THIRDEYE

THIRDEYE DECODED

AUGUST, 2024 EDITION

3 Use Cases of AI Adoption in the Manufacturing Industry

FEATURED TOPIC

How Generative AI is Scaling Up the Manufacturing Industry

GENERATIVE AI IS TRANSFORMING THE MANUFACTURING INDUSTRY

In 2022, the global Generative AI market size was valued at $223.4 million and is expected to reach $6,398.8 million by 2032, growing at a CAGR of 41.06%.

"The challenges of Generative AI in manufacturing are not insurmountable. As the technology continues to develop, we can expect to see these challenges overcome."

Mr. Peter Jones, Manufacturing Industry Analyst at Gartner

Important Articles

- Generative AI is Reshaping the Manufacturing Industry (Forbes, 2023)
- "How Generative AI is Transforming Manufacturing" (The Wall Street Journal, 2023)
- "Generative AI: The Next Frontier in Manufacturing" (Manufacturing.net, 2023)

Making Direct Impact on ROI

- Increasing productivity: AI automates tasks that are currently done by humans, freeing up workers to focus on more creative and strategic work. This leads to increased productivity and efficiency.
- Improving quality: AI has been used to identify defects in products or processes, which helps to improve the overall quality of the products.
- Reducing costs: AI is helping to reduce costs by automating tasks, improving efficiency, and identifying potential savings.
- Sustainability: Gen AI is used to design more sustainable products and processes, which helps to reduce the environmental impact of manufacturing.

How Generative AI is Scaling Up the Manufacturing Industry

The manufacturing industry is undergoing a major transformation, driven by the adoption of new technologies such as GPT models. Generative AI is a powerful tool that can be used to automate tasks, improve efficiency, and identify potential savings. As a result, it has the potential to revolutionize the way products are designed, manufactured, and maintained.

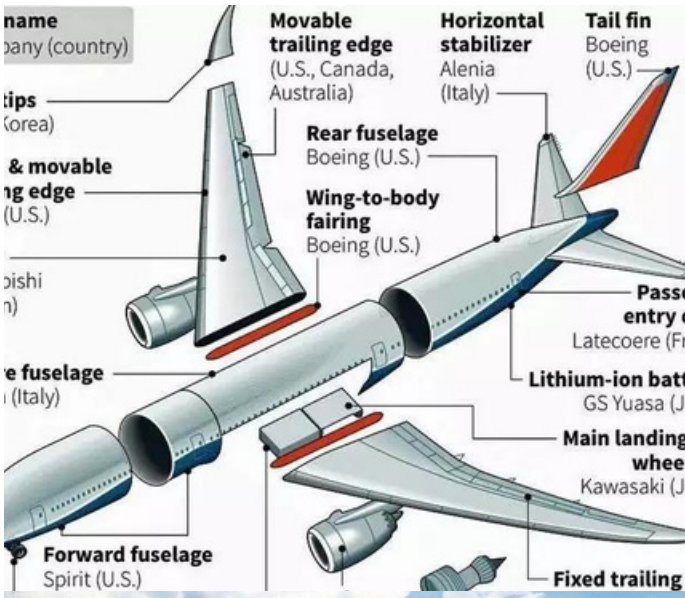
Generative AI is still a relatively new technology, but it is already being used in a variety of ways to scale up the manufacturing industry. Here are a few examples:

PRODUCT DESIGN (SOURCE)

Siemens is using Generative AI to design new wind turbine blades that are lighter and more efficient. The company says that this has helped them to reduce the weight of the blades by up to 20%, which has resulted in a significant improvement in fuel efficiency.

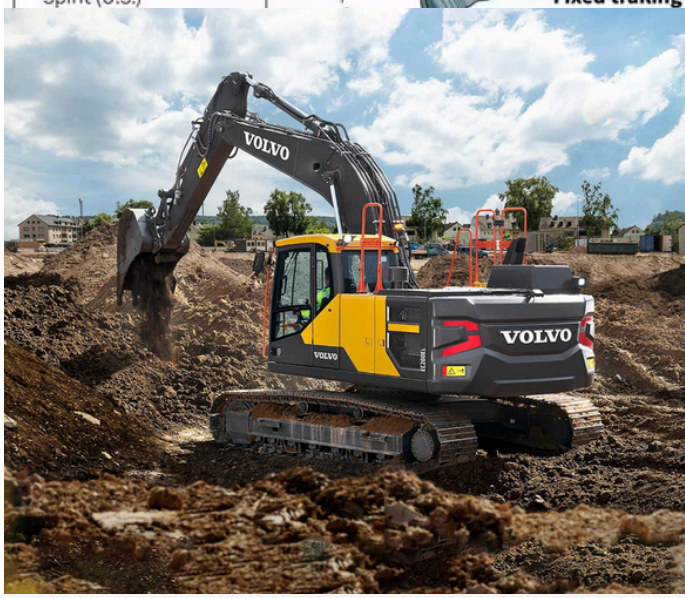
PRODUCT ENHANCEMENT (SOURCE)

