

CAD Design Automation for Leading Road Signage Structure Manufacturer (US)

Case Study



Business Challenges

- ❖ CAD design process involved significant manual effort to create 2D drawings and 3D models, especially for complex assemblies.
- ❖ Manual customization for each assembly variant led to frequent errors in parametric relationships, material specifications, and compliance with design standards.
- ❖ Revisions required manual updates to BOMs, annotations, and design details, increasing workload and risk of rework.
- ❖ The process lacked scalability, making it inefficient to manage large product lines or frequent engineering changes.
- ❖ Extended design timelines and high error rates negatively impacted overall design productivity and quality.

Proposed Solution

- ❖ Automated end-to-end CAD model and drawing generation using a rule-based engine tailored for road signage structures.
- ❖ Built a user-friendly interface enabling engineers to select key configuration parameters such as zone type and span length.
- ❖ Embedded design standards, material specs, and dimensional rules to ensure consistency and compliance.
- ❖ Enabled generation of 3D models, 2D drawings, and BOMs with minimal manual input.
- ❖ Delivered additional outputs such as DWG and DXF files for seamless integration with downstream ERP systems.

Business Benefits

- ❖ Brought down CAD creation time from hours to minutes through automation of repetitive, rule-driven tasks.
- ❖ Minimized manual effort and rework, improving resource utilization and reducing engineering costs.
- ❖ Embedded design logic ensured every output met organizational and industry standards.
- ❖ Enabled easy creation of multiple variants without redesign, supporting future scalability.
- ❖ Provided a standardized and automated design environment that improved cross-team consistency.

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