

## Automotive and transportation

# Isono Body

Truck manufacturer realizes dramatic improvements in vehicle development using Solid Edge and MACsheet SEG5

### Product

Solid Edge

### Business challenges

Reduce development cycle time and cost

Reduce problems after vehicle delivery

Share design intent by improving communication

### Keys to success

Implement easy-to-use 3D product development system

Using CAD/CAM for smooth collaboration between engineering and manufacturing

Employ 3D data as a company-wide communication tool

Expand use of CAE in conjunction with 3D CAD

### Results

Cut development cycle time by 33 percent, from 3 months to 2 months

Reduced errors and subcontracting costs significantly

Improved collaboration among vehicle development staff

Significantly reduced repair workload after vehicle delivery



**Isono Body reduced product development time by 33 percent through more effective collaboration between engineering and manufacturing teams**

**Substantially improving design efficiency through 3D-based product development**

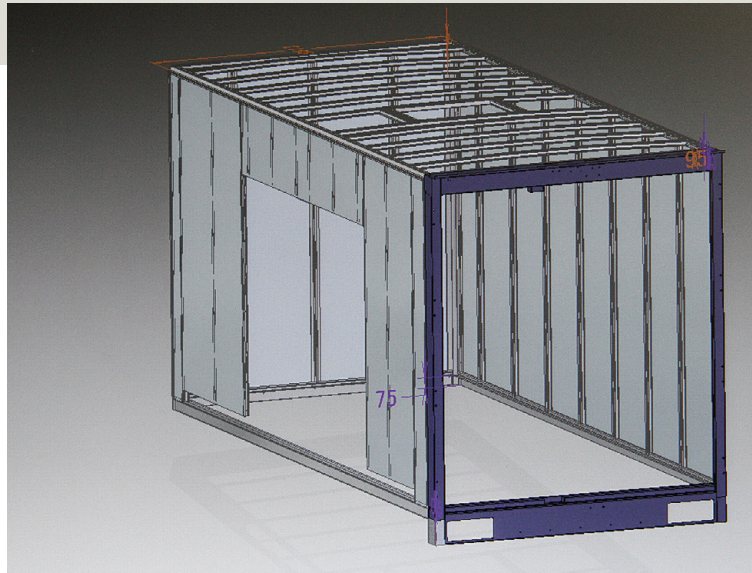
Isono Body Co., Ltd. (Isono Body) has earned the trust of its customers as a truck body manufacturer. The company manufactures various types of truck bodies, leveraging its superior technology to build vehicle bodies according to the specific requirements of individual customers. Isono Body also collaborates with chassis

manufacturers and develops its own vehicles. Plus, the company develops and sells "iSkip," a remote-controlled automatic sliding door, which helps improve security and operational efficiency.

While Isono Body has expanded its business largely based on its advanced technological capabilities, the company also faces competitive challenges to achieve even faster time-to-market. Isono Body engineers realized that it would be difficult to achieve the company's goals using a conventional development process based on 2D drawings. Moreover, improving the overall process from sheet metal design to manufacturing had become a high priority.

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Shogo Terasaki  
Engineer  
Design Department  
Isono Body



The vehicle bodies the company builds are manufactured to order. In the past, Isono Body engineers used 2D computer-aided design (CAD) for design, which led to an error-prone development process.

Re-manufacturing parts from scratch was too often required, which increased costs and workload. When layout design is done using a 2D CAD system, it can be difficult to confirm the shapes of the parts relative to their position with corresponding parts.

As the number of parts increases, production lines get crowded and complicated. During design reviews, it can be very difficult to see design errors using 2D CAD. Modifications cannot be confirmed until the parts are brought together on the shop floor. Inaccurate mating means additional

time, materials and costs. Ultimately, it can become an issue that impacts customer satisfaction/trust. This was a serious concern that Isono Body quickly alleviated.

In 2012, Isono Body addressed these matters by employing Solid Edge® software from product lifecycle management (PLM) provider Siemens PLM Software. One key point of evaluation was the short learning-curve of Solid Edge, which enables intuitive operations, versus other competitive technology. Company engineers especially appreciate CAD functionality that can be readily used to accelerate part design, assembly operations and sheet metal modeling. Solid Edge was assessed to be particularly strong here.

## “Using Solid Edge for sheet metal modeling is easy.”

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“Using Solid Edge for sheet metal modeling is easy,” says Shogo Terasaki, a design department engineer at Isono Body. “Use of the software is very intuitive. For example, if I want to modify a specific face, all I need to do is directly touch it to proceed.”

The assembly capabilities that Solid Edge provides also help improve work efficiency. Unlike using a 2D drawing-based system, a vehicle can be completely assembled virtually using an advanced 3D CAD solution long before manufacturing begins. As a result, using Solid Edge, the number of errors exposed on the shop floor at Isono Body has been dramatically reduced.

With Solid Edge, engineers can also calculate a vehicle’s weight during assembly modeling. Weight calculation is an important part of vehicle design. In the past, this task was cumbersome because the calculation was a manual and error-prone. Terasaki notes that using Solid Edge has helped the company’s engineers dramatically reduce design workload and achieve a significantly more efficient vehicle development process.

### **Collaboration between engineering and manufacturing teams results in dramatically faster turnaround**

Increasingly shorter lead time for the delivery of products is inevitable in manufacturing. At Isono Body, lead time has been shortened from three months to two months. Achieving this goal was a company-wide effort. To help further improve collaboration between engineering and manufacturing, Isono Body chose to implement MACsheet SEG5 software from Siemens PLM Software’s partner CADMAC. An add-on program to Solid Edge,

MACsheet SEG5 is used to help create sheet metal models according to custom requirements and improve the sheet metal development process. At Isono Body, MACsheet SEG5 is used primarily to generate flat patterns. The combination of Solid Edge and this special capability has been productive, resulting in improved collaboration between the engineering and manufacturing departments and measurably improved sheet metal design best practices.

