SPECIALIST
MACHINERY
SALES
AUSTRALIA, NEW ZEALAND & SE ASIA

THOUGHT-LEADER IN STEEL PROCESSING AUTOMATION

SUPERIOR MACHINERY SYSTEMS

SUPERIOR AUTOMATION OF STEEL STRUCTURE DETAILING DESIGN

1300 262 123 / +61 8 6500 6880

tellmemore@smsales.com.au
www.SMSales.com.au

EXECUTIVE SUMMARY

At Specialist Machinery Sales, we don't just sell machines—we transform fabrication workflows through intelligent automation. Our breakthrough lies not only in advanced hardware, but in our proprietary in-house software, the first of its kind to deliver up to 80% automation in structural steel detailing and processing.

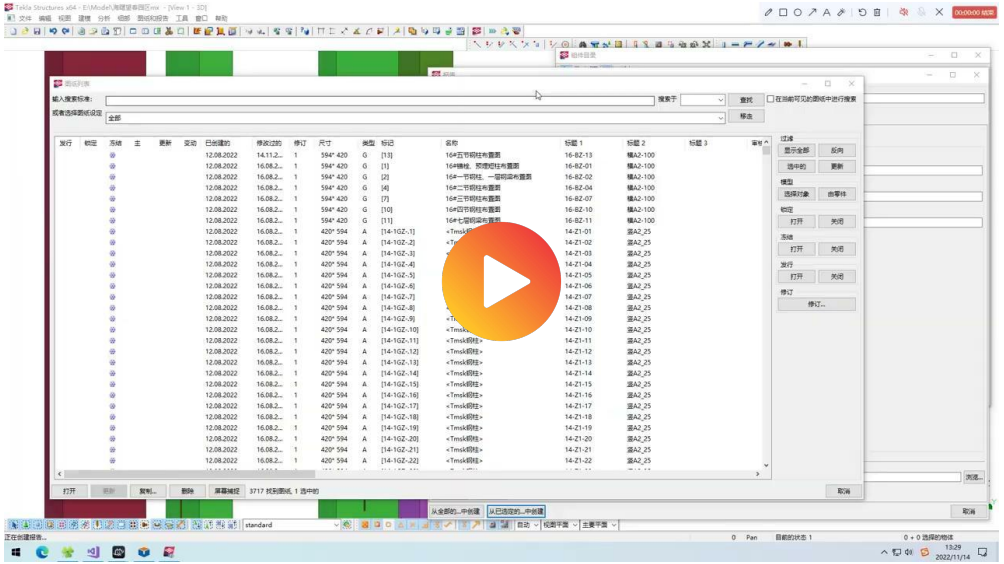
This end-to-end digital and AI-powered system translates complex 3D designs directly into machine-ready instructions, eliminating the need for manual input in traditionally labour-intensive tasks such as layout marking, coping, bevel planning, and nesting. The result is a fully streamlined operation that drastically reduces lead times, enhances cutting accuracy, and empowers even junior operators to produce consistent, high-quality outputs.

What was once a major production bottleneck—reliant on skilled labour and prone to costly errors—is now a digitally driven, repeatable process. Our system not only increases shop floor productivity, but also reduces operational dependence on hard-to-source skilled workers, making it a scalable solution for fabricators looking to remain competitive in high-pressure environments.

The following videos demonstrate how this innovative approach is already delivering measurable results in real-world fabrication settings—redefining what's possible in structural steel manufacturing.

Utilise existing software and adopt innovative operational methods to address issues beyond the original software's functionality.

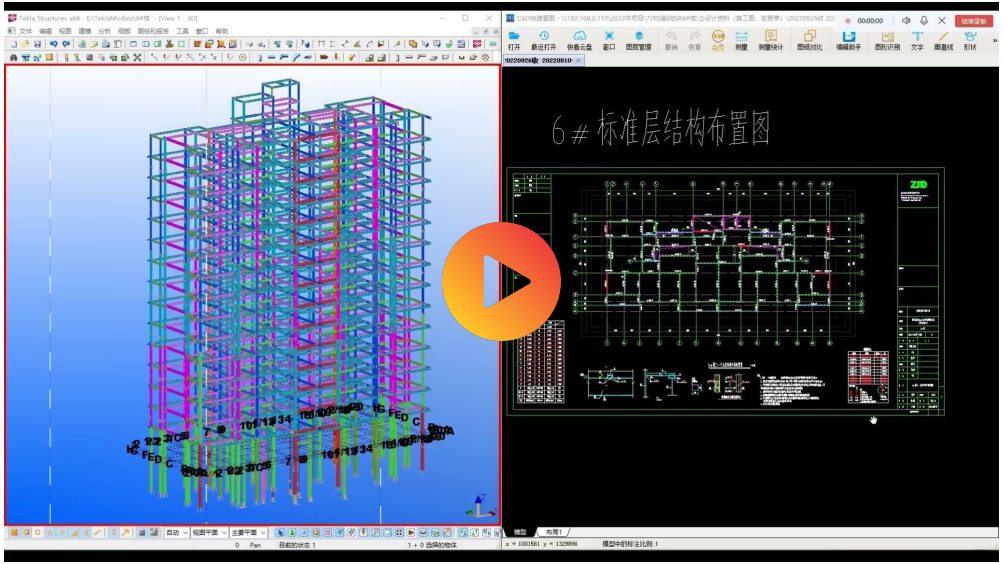
- Use list functions to create catalogs.
- Replace node templates with attribute blocks.
- Use bolt functions to draw grouting holes.
- Use cutting trajectories to represent the front and back sides of lattice panels.



CASE STUDY 1 - CATALOG AUTOMATION

Based on the high standardisation of construction drawings, batch completion of repetitive operations.

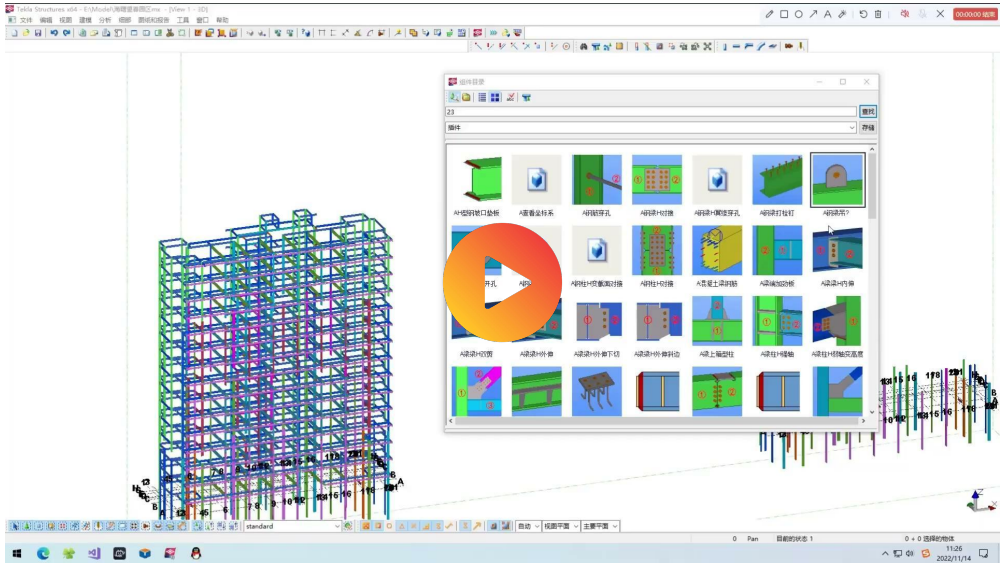
- Batch modeling of bolts
- Batch modeling of lifting ears
- Batch modeling of north-pointing plates



CASE STUDY 2 - BOLTING AUTOMATION A

Based on the high standardisation of construction drawings, batch completion of repetitive operations.