Boeing is using Generative AI to design new aircraft parts that are stronger and lighter. The company says that this has helped them to reduce the weight of the aircraft by up to 5%, which has resulted in a reduction in fuel consumption and emissions.



QUALITY CONTROL (SOURCE)

General Electric is using Generative AI to improve the efficiency of its manufacturing processes. The company says that this has helped them to reduce the number of defects in their products by up to 30%, and has also helped them to reduce the amount of time it takes to bring new products to market.



PREDICTIVE MAINTENANCE (SOURCE)

Volvo is using Generative AI to predict when its equipment is likely to fail. The company says that this has helped them to prevent unplanned downtime, which has resulted in a significant improvement in the availability of their products.

PRODUCT DESIGN (SOURCE)

Nike is using Generative AI to design new footwear that is more comfortable and supportive. The company says that this has helped them to improve the fit and feel of their shoes, which has resulted in increased customer satisfaction.

From This Month's Challenge Vault

AI ADOPTION IN MANUFACTURING INDUSTRY USE CASES

Aerospace Manufacturing

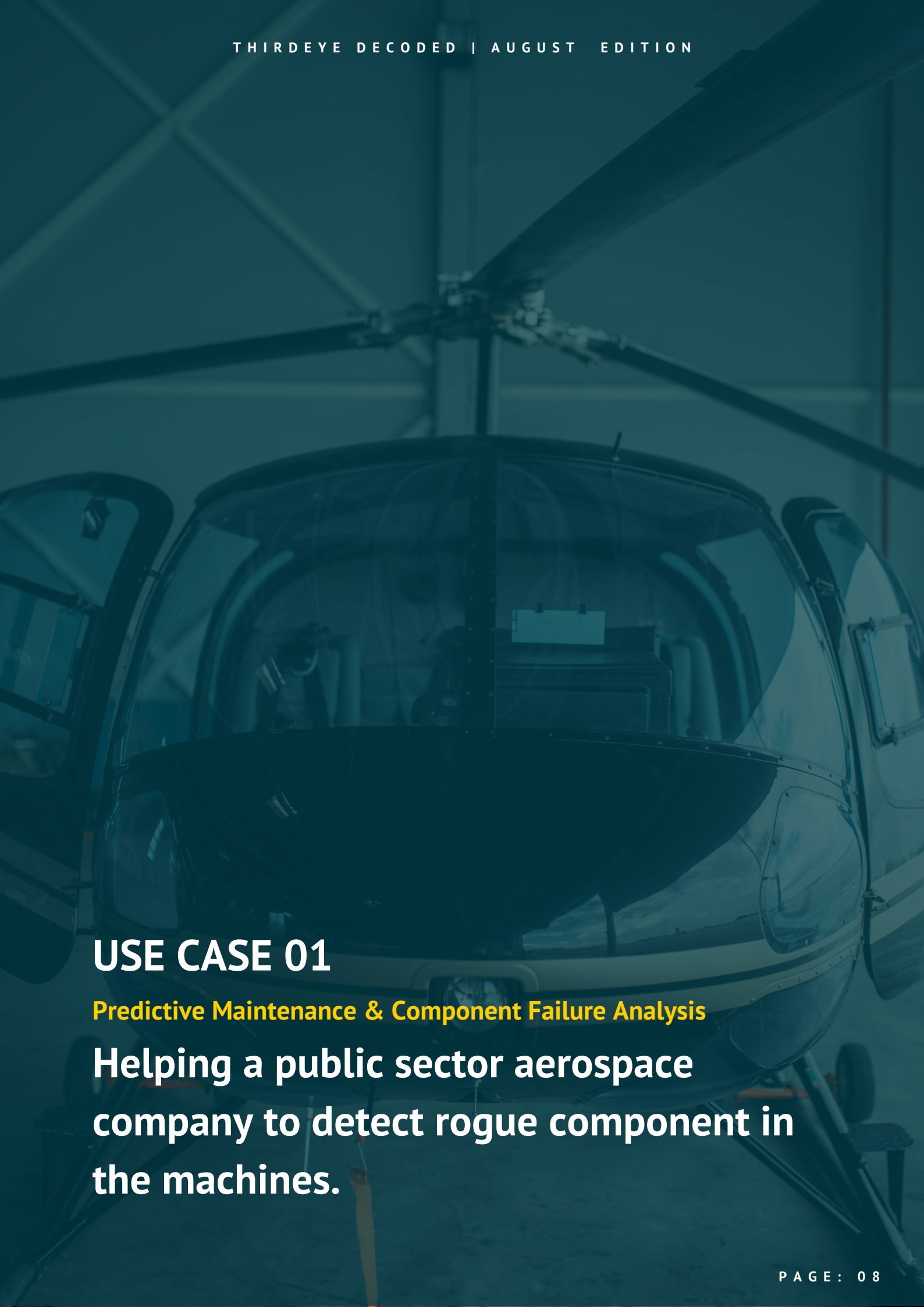
Predictive Maintenance & Component Failure Analysis

