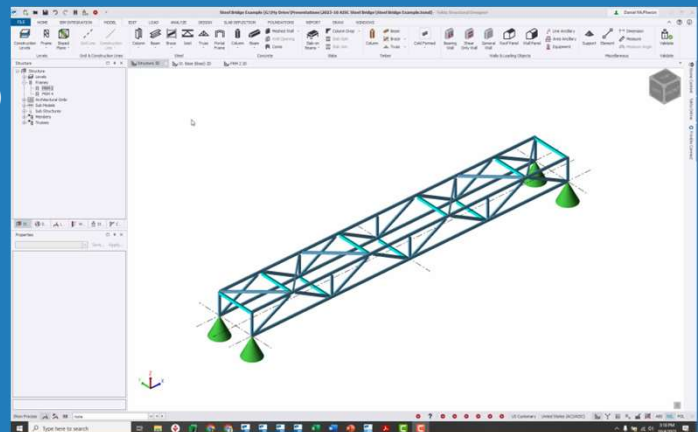
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Tekla Structural Designer

Loading a truss

- Select load combinations (ASD or LRFD)
- Auto-generate common combinations
- Add point, line, area loads



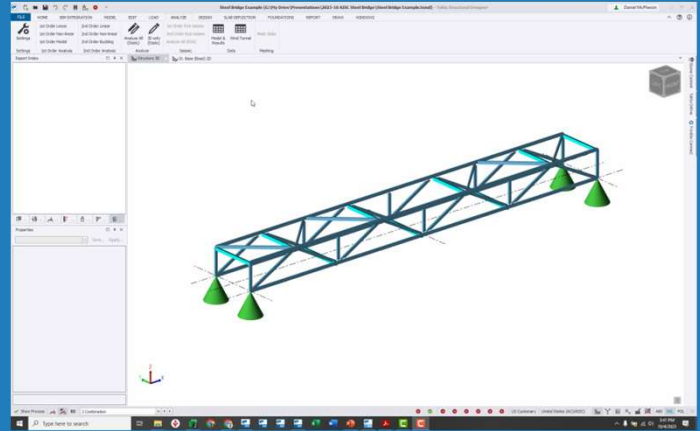
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Tekla Structural Designer

Analyzing a truss

- Check forces, stresses, design checks
- View and animate deflection
- Create member reports



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Tekla Structures



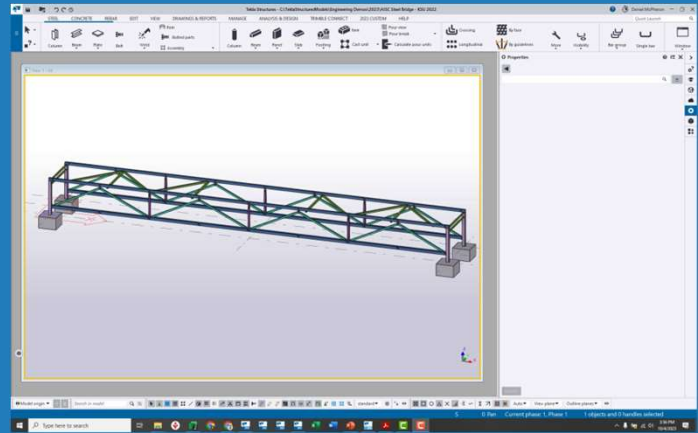
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Tekla Structures

Modeling a structure

- Import Tekla Structural Designer model (or model from scratch)
- Model members with AISC shapes or custom profiles
- Accurately model connections including plates, bolts, welds, cuts



Thanks to:  KENNESAW STATE UNIVERSITY



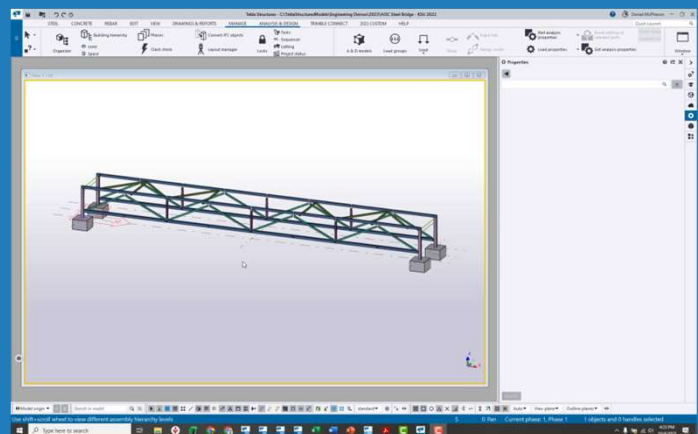
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Tekla Structures

Modeling a structure

- Get accurate material quantities
- Measure weights and centers of gravity
- Create Excel reports to help calculate cost
- Ensure constructability and avoid material waste



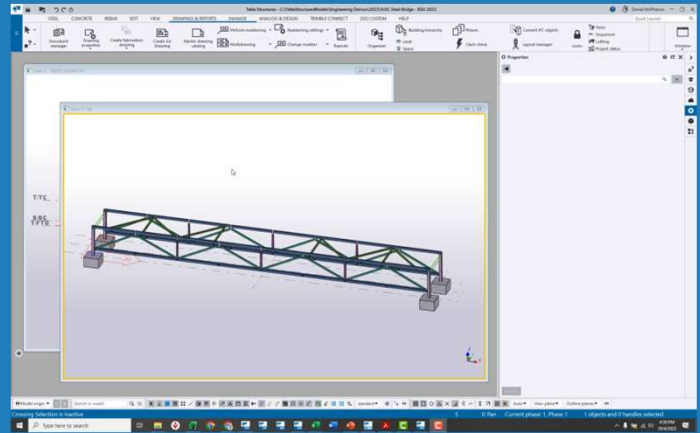
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Tekla Structures