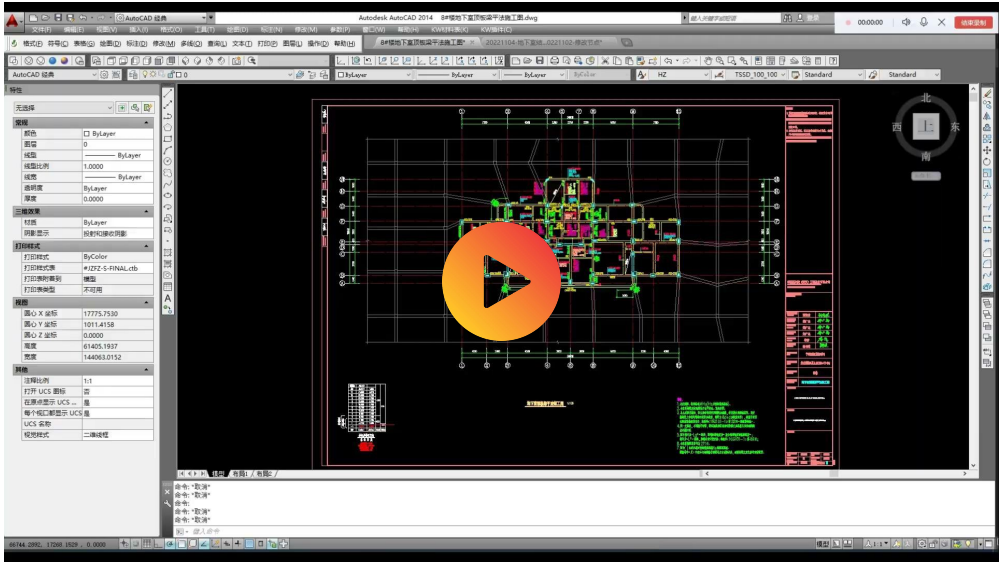
- Batch modeling of Lifting Lugs



CASE STUDY 2 - BOLTING AUTOMATION B

Batch complete repetitive operations in the drafting process to improve work efficiency.

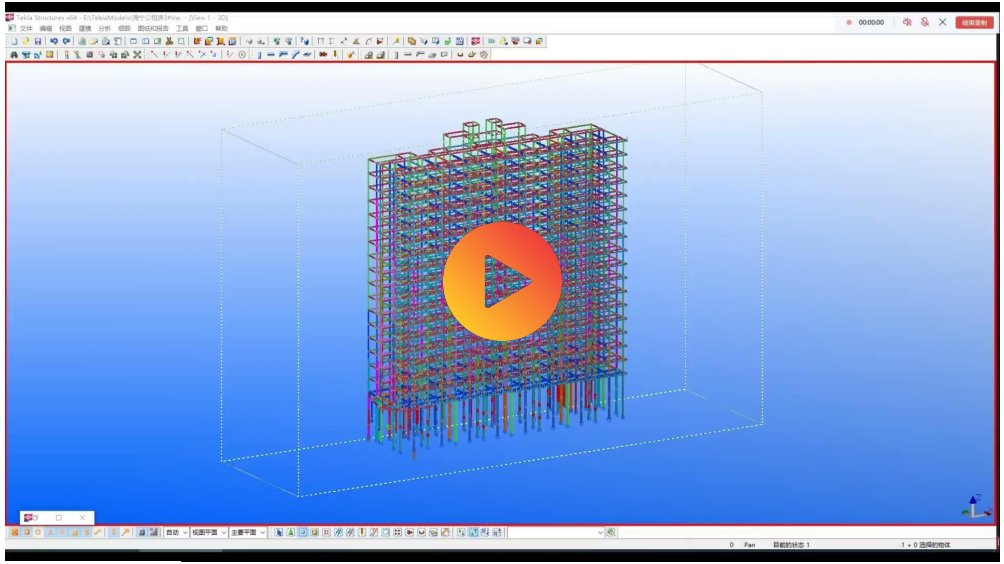
- Automatic drawing of axes
- Automatic synthesis of drawings



CASE STUDY 3 - AXIS AUTOMATION

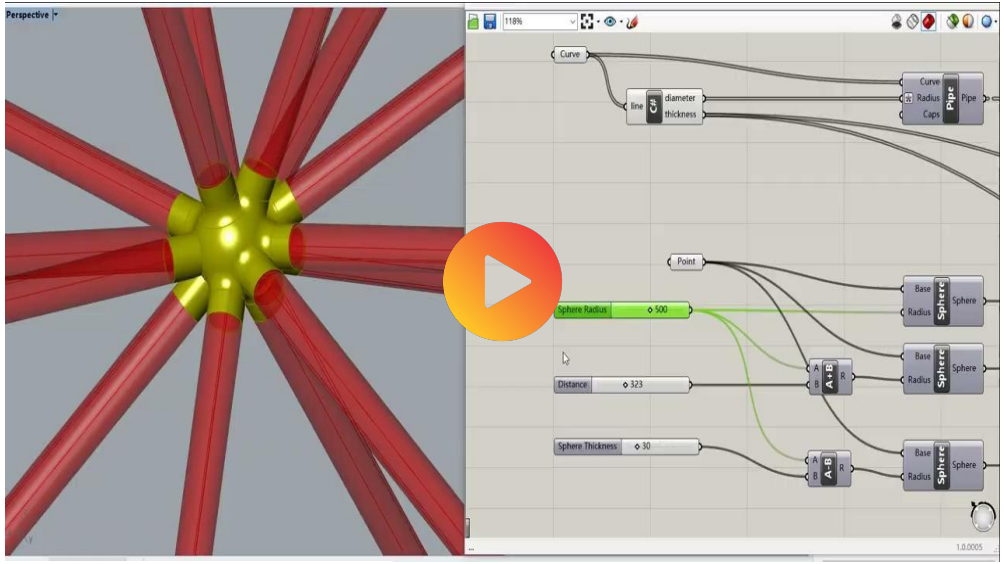
Batch complete repetitive operations during drawing modifications, ensuring accuracy and fast response.

- Batch replacement of sections
- Batch replacement of bolts
- Batch replacement of materials



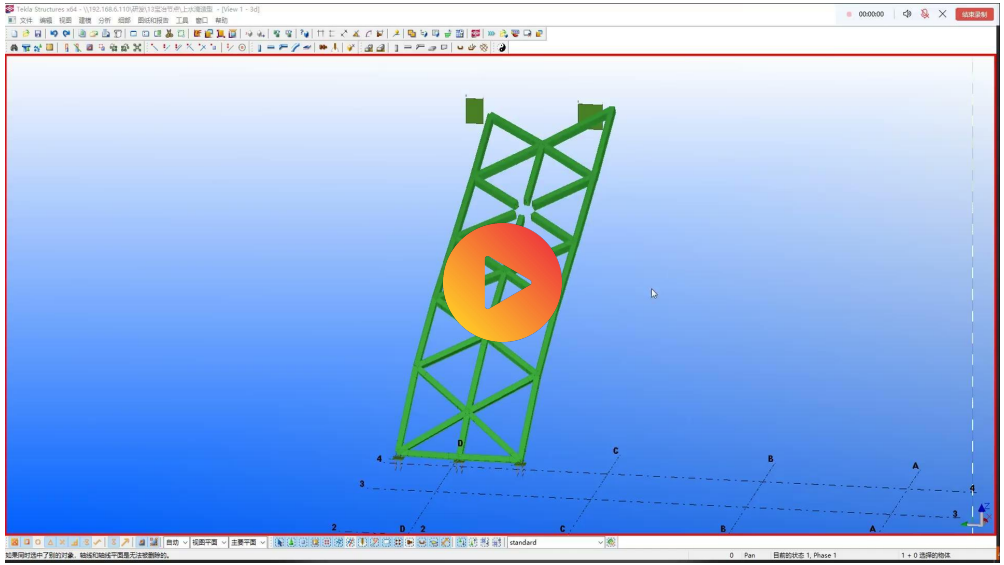
CASE STUDY 4 - SECTION REPLACEMENT AUTOMATION

For situations where a large number of components have similar types but different parameters, and where these parameters interact with each other, real-time adjustments are required for modeling. This can be addressed through automation using Grasshopper.



