

## A CASE STUDY RESTORING FUNCTIONALITY REVERSE ENGINEERING A DAMAGED INDUSTRIAL FAN

### INTRODUCTION

What happens when your broken part is obsolete? Our customer, a manufacturing company, sent us a damaged blower fan. Faced with the challenge of an obsolete part, we utilized reverse engineering, 3D modeling, and advanced manufacturing processes to recreate and enhance the damaged fan.

### THE CHALLENGE

Our team encountered a unique challenge when a customer called with a damaged industrial blower fan, rendering it inoperable. Traditional replacement options were limited, prompting us to adopt a creative approach that involved in-house reverse engineering, 3D modeling, waterjet pattern making, and custom foundry casting. The need for a quick and efficient solution led to the decision to reverse engineer the damaged fan, necessitating precise measurements and a thorough understanding of the assembly process.

### THE DETAILS

- **Measurement and Assessment:** We initiated the process by measuring the damaged fan, taking into account all dimensions and characteristics critical to its functionality.
- **Reverse Engineering Process:** Leveraging Autodesk's Fusion 360, we developed a comprehensive 3D model of all fan components, replicating the assembly process based on the acquired measurements.
- **Manufacturing Techniques:** Utilizing advanced machinery, we employed a waterjet for precision cutting of blades, front plate, and backplate. The Haas ST30 Lathe was employed to machine the hub to specifications, while the Milltronics CNC mill drilled bolt hole patterns. The iron worker was crucial for bending the radius on the fan blades.
- **Assembly Process:** Gordon, our skilled welder, meticulously welded the blades to the front and backplate, defining the fan's form. The flange, a critical connecting piece, was also welded to the hub by Gordon. The final assembly, performed by Austin, ensured the seamless mating of the hub to the fan.
- **Quality Assurance:** The fan underwent a rigorous test run in the Haas, ensuring concentricity and overall performance met our high standards.
- **Finishing Touches:** The final step involved cleaning and painting, ensuring the restored fan not only functioned optimally but also looked as good as new.

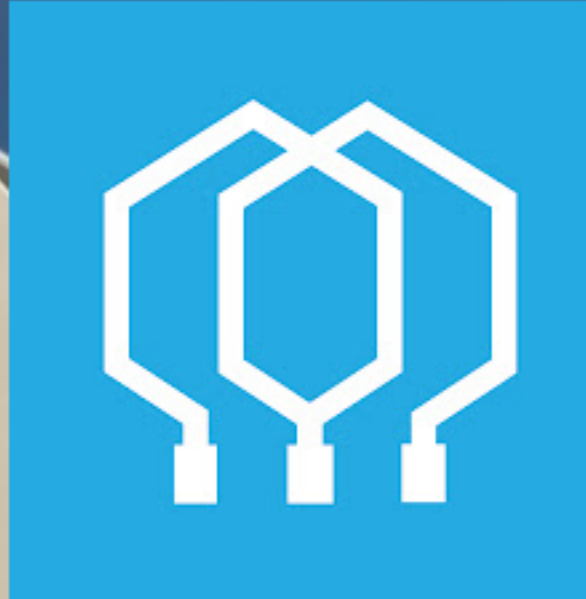


The original blower fan.



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# A CASE STUDY

## RESTORING FUNCTIONALITY

### REVERSE ENGINEERING A DAMAGED INDUSTRIAL FAN

### THE RESULTS

The reverse-engineered fan not only successfully replaced the damaged part but also showcased improved performance. The meticulous measurements, advanced manufacturing techniques, and innovative assembly process contributed to an enhanced product.

