CADDi | **Kawasaki**

CASE STUDY

Unlocking the Potential of Hidden Drawings and Purchasing Data

Achieving long-abandoned cost reductions

Achieving Long-Abandoned Cost Reductions

Before

An increase in part variety lead to the establishment of a Design to Cost department. The drawing management system before CADDi was not structured to flexibly retrieve past drawing or price information. The ability to reference past drawings in the design process was limited.

After

Users can instantly find similar drawings from the company's accumulated drawing data and refer to the amounts and suppliers. As a result, the company has created a list of suppliers capable of handling different levels of processing difficulty, enabling them to place orders with the most suitable suppliers for each part.

Kawasaki

Established
October 2021

Number of Employees
3,500

Sales
$828 million

Business Activities
Development and manufacturing of railway cars, railway systems, and associated parts

3x
Faster Supplier Selection

10%
Procurement Cost Reduction

70%
Reduction in Time for Searching Drawings

Cost Reduction Team Tackles **Design, Procurement, Manufacturing, and Cost Planning Challenges**

Since beginning manufacturing in 1906, Kawasaki Railcar Manufacturing Co., Ltd. has consistently been at the forefront of technology, playing a significant role in the evolution of rail mobility. With its outstanding technical capabilities, high quality, and production capacity, the company has manufactured numerous iconic railcars that have left their mark on railway history, contributing to the development and modernization of railcars. In addition to domestic operations, the company's railcars support urban transportation in North America and Asia, particularly in New York and Washington, D.C., in the United States.

As a renowned railcar manufacturer, the company adopts a made-to-order production approach, designing railcars tailored to the requirements of each railway company. While this approach offers the advantage of flexibly meeting the needs of each company, it also leads to an increase in the variety of parts, making it difficult to pursue efficiency. Optimizing procurement, standardizing design, and reducing costs have become critical management issues. To address these challenges, the DTC Department was established within the Technology Headquarters. DTC stands for "Design to Cost."

"As the name suggests, our department's mission is to reduce costs at the design stage. We were launched as a task force to solve issues in design, procurement, manufacturing, and cost planning from a VE/VA perspective," explains Naoki from the department. The department brings together experts from a wide range of divisions, including design, cost planning, material procurement, and manufacturing, to develop price strategies for cost planning and cost management.

According to Masa, who is responsible for optimizing parts procurement, the company's made-to-order production approach involves forming project teams for each customer case. The teams create designs based on specifications and develop assembly and part drawings. "During detailed design, designers sometimes refer to past similar drawings."

"However, our current management system is not structured to flexibly retrieve past drawing information or price information. This hinders optimal drawing reuse decisions in design work, leading to various associated costs."

The Bottleneck to Cost Reduction:
"Unable to Find Necessary Drawings"

While seeking a breakthrough, the company received a proposal from CADDi, a long-time business partner, for the drawing data utilization cloud, CADDi Drawer. CADDi Drawer has a feature that automatically reads and analyzes text and shapes from drawing data in PDF, TIFF, and other formats. By uploading the company's drawing data to the cloud, users can freely search using keywords that are convenient for them, such as processing methods and materials, based on the analyzed information.

Additionally, past drawings with similar shapes can be immediately referenced using the shape data. Furthermore, by uploading data such as order history, it can be linked to the drawings.

The implementation took place in August 2022, shortly after the service's launch. Regarding the deciding factor for the introduction, Naoki explains,

> "We were experiencing situations where we wanted past drawings that could be useful references, but we couldn't find them when manufacturing different railcars. Solving this issue was a significant factor in our decision to implement the system."
>
> **Naoki Shiraishi** *Technical Headquarters, DTC Promotion Department*

The company had previously introduced a system to manage drawing data. However, that system did not allow searching for text information on drawings, requiring users to visually check each drawing one by one. Moreover, the keywords for searching drawings in the system were limited to part numbers because the file names of the data were managed using part numbers. In overseas projects, the part numbers change whenever modifications are made, making it difficult to determine repeats and trace back to the original drawings.


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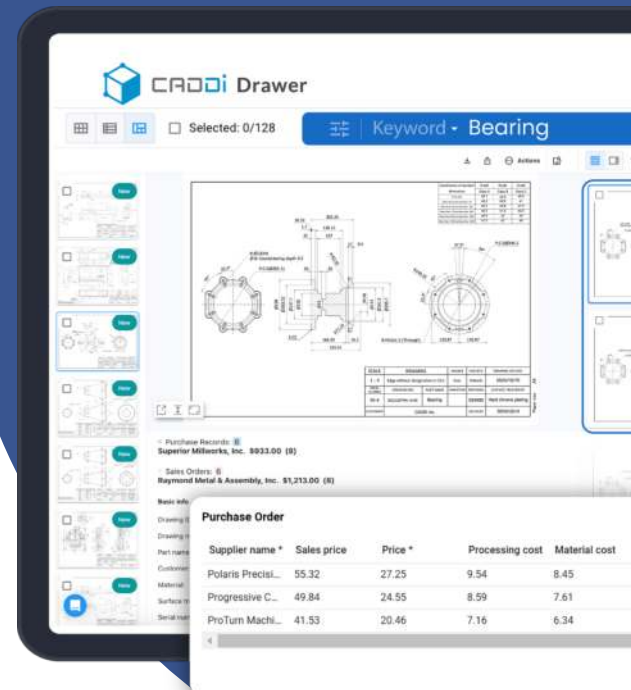
Optimizing Procurement Operations through the Utilization of Drawing and Order Data