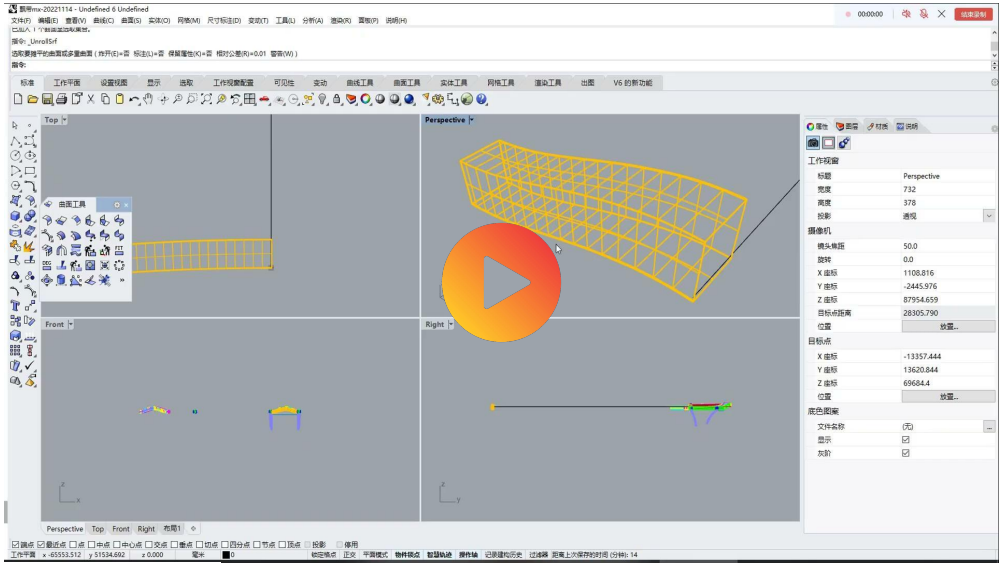
CASE STUDY 5 - CAST STEEL COMPONENT MODELING AUTOMATION A

For situations where a large number of components have similar types but different parameters, and where these parameters interact with each other, real-time adjustments are required for modeling. **Automation can be achieved using Grasshopper with general parametric nodes.**



CASE STUDY 5 - SIMILAR CAST STEEL COMPONENT MODELING B

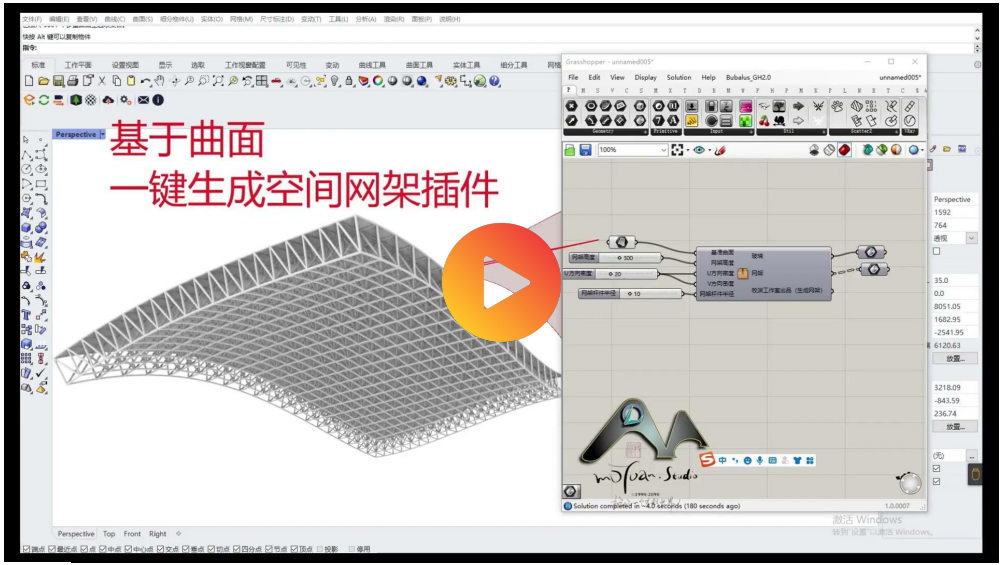
For the unfolding of bent or twisted components or aluminum panel parts, it is preferable to complete the process within a single software while ensuring sufficient accuracy. By extending the concept of panel unfolding to linear bent and twisted components, this relatively complex task is simplified.



CASE STUDY 6 - CURVED PANEL UNFOLDING AUTOMATION

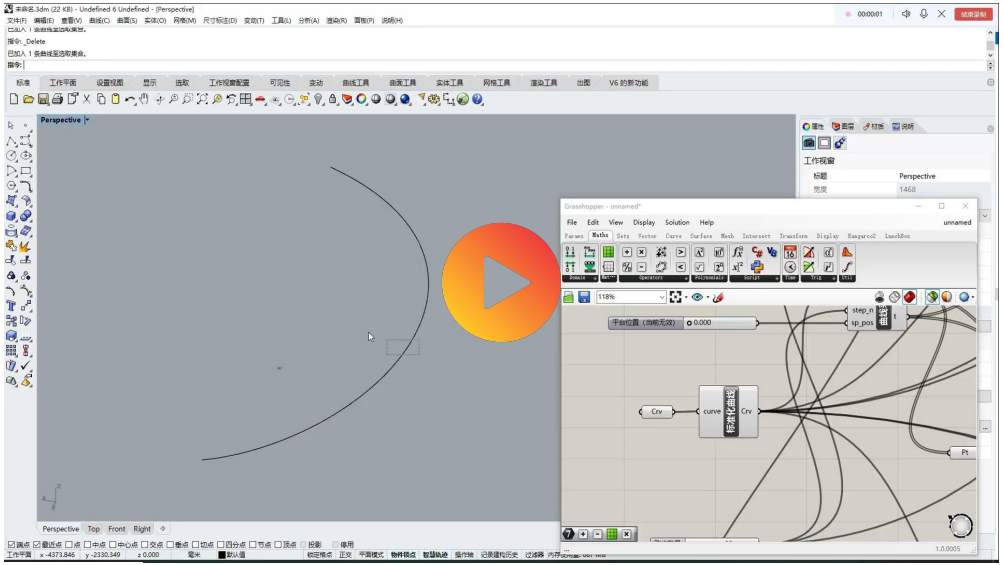
Based on design drawings, adjust the corresponding parameters of spatial truss structures in the plugin and automatically generate new models.

- Modify truss height
- Modify node spatial coordinates
- Modify upper/lower chord/web specifications



CASE STUDY 7 - SPATIAL TRUSS AUTOMATION A

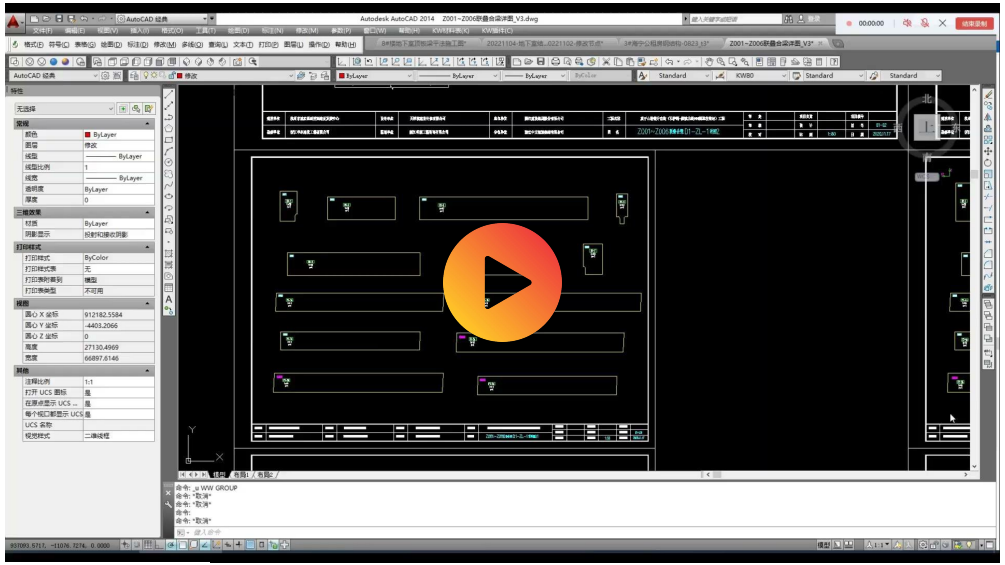
Utilise the component method to achieve automation for some of the challenging modeling issues in the industry.



CASE STUDY 7 - ROTARY STAIRCASE AUTOMATION B

Batch drawing adjustment to meet short-term drawing output requirements.