Plywood Manufacturing

Product Quality Check System

Glass Manufacturing

Predictive Metrology for Control Systems



USE CASE 01

Predictive Maintenance & Component Failure Analysis

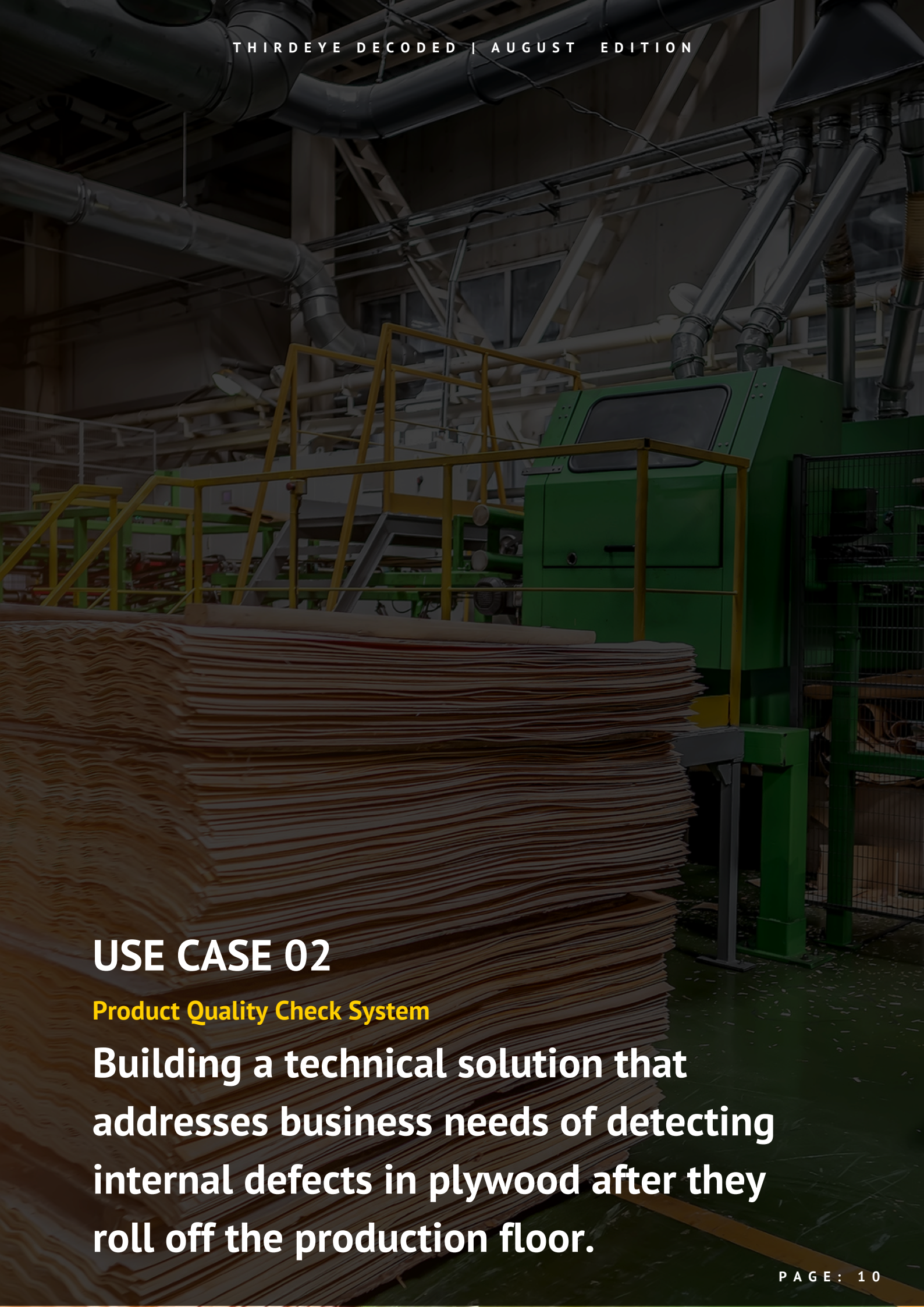
Helping a public sector aerospace company to detect rogue component in the machines.