Before the introduction of Solid Edge and MACsheet SEG5, the company often outsourced part manufacturing to subcontractors in order to meet schedules. Concurrent with the introduction of Solid Edge, the manufacturing department further strengthened its facilities by installing turret punch machinery. 3D design data created using Solid Edge is now easily converted to sheet metal production data using MACsheet SEG5 and can be moved immediately to actual production. The result is a sizable increase in capacity within the company, eliminating much of the need to outsource work to subcontractors, saving both time and money.

“We have considerably reduced outsourcing costs with the help of Solid Edge,” says Masatoshi Takeda, design department manager at Isono Body. “Previously, outsourcing was inevitable to meet delivery deadlines due to our internal manufacturing capacity. We had to create drawings for contractors and also meet with them to discuss our requirements. It was extra workload. This not only took time, but sometimes our intent was misinterpreted and the delivered parts were not what we needed. Now that we have installed turret

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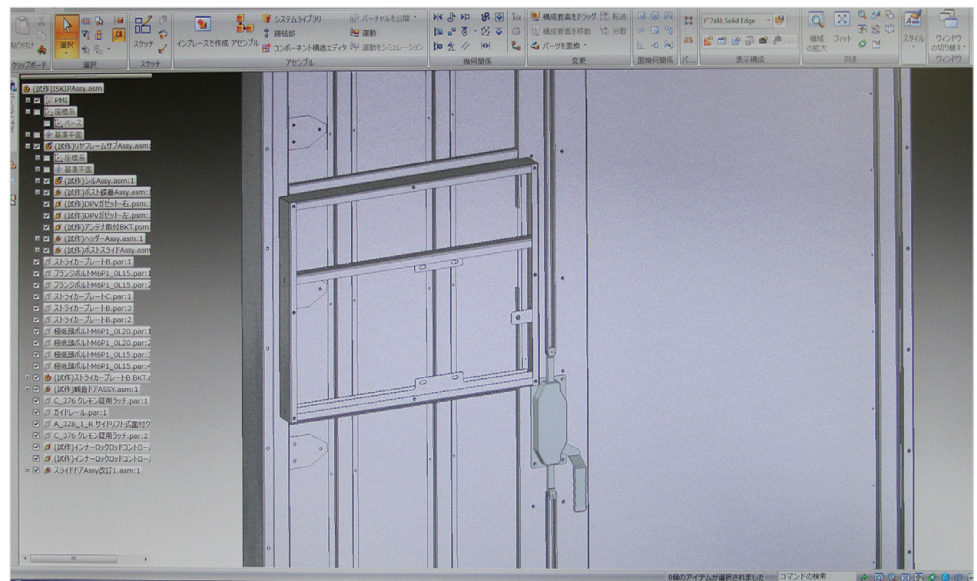
Masatoshi Takeda  
Manager  
Design Department  
Isono Body

punch machinery, we can start production directly from the 3D data. Because we can now manufacture parts internally, even if we have issues, we can solve them internally.”

Improved internal communication extends beyond engineering and manufacturing. By using 3D data for presentations and design reviews, sales people can also more easily understand the products. This has reduced misunderstandings with regard to how the products are made.

### Improved customer relationships

Effective use of Solid Edge also helps improve communication with customers. Because Isono Body develops vehicles to-order and each order is different, communication based on 2D drawings sometimes led to miscalculations. Upon vehicle delivery, in some cases, Isono Body needed to modify or even recreate particular parts. To minimize such occurrences, the company now uses 3D data for meetings with customers, enabling design intent to be accurately reflected from the very beginning of the development process.



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## Solutions/Services

Solid Edge

[www.siemens.com/solidedge](http://www.siemens.com/solidedge)

## Customer's primary business

Isono Body Co., Ltd. manufactures vehicles for professional use, including vans equipped with the "iSkip" remote controlled automatic sliding door, wing body trucks, special purpose body trucks, flatbed trucks, aluminum body vehicles and vehicle repair.

[www.isono-body.co.jp](http://www.isono-body.co.jp)

## Customer location

Yamagata

Japan

## Partner

CADMAC

**"In the coming year, we plan to do all design work in 3D. We also plan to utilize CAE for more intensive structural analysis. I am confident that by using solutions from Siemens PLM Software, we can develop even better products to meet our customers' needs."**

Takashi Ishii

Director

Design Department

Isono Body

## Smarter decisions, better products using 3D CAE

Until recently, Isono Body engineers primarily calculated the structural strength of the vehicle using manual calculators.

However, with usage conditions varying from vehicle to vehicle and increased product complexity, such calculations were becoming inefficient. For example, how cargo is loaded can differ significantly, which can make a huge difference in overall loading conditions and stress concentration. Analyzing all possible conditions manually is simply no longer a realistic approach for obtaining high-quality analysis.

Therefore, Isono Body is turning to structural analysis using 3D models early in the development cycle so that its engineers can project optimal usage scenarios. By using computer-aided engineering (CAE)

analysis results in conjunction with a database of past issues, Isono Body engineers are creating smarter designs that result in even more reliable vehicle performance.

"At the moment, some of our product models are still in 2D," says Takashi Ishii, director of Isono Body's design department. "But in the coming year, we plan to do all design work in 3D. We also plan to utilize CAE for more intensive structural analysis. I am confident that by using solutions from Siemens PLM Software, we can develop even better products to meet our customers' needs."

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