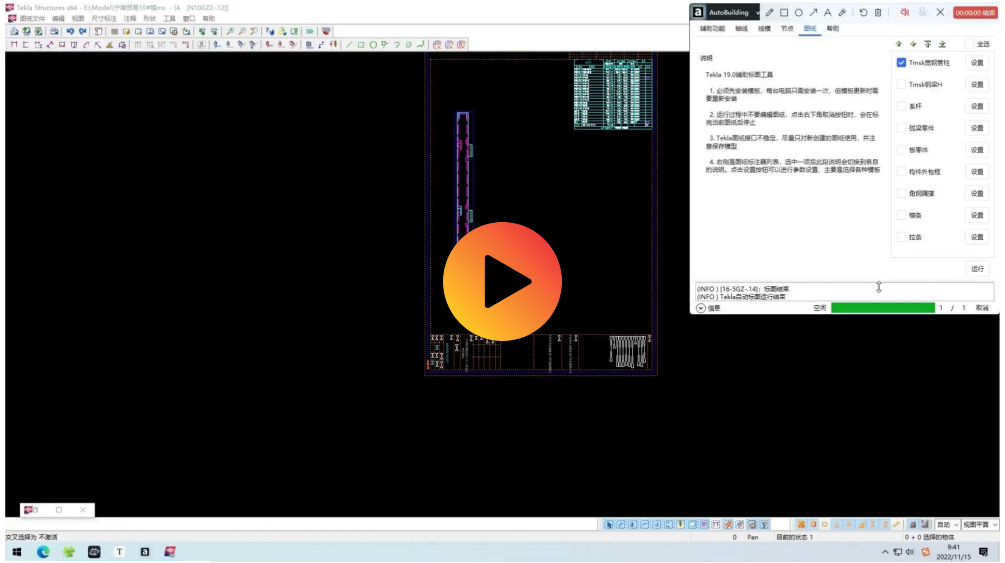
- **Part drawings (tens of thousands level)**
- Component drawings (thousands level)
- Layout drawings (hundreds level)
- 3D axis diagrams
- Exploded views of components



CASE STUDY 8 - DRAWING ADJUSTMENT AUTOMATION A

Batch drawing adjustment to meet short-term drawing output requirements.

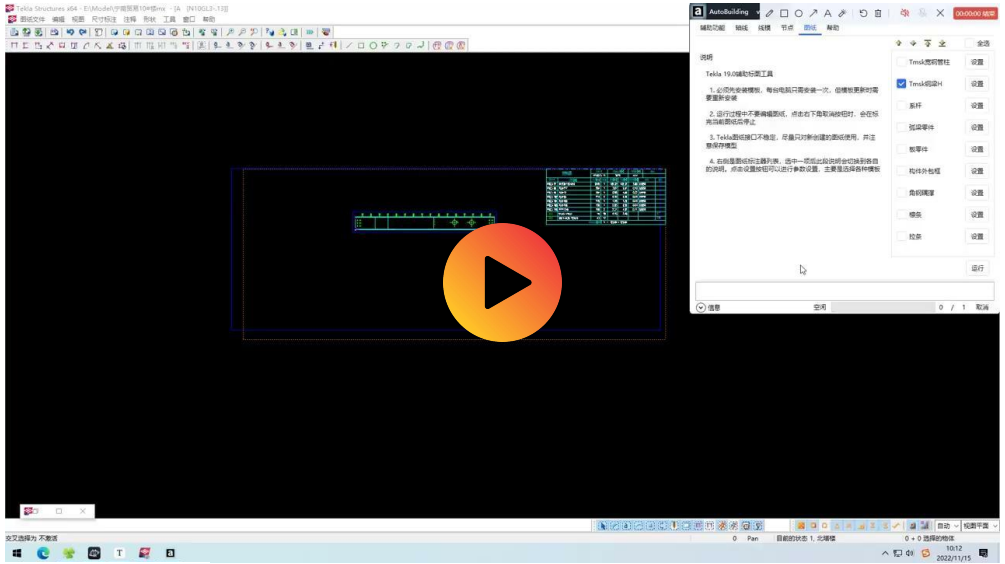
- Part drawings (tens of thousands level)
- **Component drawings (thousands level)**
- Layout drawings (hundreds level)
- 3D axis diagrams
- Exploded views of components



CASE STUDY 8 - DRAWING ADJUSTMENT AUTOMATION B

Batch drawing adjustment to meet short-term drawing output requirements.

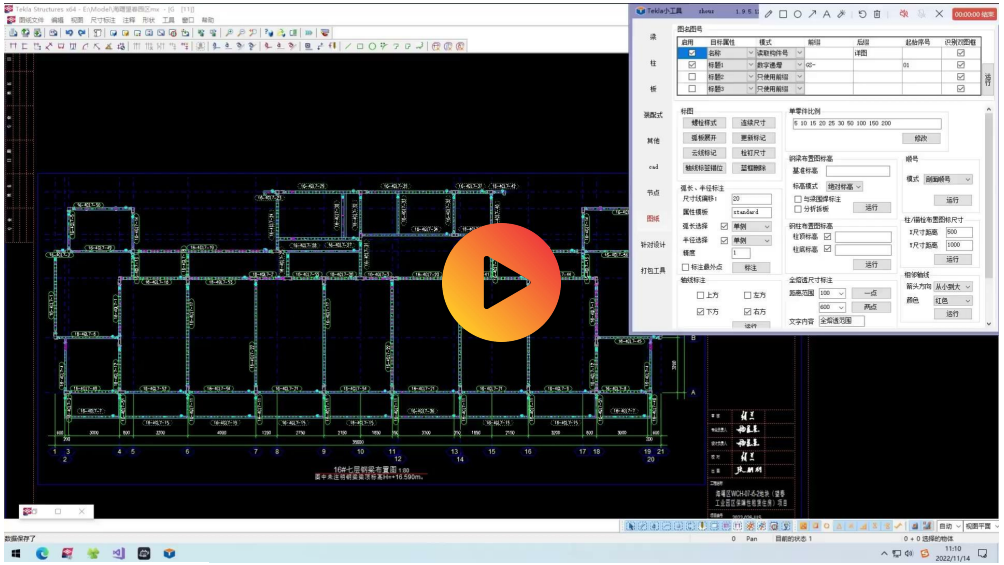
- Part drawings (tens of thousands level)
- **Component drawings (thousands level)**
- Layout drawings (hundreds level)
- 3D axis diagrams
- Exploded views of components



CASE STUDY 8 - DRAWING ADJUSTMENT AUTOMATION C

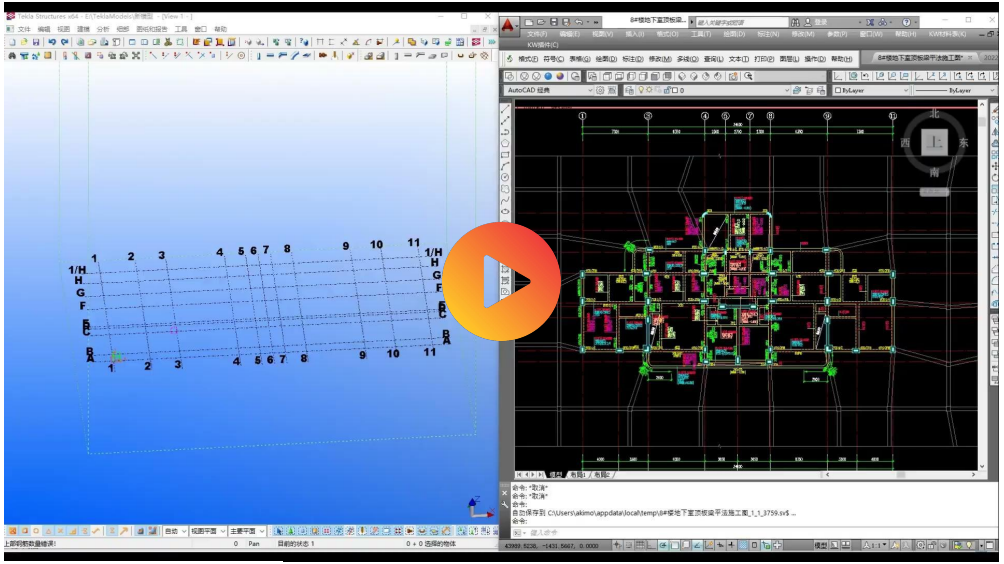
Batch drawing adjustment to meet short-term drawing output requirements.