PREDICTIVE MAINTENANCE
AND COMPONENT FAILURE ANALYSIS

The client is a public sector aerospace and defence company. They manufacture and maintain various components that are typically used in Helicopters.

- ThirdEye Data has built a predictive algorithm that tell the average time that would be required to repair any faulty component.
- Following AI models have been developed:
  - Detect the rogue component out of all the given components.
  - Help to identify the number of hours that any component would be able to run without failure and according to which the client can schedule the maintenance proactively.
  - Help to know the probable maximum number of times a component can be repaired. After this threshold, the component would have to be replaced.
- Currently working on ingesting documents and extracting entities and their values using AI models

01 USE CASE



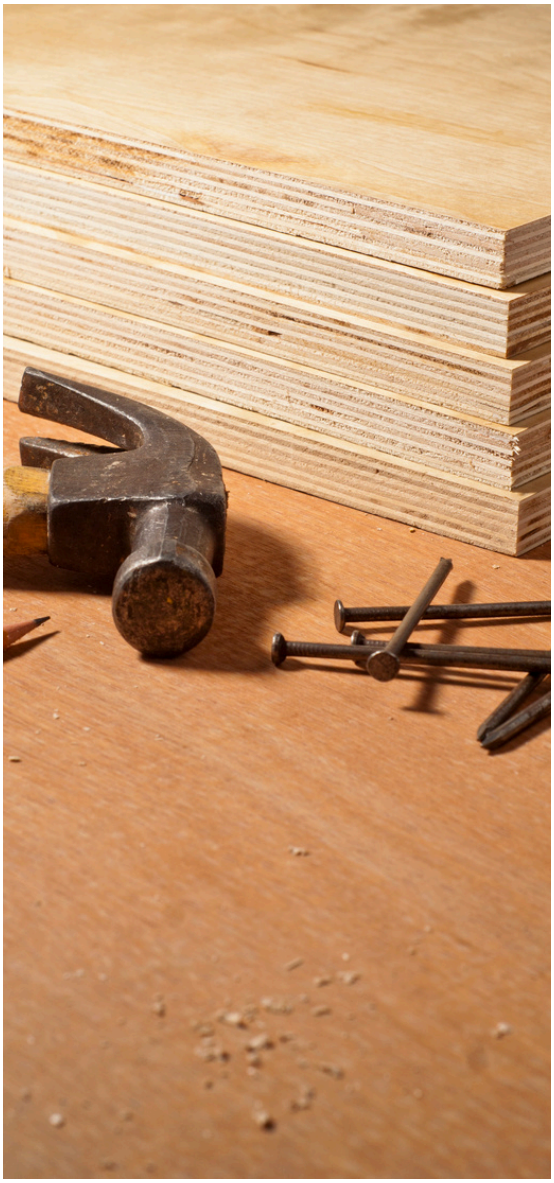
USE CASE 02

Product Quality Check System

Building a technical solution that addresses business needs of detecting internal defects in plywood after they roll off the production floor.

PRODUCT QUALITY CHECK SYSTEM TO DETECT MANUFACTURING ISSUES

This client is the largest manufacturer, seller, and exporter of plywood, laminates, doors, PVCs, and veneers in India. With more than 5000+ employees across India, the company's main plant is located at Kolkata, West Bengal.



