

# Cold Plate Case Study

*A real-world example of Alloy Enterprises partnering with a customer on a development project to optimize complex geometry and improve performance.*

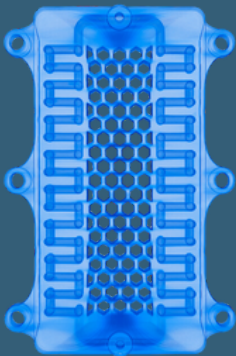
## Profile

Our customer is a photonics company valued at over a half billion USD with global distribution.

Alloy is the only manufacturer that can produce cold plates that include complex internal channels with no additional assembly required.



Cold Plate



Internal Channels Scan



Aluminum components.  
At scale.

## CHALLENGE



Cold plates that are manufactured by machining and vacuum brazing result in lower yields and incur high costs. Maintaining thermal performance while trying to reduce cost and weight of this critical system component has historically been an obstacle. Relying on conventional manufacturing methods caused the customer's cost reduction efforts to plateau. The company looked to sheet forging as a means to achieve their goal and to Alloy for reshoring production.

## SOLUTION



Our team worked with the customer to fully understand their application requirements and designed internal channels to meet the thermal specifications. Alloy Enterprises is able to produce these channels as-built. We eliminate the need for vacuum brazing through our Stack Forging™ process and reduce the overall piece price of this customized part. With Alloy's on-demand fabrication, we're able to manufacture a cold plate with matching thermal performance. Our unique feedstock is comprised of Al 6061 with superior material properties and a thermal conductivity that is higher than wrought aluminum 6061. We're slated to deliver several thousand units per year for the initial part number.

## RESULT



1

### Cost Effective

The customer is able to increase the Watts/\$ of their laser by cutting costs of the cold plate and meet cost targets across a mix of commercial and custom product lines.

2

### Higher Functionality

The mechanical properties of Alloy's 6061 aluminum produce precision parts with a high strength-to-weight ratio and optimal thermal conductivity.

3

### U.S. Based Supplier

Alloy is a trusted and reliable domestic supplier. The customer never has to worry about offshoring supply chain risk.

