



## GKN PLANETARY CARRIER HOUSINGS

Prod. Group No. 2280



### The Challenge:

Produce complex geometric features, while reducing costs and improving strength and durability



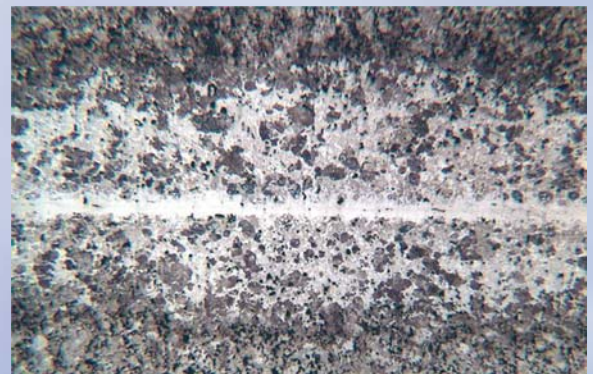
### The Solution:

- Cost-effective manufacturing process
- Sinter brazing for component bonding, providing durable high-strength part-to-part mating
- Feature incorporation for weight reduction, strength, and component mating, without additional process steps
- Complex geometrical features and difficult tooth forms can be produced

### Higher Performance:

GKN Sinter Metals' planetary carrier housings are design optimized, and are validated for less weight, yet high strength.

- Design review and optimization, using Finite Element Analysis (FEA), help improve tooled "manufacturability" and ensure product integrity
- We have the ability to customize alloying properties to achieve desired strength and weight
- Sinter brazed carrier housings are less prone to joint fatigue and mating component part separation



Brazed diffusion into the p/M parts at the joint

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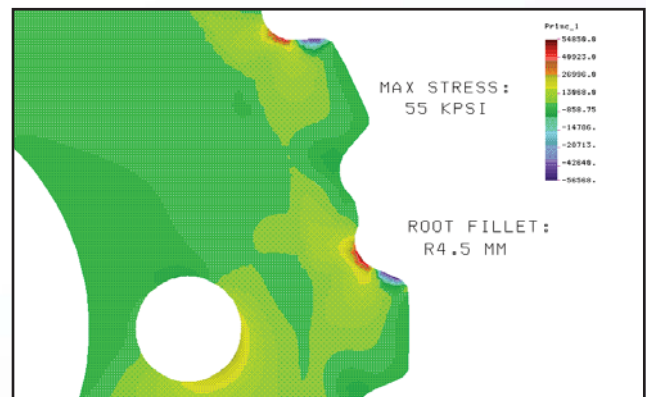
### Cost Savings:

Our planetary carrier housings are produced with refined tooling configurations, which enable us to incorporate complex features into the product.

- Cost is minimized by optimizing the joining process to assure the most robust overall process at the lowest manufacturing cost. Optimizing techniques include sinter brazing, mechanical joining and welding.
- Net-shape features of the as-formed powder metal part further reduce the need for additional machining processes
- Weight reduction options become available, without extra processing, by incorporating features into the components tool design

### Dimensional Quality:

- Our planetary carrier housings are designed and produced with capable mating feature geometries without a need for additional machining processes
- Our housings offer consistent metallurgical properties for reliable and repeatable operational excellence



FEA modelling for feature stress optimization

### Net Shape Design Technology:

- Weight saving features [1]
- Internal and external splines [2]
- Net shape gear space [3]
- Pinion shaft “staking” features [4]
- Lubrication features [5]