- ThirdEye has built a technical solution that addresses client's business needs of detecting internal defects in plywood after they roll off the production floor and before they are shipped to customer locations.
- The solution involves implementing a deep-learning solution to detect defects in plywood by analyzing the sound of hitting plywood with a hammer.
- The dataset is being created by collecting recordings of the sound of hitting plywood with a hammer.
- The audio files has been processed, noise has been removed and analyzed to detect the sound of a good or bad quality plywood.
- The whole system has been deployed in the production floors of all manufacturing locations across the country.

02 USE CASE

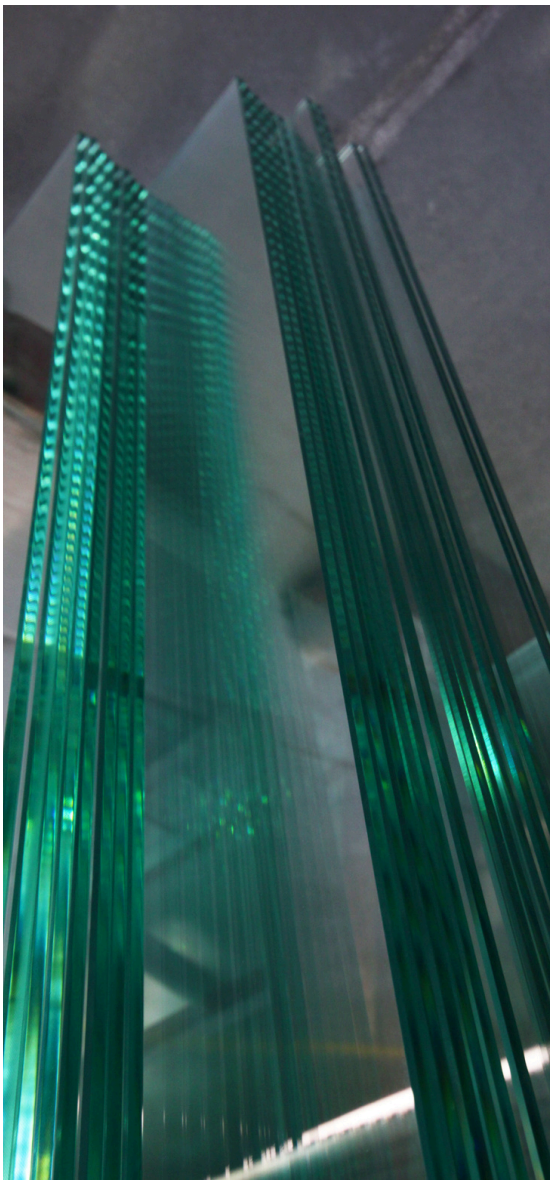
USE CASE 03

Predictive Metrology for Control Systems

Developing an AI Algorithm to improve the performance, reliability, and quality output of the machinery.

PREDICTIVE METROLOGY FOR CONTROL SYSTEMS

is a 100+ years old company that's involved in the production, processing and finishing of glass in Switzerland and Europe.



- ThirdEye has developed an Open-Loop-System that aids operational personnel to control the glass coating process, improves the product quality, and reduces waste.
- The Open-Loop-System receives live data, computes the predicted end-of-line metrology values and corrective action suggestions for the process parameters in real-time, while panes are being coated.
- The predicted metrology values and parameter suggestions were made available in real-time on the shop floor in the form of a graphical user interface, with which the operational personnel interacts.

03 USE CASE

Challenges and Limitations of Generative AI in Manufacturing

Generative AI is a powerful tool that has the potential to make a significant impact on the manufacturing industry. As the technology continues to develop, we can expect to see even more innovative applications of generative AI in manufacturing in the years to come.

Generative AI is a powerful technology, but it is not without its challenges and limitations. Some of the challenges include:

- Data requirements: Generative AI models require large amounts of data to train. This can be a challenge for manufacturers who may not have access to the necessary data.
- Bias: Generative AI models can be biased, which can lead to the creation of products or processes that are not inclusive or equitable.
- Interpretability: It can be difficult to understand how generative AI models work, which can make it difficult to trust the results.

Despite these challenges, generative AI is a promising technology with the potential to revolutionize the manufacturing industry. As the technology continues to develop, we can expect to see these challenges overcome and generative AI become an even more valuable tool for manufacturers.

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DRIVING SUCCESSFUL AI INVESTMENTS BY SOLVING REAL-WORLD INDUSTRY PROBLEMS

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