- Part drawings (tens of thousands level)
- Component drawings (thousands level)
- **Layout drawings (hundreds level)**
- 3D axis diagrams
- Exploded views of components



CASE STUDY 8 - DRAWING ADJUSTMENT AUTOMATION D

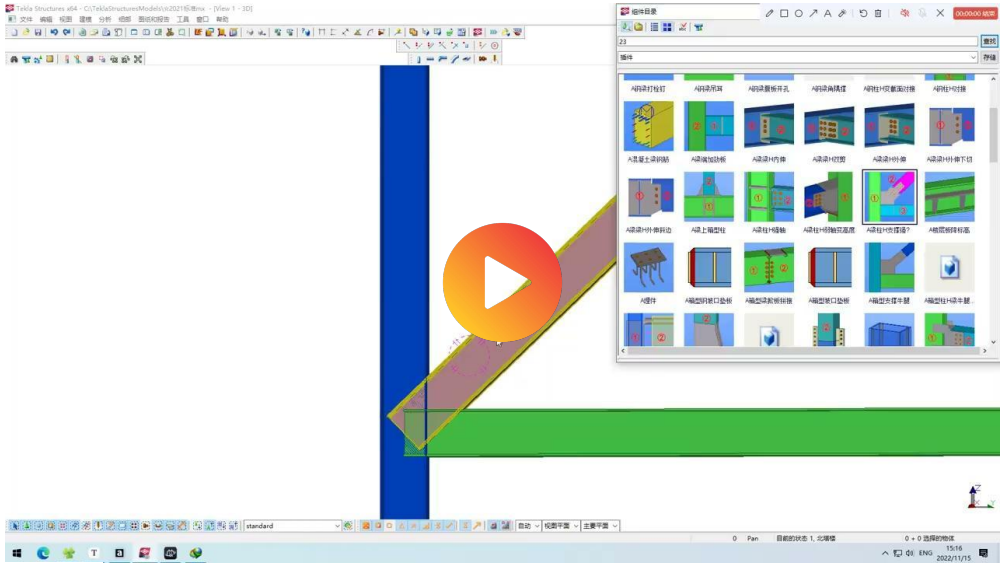
For the modeling of a large amount of reinforcement in steel structure framing and PC detailing, this process utilises flat method reinforcement diagrams to directly read data and quickly build models, while simultaneously handling the corresponding construction details.



CASE STUDY 9 - AUTOMATION OF REINFORCEMENT MODELING

Automate the modeling of complex nodes to reduce manual labor.

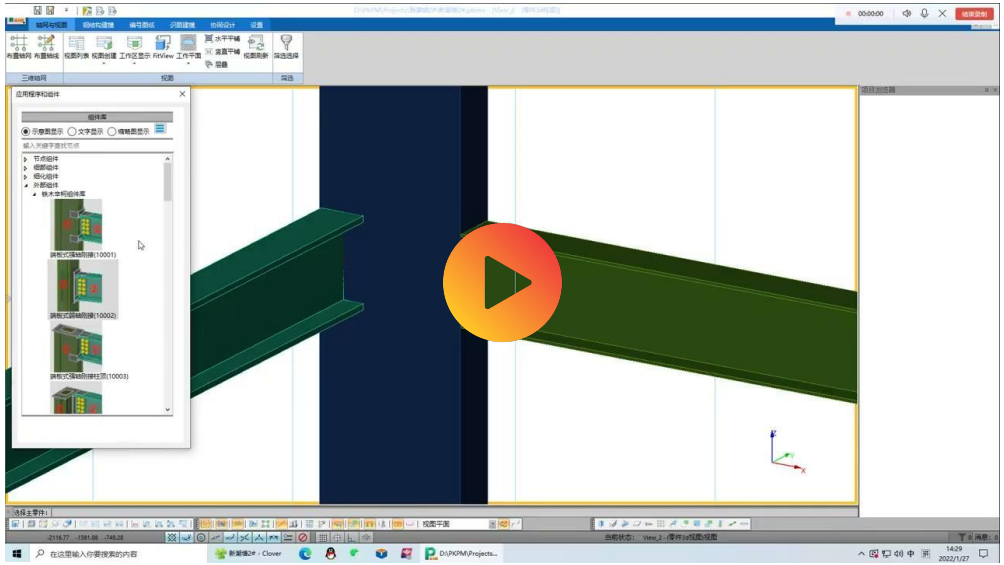
- **Nodes with inclined braces**
- New types of nodes
- Steel plate wall nodes
- Support systems



CASE STUDY 10 - COMPLEX NODE AUTOMATION A

Automate the modeling of complex nodes to reduce manual labor.

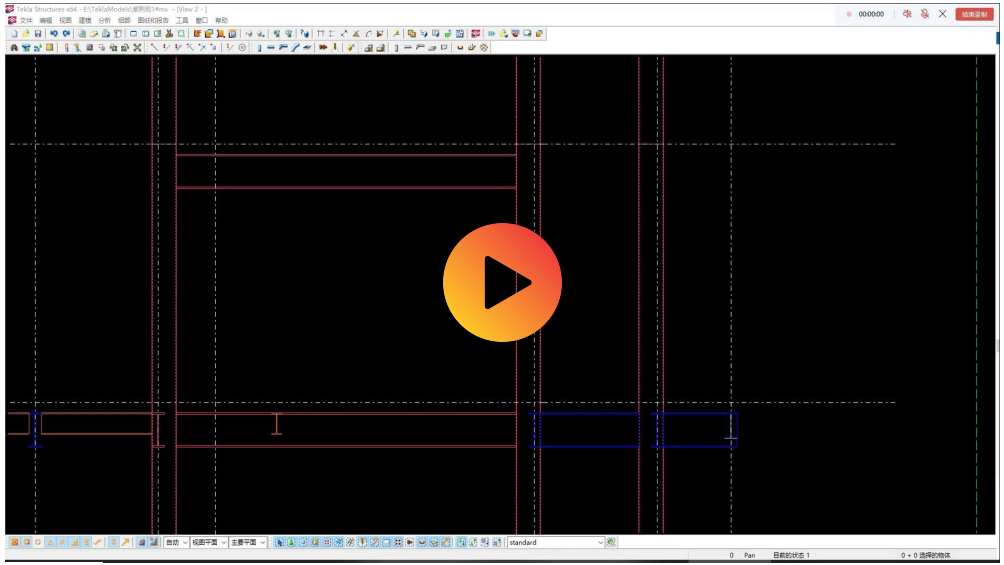
- Nodes with inclined braces
- **New types of nodes**
- Steel plate wall nodes
- Support systems



CASE STUDY 10 - COMPLEX NODE AUTOMATION B

Automate the modeling of complex nodes to reduce manual labor.

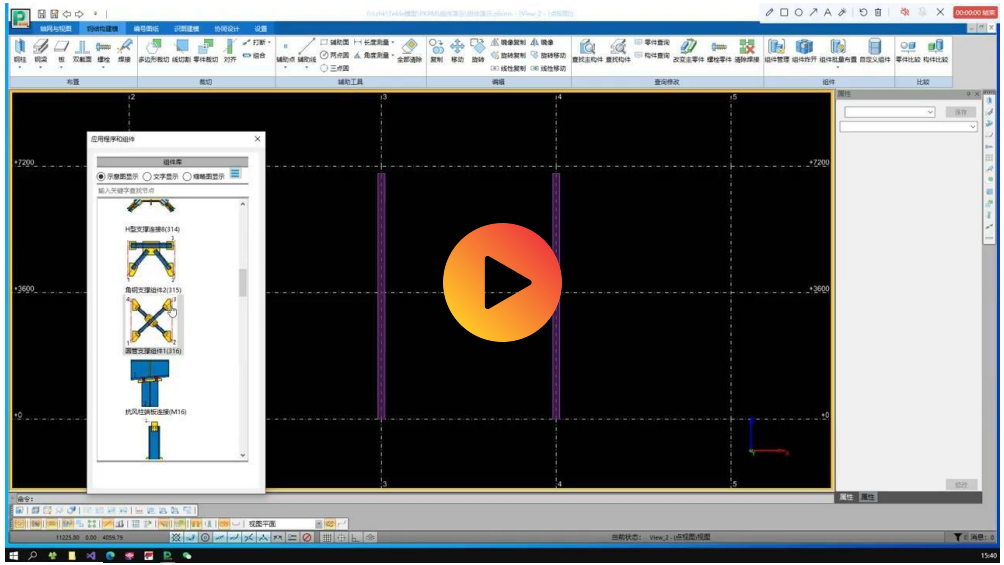
- Nodes with inclined braces
- New types of nodes
- **Steel plate wall nodes**
- Support systems



