

gigant friction welded axle beam

General:

Gigant conforms to the market demand for high flexibility by examination, improvement and optimization of their manufacturing process for the rigid axle beam. In the coming months Gigant will progressively transfer the production of the rigid axle beam from the current forging production method to the tried & tested friction welding process.

Friction welding is a commonly used process throughout a wide variety of industries where components are joined with different stress conditions (bending, torsion, etc.) and is a process extensively used in the oil industry & especially in the automotive sector.

In the commercial vehicle industry, the process of friction welding has been around for many years. As an example friction welding is extensively used for the production of crank shafts and is a proven & reliable production process from which both Gigant and their customers will benefit enormously in terms of its advantages.

Friction welding:

Friction welding (rotation welding) is a highly productive process for the joining of materials, characterized by its ease of automation and high quality welding.

The component heating is generated by mechanical friction from the relative motion between a rotating and a stationary component being pressed together while under pressure. The temperatures occurring during the diffusion process are below the melting temperature of the materials owing to the intensive contact of the joining parts. The end result being a very high strength joint with lower heat input compared to a conventional (melting) welding process.

Benefits:

- Flexible and fast production process
- Short production times => shorter delivery times
- High resistance connection (diffusion process)
- Weight reduction
- High repeatability
- low energy input

Tests:

The Gigant development team has optimized the friction - welded axle body by introducing modern FEM calculations, friction welding seam analysis (microstructure / hardness of the welded seam zones) and extensive testing under different load parameters. All tests have proven highly successful and exceeded all initial expectations.

Conclusion:

The transfer of the production process will have no physical bearing on the product; however Gigant customers will reap the benefit of shorter delivery times and improved flexibility from the significant time reductions in both the procurement & manufacturing processes.