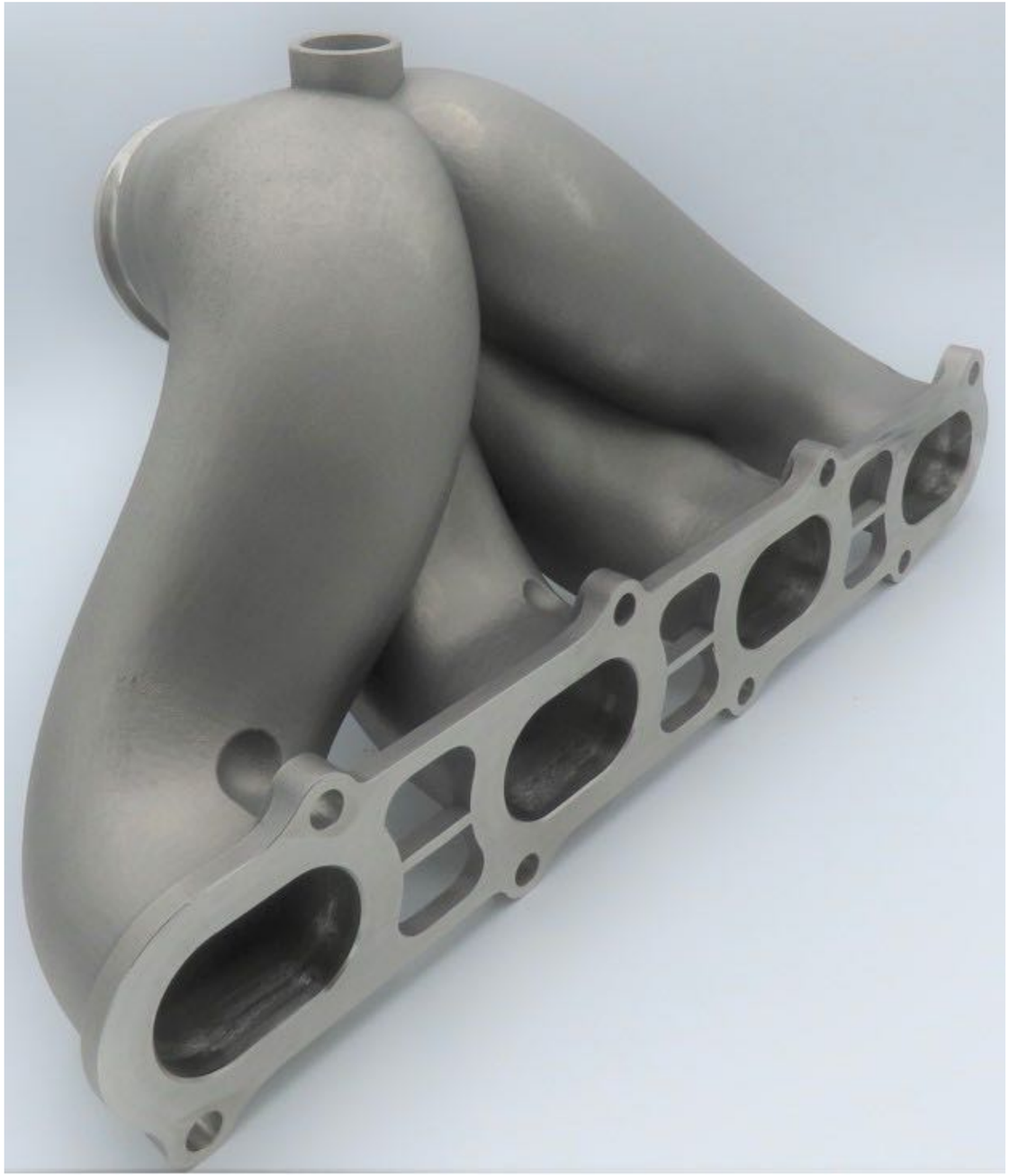
FLEX prototyping

Project Exhaust Manifold
- lower weight
- higher temperature resistance
- easier to rework
- cheper in production