CASE STUDY 10 - COMPLEX NODE AUTOMATION C

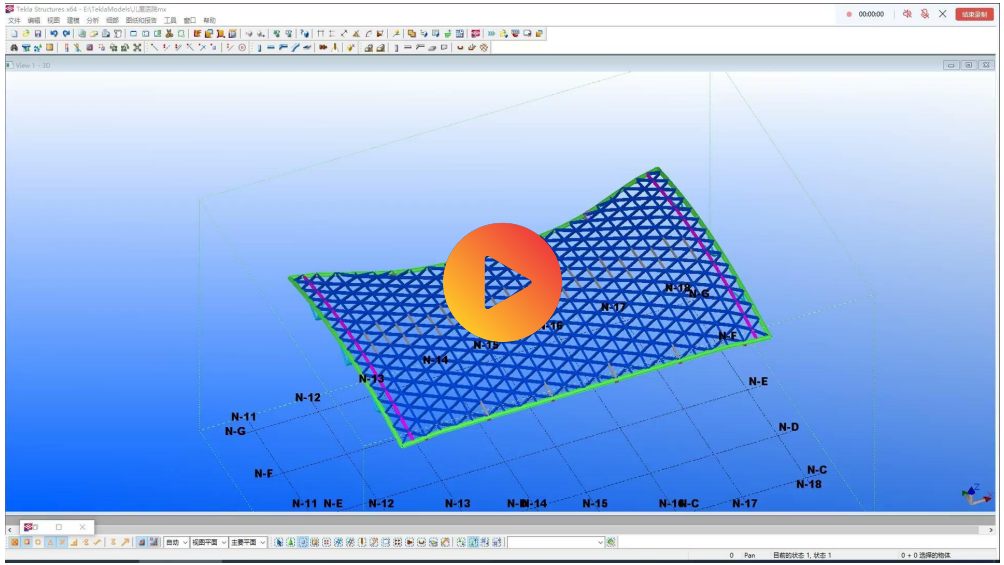
Automate the modeling of complex nodes to reduce manual labor.

- Nodes with inclined braces
- New types of nodes
- Steel plate wall nodes
- **Support systems**



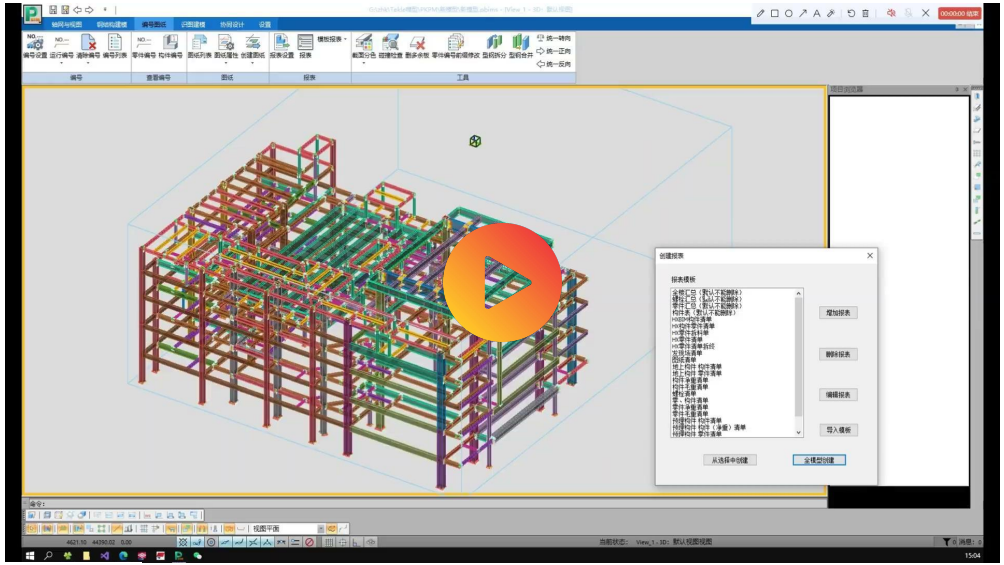
CASE STUDY 10 - COMPLEX NODE AUTOMATION D

Grid shell projects, especially those involving curved and twisted components, make it extremely difficult to accurately determine the spatial positions of members, almost impossible to complete manually. By utilising existing software or custom programs, one-click generation can be achieved.



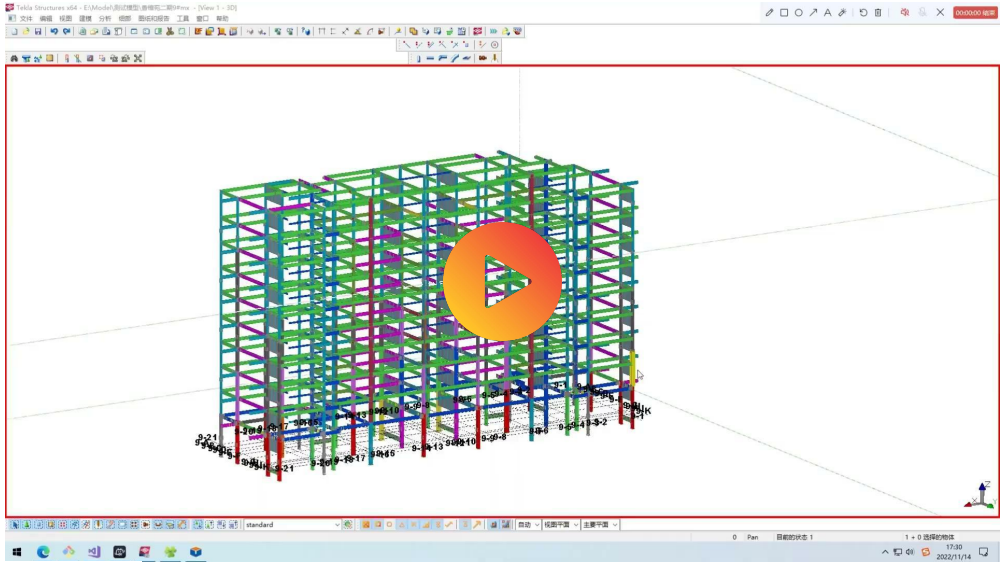
CASE STUDY 11 - GRID SHELL AUTOMATION

Different departments have varying requirements for lists, often necessitating repeated modifications. Therefore, multiple templates can be preset to export all at once, allowing clients to select as needed. (Original functionality of PKPM-DW software).



CASE STUDY 12 - AUTOMATION OF VARIOUS LISTS A

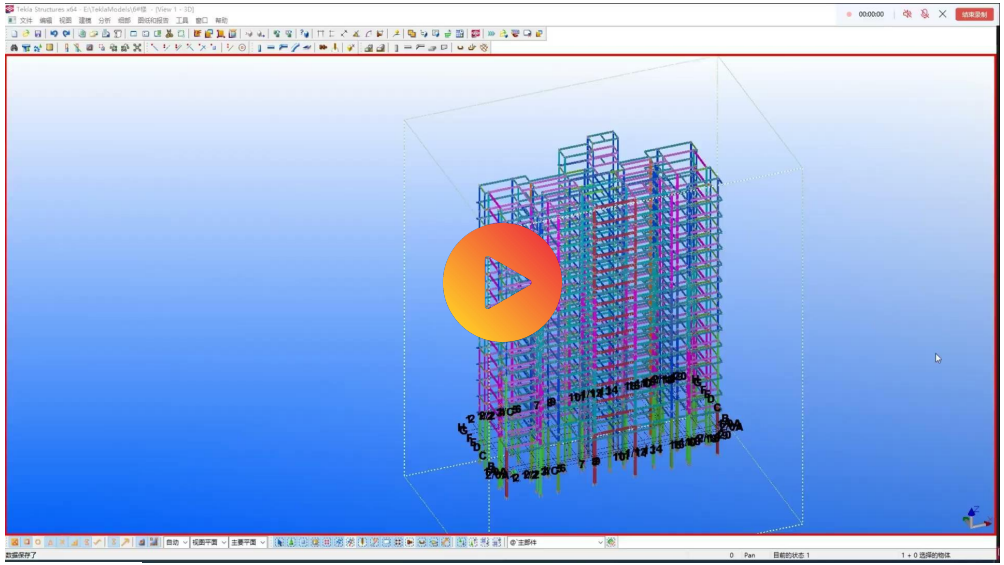
Different departments have varying requirements for lists, often necessitating repeated modifications. Therefore, multiple templates can be preset to export all at once, allowing clients to select as needed. (Secondary Development Product Based on Tekla).



CASE STUDY 12 - AUTOMATION OF VARIOUS LISTS B

Provide data support for backend intelligent manufacturing, enabling simultaneous issuance of data and drawings, or achieving paperless processing.

