

Power Tool CASE STUDY

Custom bearing reduces cost by 50% for leading manufacturer.

OVERVIEW

A leading power tool manufacturer had inadvertently over-specified the load requirements for a needle thrust bearing in a drill. Production costs were higher than necessary due to the use of a standard bearing that contained more needles than required.

Over-specification of a bearing occurs when an engineer selects a bearing that is too complex or oversized for the application needs. Many standard bearings support more load and speed than is necessary for an application, and are over-specified – and thus more expensive than a custom bearing – by their very nature.



THE CHALLENGE

The standard bearing specified for the drill application had a load capacity of 16000 N, much greater than the 11,000 N required to operate under the most extreme condition.

National Bearings' engineers reviewed the design specification and compared it to the actual operation requirements. The team realized the standard bearing was over-specified and contained more needles than was necessary to meet load requirements.

This resulted in thousands of dollars in unnecessary costs.

THE SOLUTION

National Bearings collaborated with the drill designer to identify the actual load requirements and in turn, the required number of needles that would successfully meet load requirements without compromising product life span.

National Bearings replaced the overspecified bearing (36 needles) with the custom-designed needle thrust bearing (18 needles). The custom bearing reduced the cost of the bearing by 50%. Bearing size remained the same, leaving the housing intact and avoiding an expensive product redesign.

The National Bearings engineering team also recognized that further cost savings could be realized by replacing the original metal retainer with a similarly-performing plastic retainer.

THE RESULT

- 1 50% reduction in the cost of the needle thrust bearing by reducing the number of needles from 36 to 18 (while conforming to the actual application needs in terms of load and size).
- 2 30% reduction in tooling costs by changing the bearing material from metal to plastic.

The Unique National Bearings Approach

National Bearings applied decades of bearing-specific engineering experience to an existing design to help the manufacturer re-think its reliance on so-called "cheaper" standard bearings.

The product design analysis skills of the National Bearings team helped the manufacturer identify ways in which a custom bearing and changes to legacy assembly processes could dramatically reduce product costs while maintaining quality.



National Bearings Custom Bearing Solution



Originally Specified Bearing