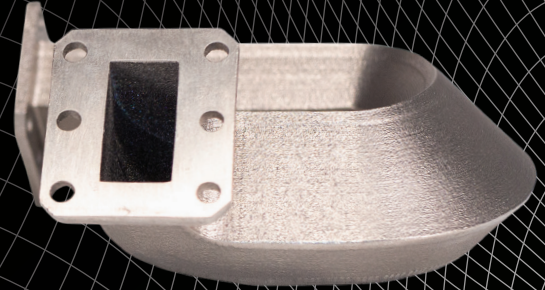


CASE STUDY

RF WAVEGUIDE

Achieving a single-piece waveguide suited for space.



The RF waveguide is crucial for high-quality space satellite communications. The original component weighed 275g, and was designed with multiple independent assemblies, and corresponding interface flanges and associated hardware. Each interface point previously presented an opportunity for signal loss when transmitting the radio waves.

Burloak Technologies consolidated the original design into a single-piece assembly and reduced the number of critical stress points to strengthen the component and improve its longevity. Through an iterative design process, the mass was reduced to 120g then 75g. A post-processing surface finish contributed to an improved fatigue performance.

CHALLENGE

- **Reduce component** mass from 275g
- **Eliminate** of multi piece design

SOLUTION

- Removed **all critical failure points**
- **Consolidated assembly** into a single unified body

IMPACT

- **Reduced** to 120g, and then to 75g
- Achieved **5:1 part consolidation**
- **Extended life** of part
- **Reduced assembly** and **machining costs**
- **Lesser raw** material inputs
- **Superior** surface finish

AM Technology: Renishaw 500Q

Material: Titanium

5:1

PART CONSOLIDATION

75g

REDUCED MASS

