

AEROSPACE COMPONENTS FROM THIN AIR

A case study in reverse engineering



Imagine you are responsible for maintaining the past order book for an aerospace company. A replacement part is required for an order delivered four decades ago. The part is no longer made, the tools to make the part cannot be located and there is no intact edition of the part in existence.

Having been made in the 1980's there are no CAD files of the part or of the tooling. In fact the only reference available is a two dimensional (2D) drawing of the part. This feels like a flimsy starting point from which to make an aerospace component that by definition has to be high precision and high performance.

Fortunately Kajul had a rigid plan for how to recover the situation.

Using the 2D drawing as their starting point they turned to their state-of-the-art computer aided design (CAD) software and meticulously reproduced a three dimensional (3D) model of the part. In collaboration with the client the model was verified. On verification Kajul set about using the 3D model to work out the specifications of the tools that would be needed to create the part.

Using the modelled surfaces Kajul in turn modelled the press tools to press the part. Working in conjunction with the client Kajul produced the tools and the part. With the tools back at the Kajul engineering facility trimming fixtures were created to trim the components so that they could be welded together. A weld fixture was also made to enable the welding. The client and Kajul verified the assembly against the original 2D drawing, Kajul hardened the tools and supplied to the client to begin manufacture.

Task:

Reverse engineering of a titanium engine component from 2D drawings and manufacturing tooling suite.

Skills:

- Accurate interpretation of a 2D drawing in a 3D model
- Extracting tool specification from the 3D model of the subject part
- Understanding of pressings
- Understanding of tool assemblies for trimming and welding
- Close collaboration with client company to ensure a successful outcome

About Kajul

KAJUL is a Midlands-based design development company that specialises in delivering innovative, cost-efficient engineering solutions to meet your specific requirements.

With experience across all sectors and industries, we have the capability, expertise and problem-solving ability to address design engineering and engineering challenges for those clients looking to outsource engineering development.

With a strong understanding of manufacturing processes and working with the latest technologies, we can produce accurate tooling or prototypes of the highest quality on time and within budget.

Taking a consultative and collaborative approach, we will listen to your needs and work as your partner to deliver exactly the solution you require.

