



## GKN POWDER FORGED ONE-WAY ROLLER CLUTCH RACES



### The Challenge:

Incorporate interactive net-shape features, durability, and strength into a cost-effective manufacturing process

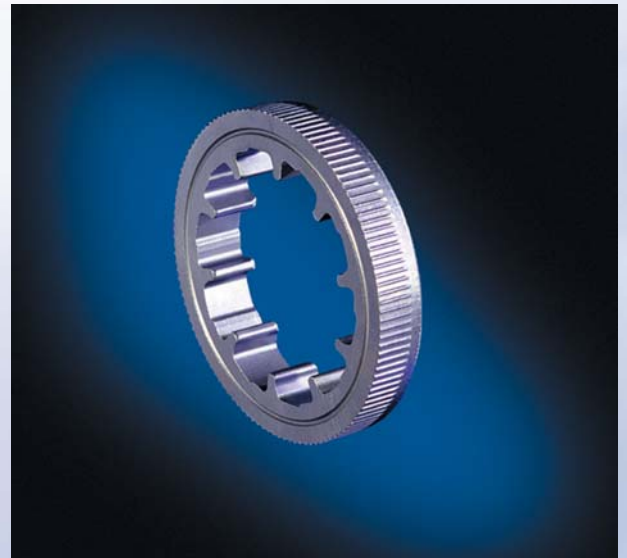
### The Solution:

- Cost-effective manufacturing process
- Durable service in a high-stress application environment
- Incorporates net-shape features for strength and component mating, without additional process steps

### Higher Performance:

Powder forged one-way clutch races, manufactured using GKN Sinter Metals Sinta Carb process, provides superior performance in the stress-filled, one-way clutch environment.

- Custom case-carburization method supplies a gradual transition between the case and core hardness
- The ability to provide customized alloying properties
- Our products have a proven, durable performance track record in high-torque, one-way clutch production applications, where competing manufacturing methods have failed



Race preform ready for forging

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### Cost Savings:

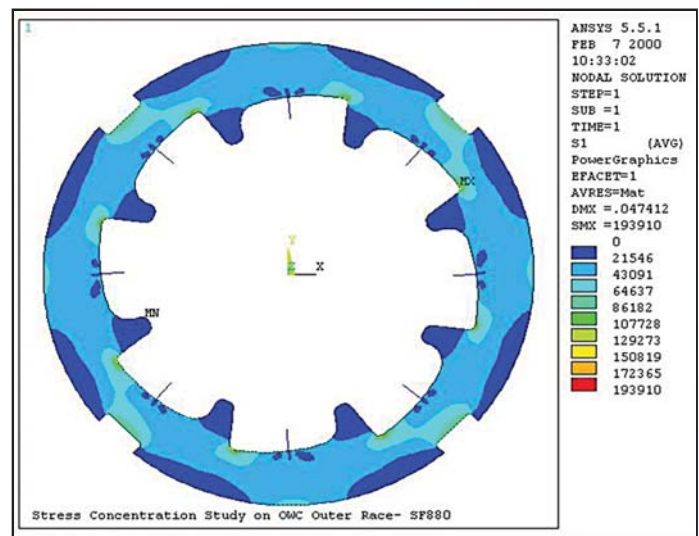
Our Sinta Carb process for powder forging saves cost by reducing process steps without sacrificing product features.

- Lowers cost by eliminating secondary heat treatment operations
- Tailors properties through selective carbon diffusion during the sintering process
- Intercorporates net-shape features without additional costly machining operations

### Dimensional Quality:

Our Sinta Carb process facilitates production of as-forged cam surfaces for one-way roller clutch applications.

- Capably produces roller mating-feature geometry without additional machining process steps
- Yields consistent metallurgical properties, even in high-volume production, for reliable and repeatable operational excellence



FEA for optimization of component stress



One-way clutch stroker test machine