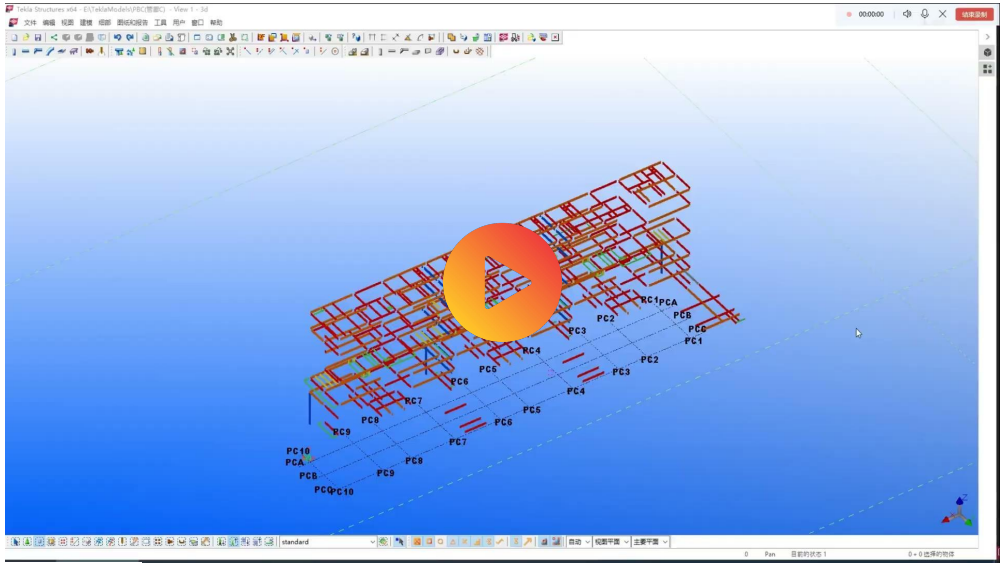
- Material Layout Data
- Cutting Data
- Welding Data
- Integration with ERP/MES



CASE STUDY 13 - EQUIPMENT DATA AUTOMATION A

Provide data support for backend intelligent manufacturing, enabling simultaneous issuance of data and drawings, or achieving paperless processing.

- Material Layout Data
- Cutting Data
- Welding Data
- Integration with ERP/MES



CASE STUDY 13 - EQUIPMENT DATA AUTOMATION B

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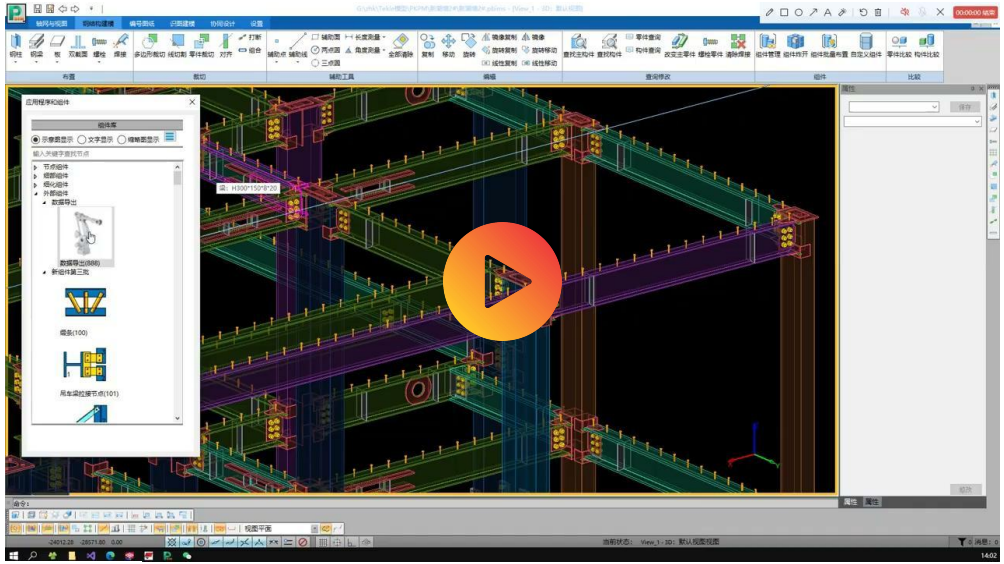
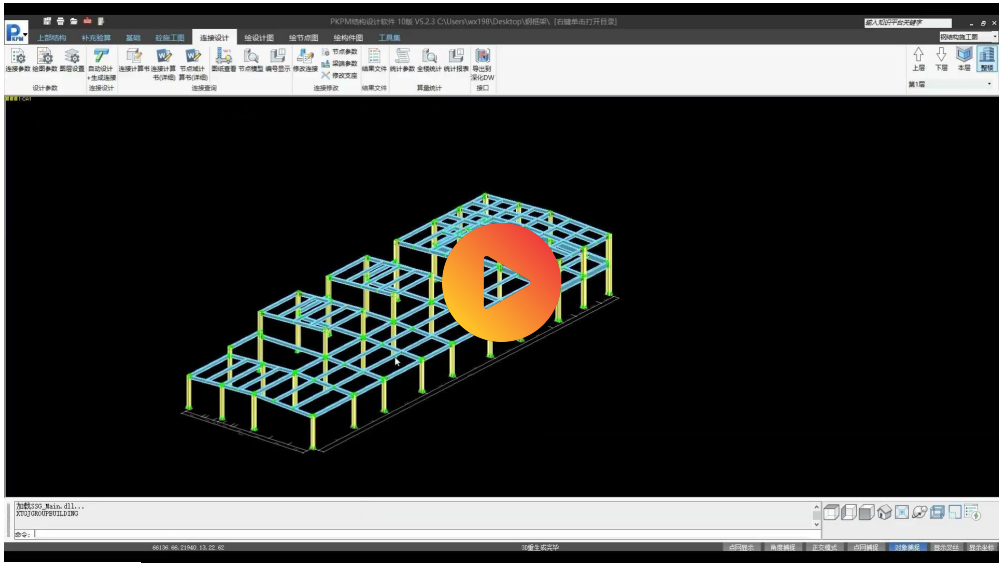


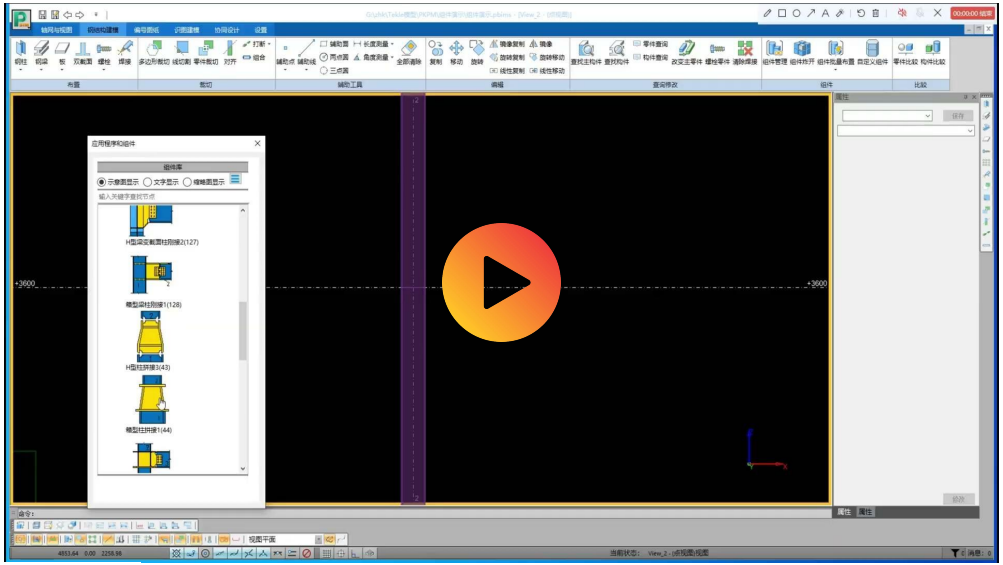
CASE STUDY 13 - EQUIPMENT DATA AUTOMATION C

The efficiency of detailed design software is primarily reflected in its core components. The quality and quantity of the core components determine the value of the software. Through a strategic partnership, Tiemuxinkuo and Goulitek have developed the core components for PKPM-DW, further enhancing the software's market competitiveness.