The biggest challenge arising from the inability to reference past drawing data and order history is the inflated costs in both design and procurement operations. When designers need to refer to reusable drawings, they often rely on their memory, thinking, "I'm sure there was a drawing like this somewhere." If the necessary drawings cannot be found quickly, some designers decide that creating a new drawing would be faster, leading to an increase in new drawings.

In the procurement department, when staff members outsourced parts manufacturing to external processing companies, it was difficult for them to access information about similar parts that other staff members had previously ordered. As a result, each staff member relied on their own experience and knowledge to place orders and determine suppliers and prices on a case-by-case basis. Masa reflects,

> "There were instances where orders were placed with suppliers specializing in high-difficulty processing, even for simple parts, leading to price increases."

Masayoshi Ashida *Technical Headquarters, DTC Promotion Department*
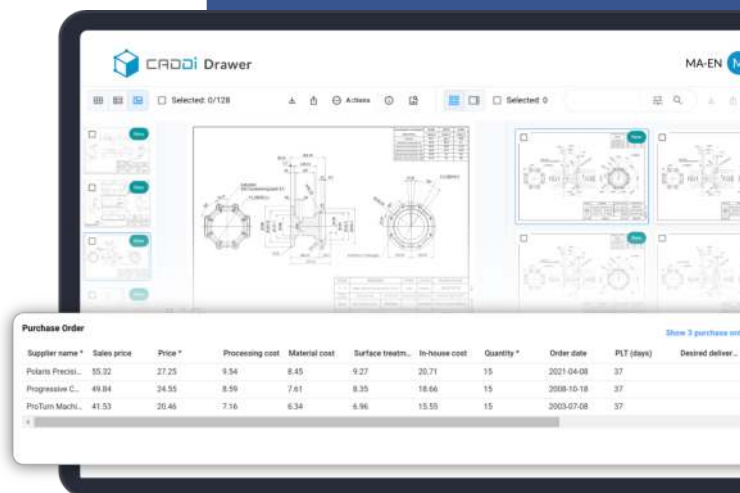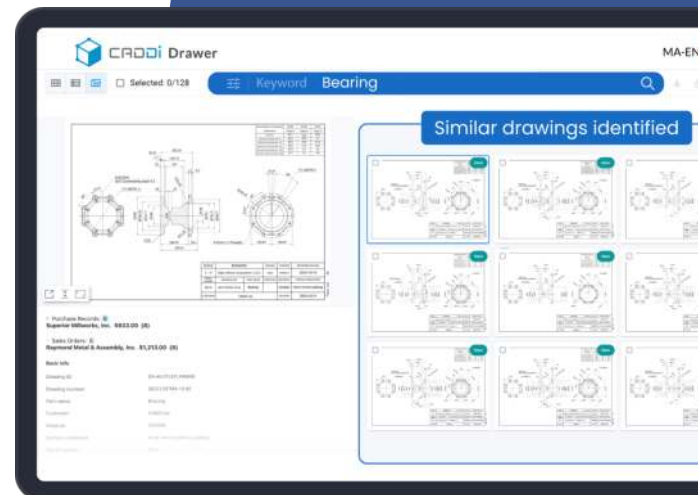
"This type of cases was more noticeable in overseas factories, where there was a higher turnover of ordering staff compared to domestic operations."

The introduction of CADDi Drawer has already shown signs of resolution. One example is the optimization of procurement operations. CADDi Drawer has a feature that automatically associates order information such as supplier names and amounts with each drawing.

When making ordering decisions for new drawings, users can instantly find similar drawings from the company's accumulated drawing data and refer to the amounts and suppliers. Additionally, it becomes easier to understand the difficulty level of the drawings without reading each one individually. As a result, the company has created a list of suppliers capable of handling different levels of processing difficulty, enabling them to place orders with the most suitable suppliers for each part.

Finally, when asked about future plans for utilizing the system within the department, Naoki and Masa expressed their vision for further improving design and procurement operations, stating, "We want to use it not only for supplier selection and cost reduction but also for standardization at the upstream design stage," and "We have applied it to some overseas projects at this stage, and we plan to expand the scope of application in the future."

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