Exhaust Manifold

3d printed

- Size: 355mm x 260mm x 210mm
- Material: 316L



Exhaust Manifold

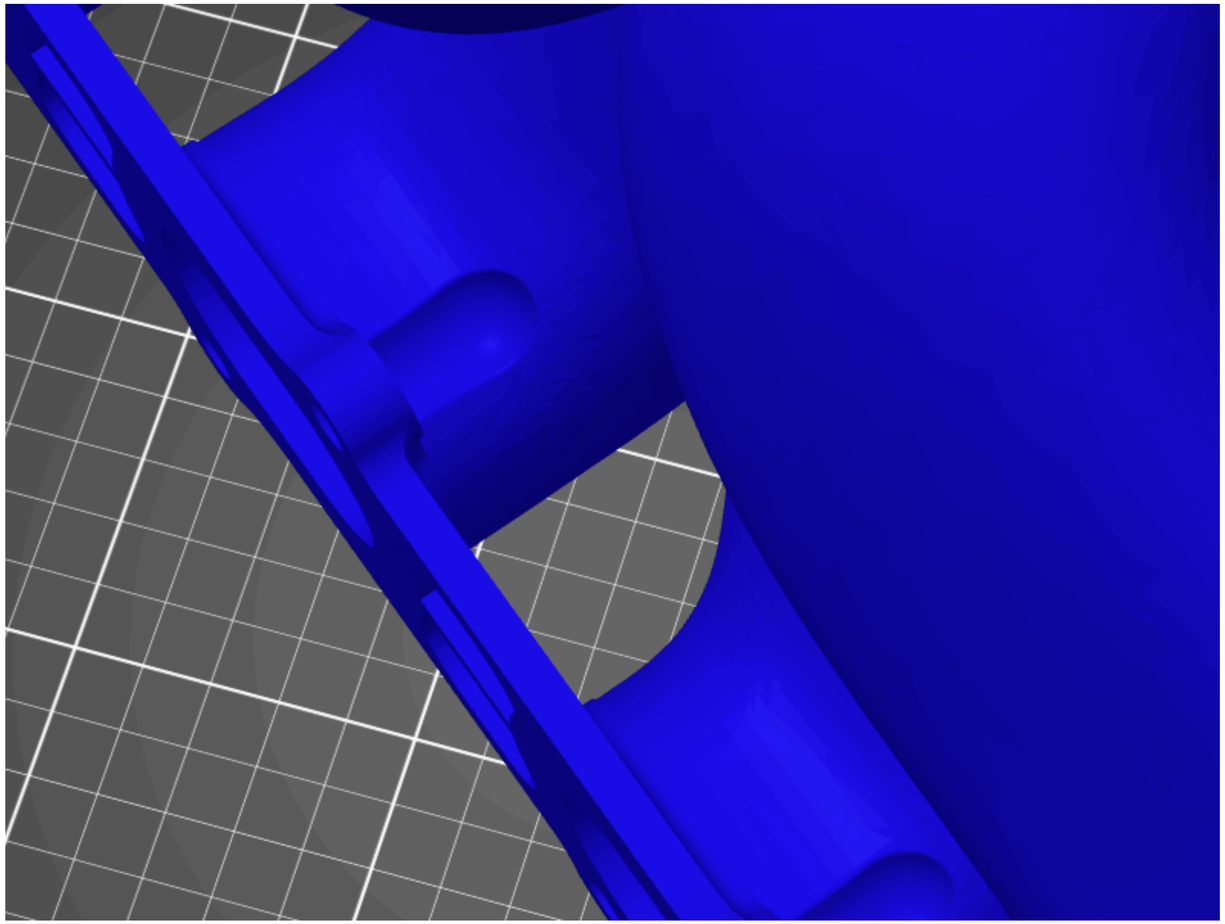
Why 316L?

- Easier to rework than Inconel
- Cheaper
- Good material properties

Exhaust Manifold

How to save weight?

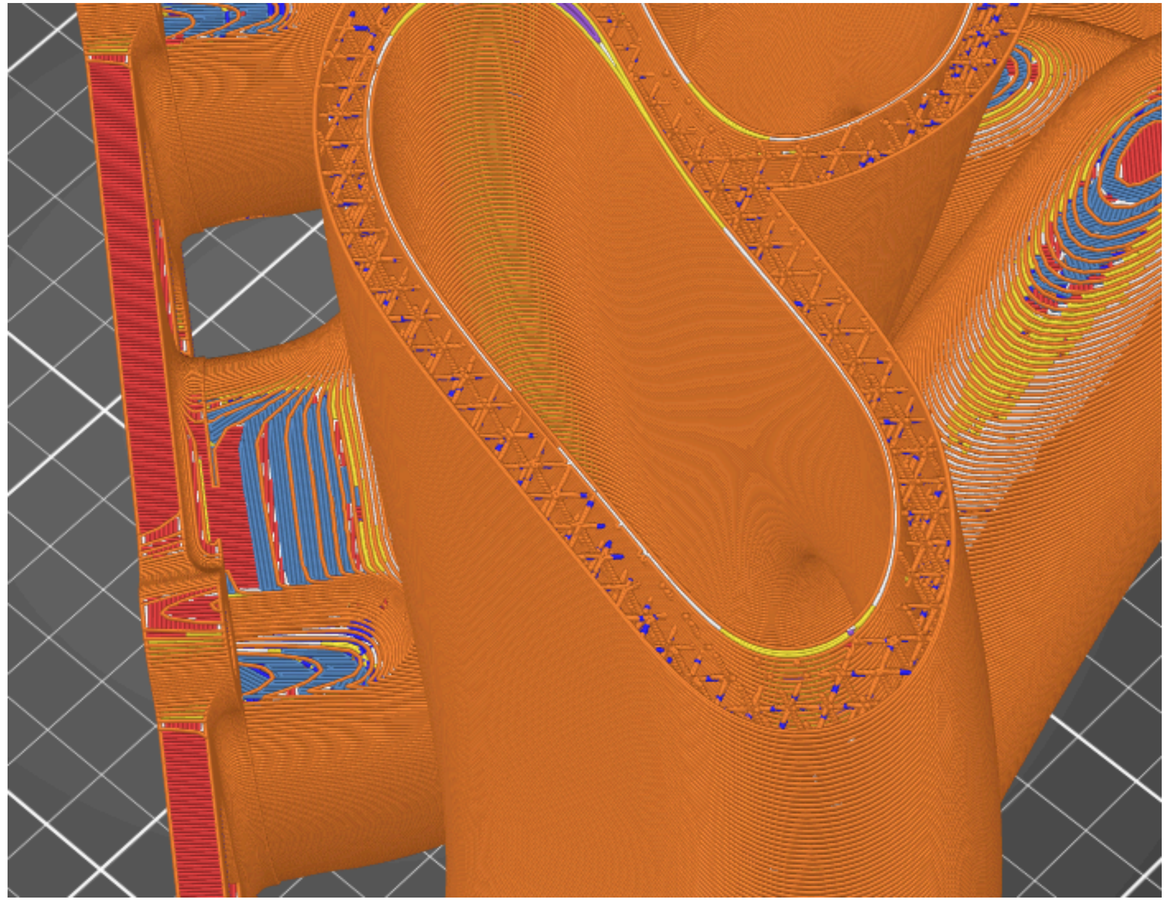
- Create hollow structures
- Minimize wall thickness to 0,7mm from 1,4 mm
- Use a lighter Material = 316l vs Inconel 718