Creating drawings from a model

- Create design drawings (plans, elevations)
- Generate assembly, part drawings for fabrication shops
- Plot construction drawings to help with bridge assembly



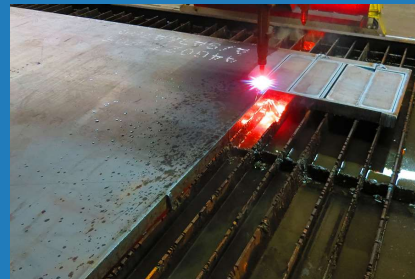
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Tekla Structures

Creating fabrication data

- Export CNC data for direct entry to fabrication machines
- Plates, angles, tubes, etc.



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Example Projects



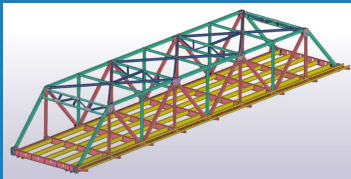
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Umatilla River Bridge

Tekla BIM Awards

- 190' x 44' bridge in Oregon
- 2500 parts, 173 tons of steel, 433 drawings
- Axis Steel Detailing



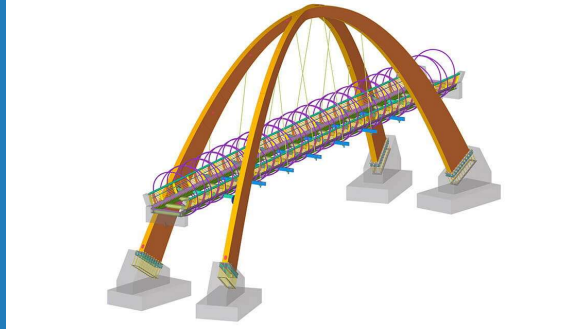
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College Park Connector Bridge

Tekla BIM Awards

- 200' pedestrian bridge in Georgia
- HSS design, 250 tons of steel
- International Design Services, Inc.



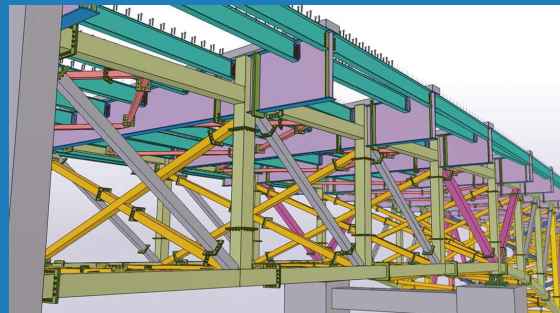
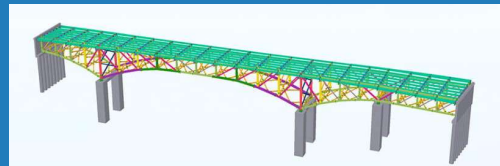
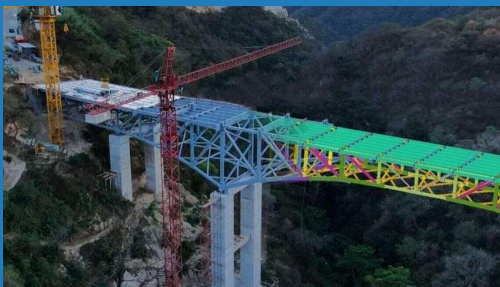
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Puente 6 VAS

Tekla BIM Awards

- 450' bridge in Guatemala
- 950 tons of steel
- Aceros Arquitectónicos



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Resources



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Tekla for Students



The screenshot shows a web browser window with the URL <https://www.tekla.com/solutions/campus>. The page features a navigation menu with links for Products, Solutions, Resources, Support, and About. A breadcrumb trail indicates the current location: Home > Solutions > Tekla Campus. A prominent blue button labeled "CONTACT US" is visible. The main content area displays a modern building facade with a white overlay box containing the heading "Tekla Campus for higher education" and the text: "Our mission is to transform the engineering, construction, and operations industries by investing in the next generation of skilled professionals and industry influencers." Below this text are two buttons: "Register" and "Sign in".

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Tekla User Assistance



Learn more: Tutorials, articles, troubleshooting

Get started: Setup and learning

Tekla Structures

Tekla Structural Designer

Tekla Tedds

Tekla PowerFab

Learn more

Get started

Learn more

Get started

Learn more

Get started

Learn more

Get started

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Thank you

Questions?

THANK YOU

תודה

KIITOS

BEDANKT

Teşekkürler

DANKIE

Ευχαριστώ

Спасибо

GRACIAS

SALAMAT

VIELEN DANK

KÖSZÖNJÜK

NGĀ MIHI

उत्तरदा यँनहारद

GRAZIE

TACK

Dziękujemy

VINAKA

شكراً

Obrigado

शुक्रिया

AČIŮ

БЛАГОДАРИМ ВИ

HVALA VAM

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HVALA VAM

ASANT

DIOLCH

MULTUMIM

Xin Cảm Ơn

ДЯКУЄМО

ありがとうございます

감사합니다

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