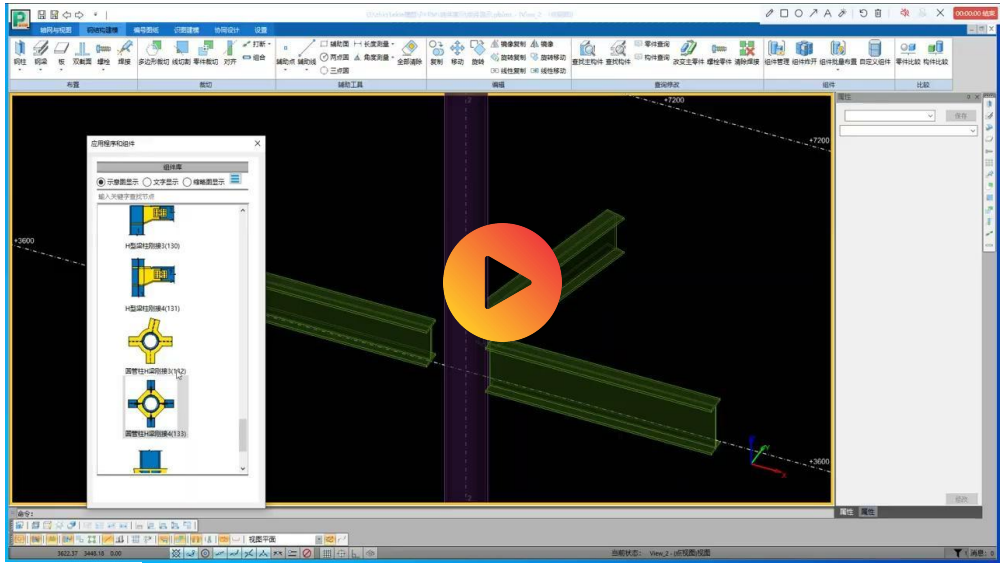
CASE STUDY 14 - CORE COMPONENT AUTOMATION A

The efficiency of detailed design software is primarily reflected in its core components. The quality and quantity of the core components determine the value of the software. Through a strategic partnership, Tiemuxinkuo and Goulitek have developed the core components for PKPM-DW, further enhancing the software's market competitiveness.



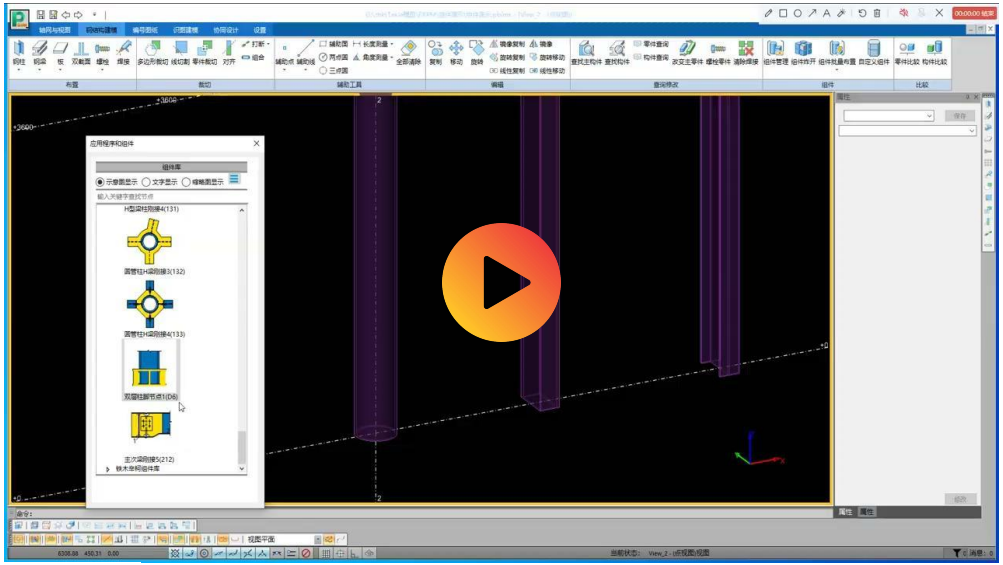
CASE STUDY 14 - CORE COMPONENT AUTOMATION B

The efficiency of detailed design software is primarily reflected in its core components. The quality and quantity of the core components determine the value of the software. Through a strategic partnership, Tiemuxinkuo and Goulitek have developed the core components for PKPM-DW, further enhancing the software's market competitiveness.



CASE STUDY 14 - CORE COMPONENT AUTOMATION C

The efficiency of detailed design software is primarily reflected in its core components. The quality and quantity of the core components determine the value of the software. Through a strategic partnership, Tiemuxinkuo and Goulitek have developed the core components for PKPM-DW, further enhancing the software's market competitiveness.

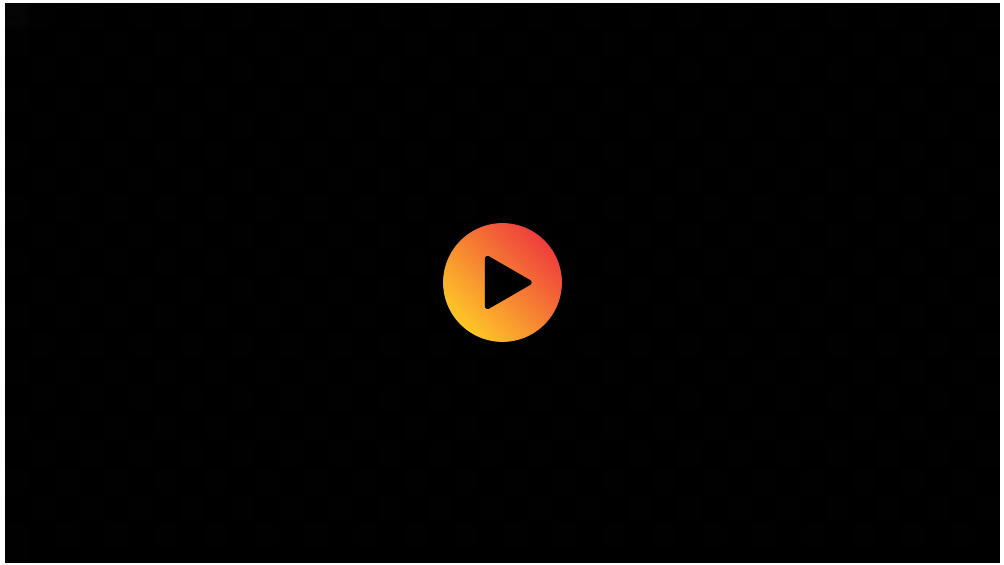


CASE STUDY 14 - CORE COMPONENT AUTOMATION D

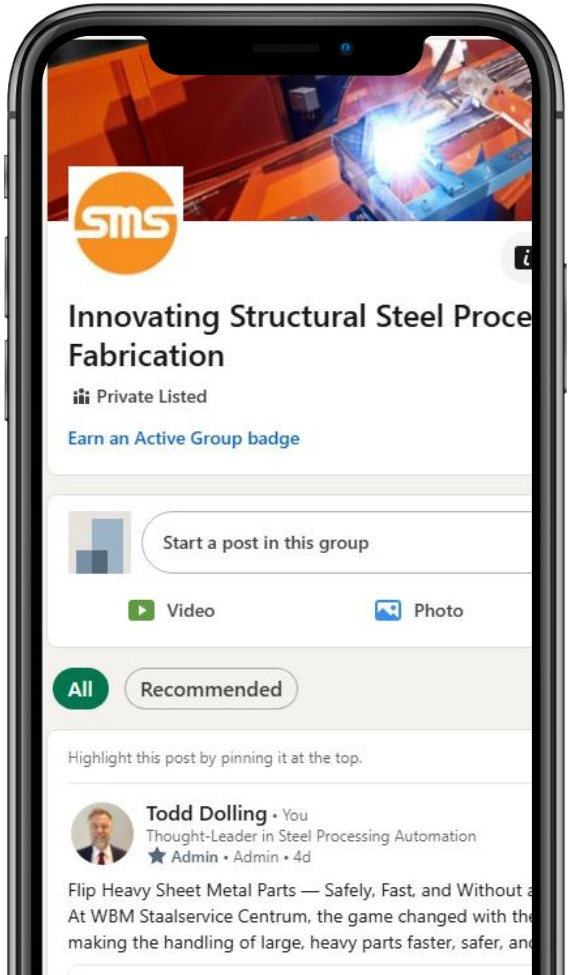
The standardisation level of steel structure residential components is relatively high, providing the possibility for one-click drawing. Currently, a one-click drawing software has been developed specifically for concealed frame structural systems. The efficiency of its modeling and drafting modules is more than 10 times that of industry standards.

CASE STUDY 15 - ONE-CLICK DRAWING (RESIDENTIAL)

Customisation can be performed for specific steel structure projects that meet standardisation conditions, enabling one-click drawing. By solidifying and embedding detailed design elements with algorithms, efficiency can be significantly improved.



CASE STUDY 16 - ONE-CLICK DRAWING



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