Exhaust Manifold

How to get the part high temperature resistance with 316L?

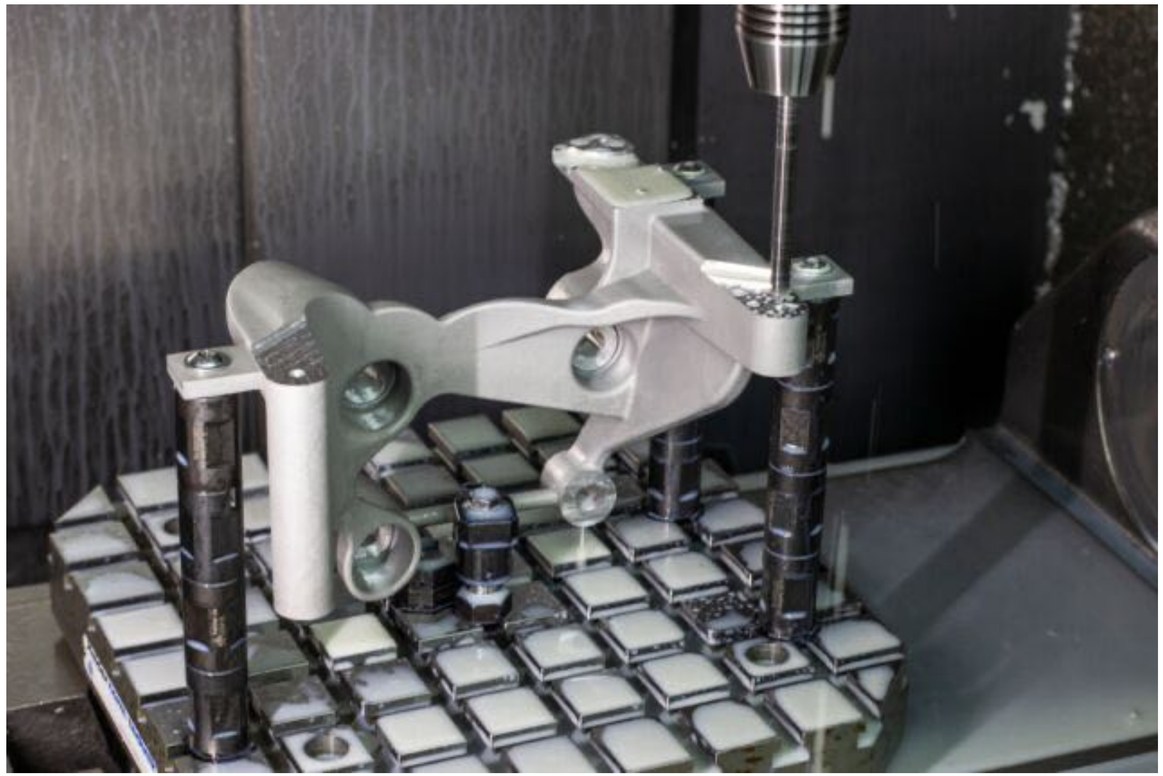
- Created a double wall System for air circulation
- Use the double wall System as a heat shield and to dissipate the heat
- Result: the manifold can withstand 1400 degrees on a long term test bench without any problems



ExhaustManifold

Why easier to rework?

- Due to the fact of using 316l about Inconel 718 the part is much easier to handle in cnc machining
- Due to process optimizing in 3d positioning the part doesn’t have to rework as much



Exhaust Manifold

Why is it cheaper in production?

- Cheaper price for 316L material than Inconel 718
- Faster printing time due to shorter exposure time
- Easier and faster to rework due to material properties