### THE CONCLUSION

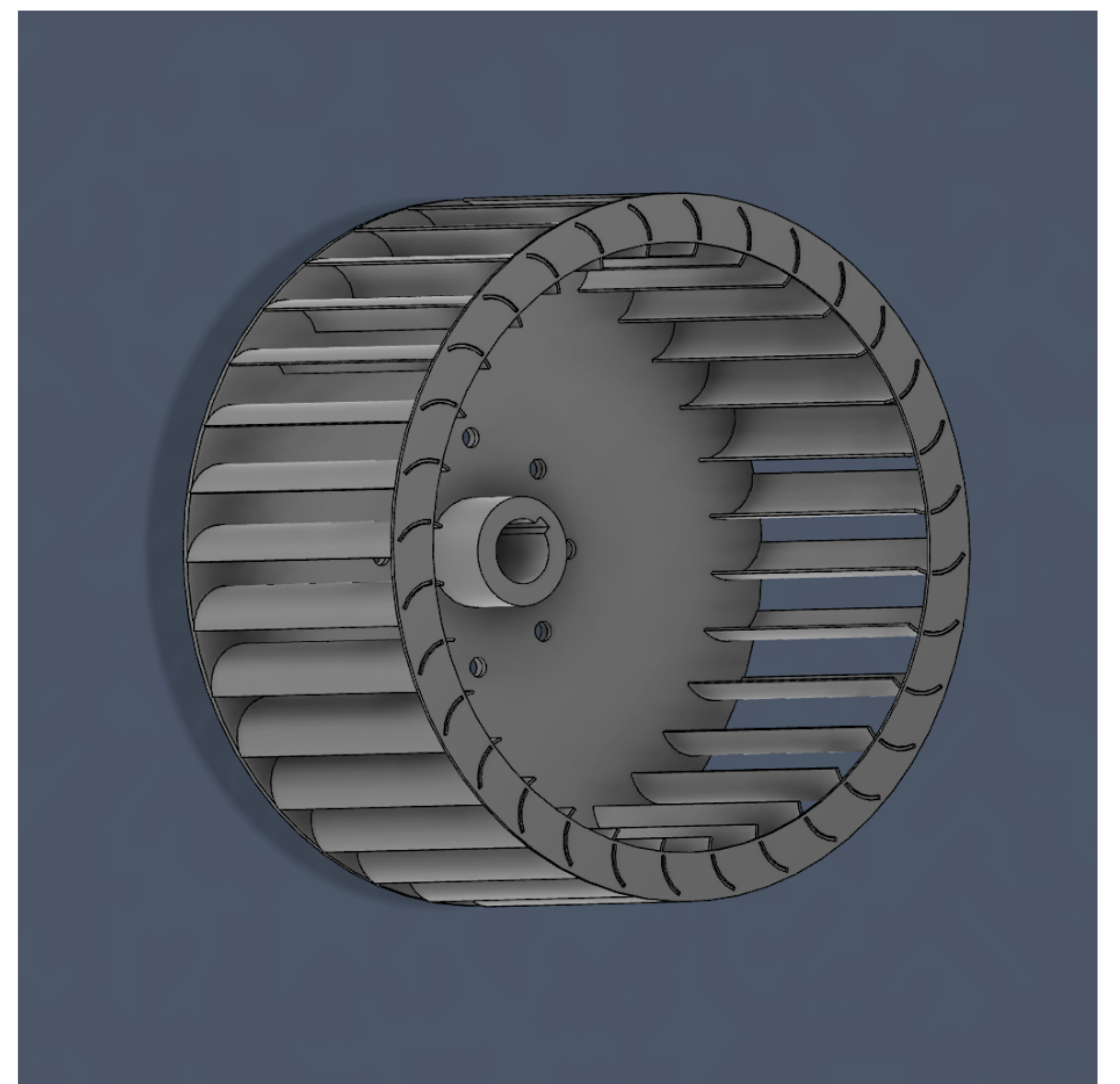
This case study demonstrates how reverse engineering and modern manufacturing techniques turned a damaged industrial fan into an innovation opportunity. Through the use of advanced technology and skilled craftsmanship, our team not only restored functionality but also enhanced the original design. This highlights the significance of adaptability and creative problem-solving in addressing challenges in industrial manufacturing. As a repair shop and parts manufacturer, we have all the necessary resources in-house to produce and understand various applications.

### ABOUT JENKINS

Parts that are obsolete or previously impossible to find can be recreated using reverse engineering and advanced manufacturing processes. Jenkins can remanufacture new precision parts from a sample or drawing. In fact, we already have a large library of patterns for our customers to peruse. From one-offs to large volume equipment part production, our team is at the ready. To shop the full catalog of Jenkins replacement fans visit [Jenkins.com](http://Jenkins.com). Have additional questions? Just Ask Jenkins at [answers@jenkins.com](mailto:answers@jenkins.com) or 800-438-3003.



New fan mounted on the motor.



3D Image of the new blower fan.