

## Success Story

Industry: Petrochemical

Application: Centrifugal Pump

**Cost Savings: € 27 845**

### Introduction

A petrochemical refinery started experiencing increasing failures on bearings fitted to their most critical centrifugal pump. NSK was consulted and performed a bearing failure investigation which showed that the existing roller bearing set up was experiencing roller skidding due to insufficient radial load. Investigation revealed that the customer had recently changed the motor drive from belt to direct drive. This had resulted in removal of the belt load and a consequential reduction of radial loading. Taking this into consideration NSK engineers proposed an alternative Deep Groove Ball Bearing set-up. A trial was investigated, which demonstrated that the bearing life was extended to over 3 times that of before. In fact, there were no breakdowns in the period of 1 year and the pump remained running after that. This resulted in a significant reduction in maintenance costs with no unplanned breakdowns and a subsequent improvement in productivity.

### Key Facts

- Petrochemical refinery - critical centrifugal pump
- Regular failures experienced following changes in motor set-up
- Bearing failing due to roller skidding
- NSK proposed an alternative bearing arrangement using Deep Groove Ball Bearings
- A trial showed that the bearings lasted over 3 times that of before
- No unplanned failures in a 12 month period
- Consequent cost saving by reduced maintenance cost and no lost production
- Petrochemical Centrafugal Pump NSK Deep Groove Ball Bearings



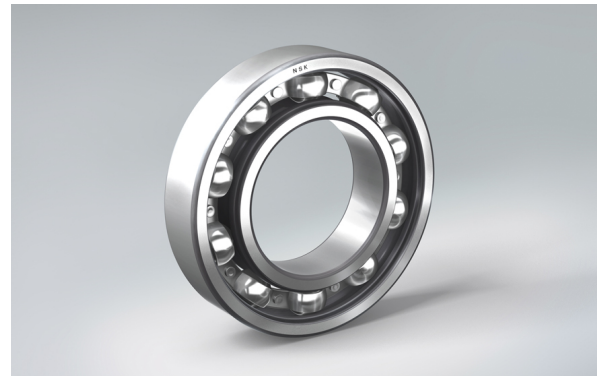
↑ Petrochemical Centrafugal Pump

### Value Proposals

- Following increased pump failure, the customer requested NSK to review their application
- A Failed Bearing Analysis was performed and showed that the existing roller bearings were experiencing skidding and resultant failure. This was caused by insufficient radial load and low roller traction
- An Application Review was conducted, which identified that the customer had changed his motor set-up from belt to direct drive
- NSK proposed a trial using an alternative Deep Groove Ball Bearing set-up
- The trial was successful with no bearing problems in a 12 months period
- This resulted in a significant cost saving for the customer due to reduced maintenance costs and removing loss of production costs due to unplanned breakdown

## Product Features

- Steel cage
- High load ratings ( 7% to 19% increase in dynamic load rating)
- Optimised internal design
- Bigger rolling elements
- Some sizes available with closures (shields, seals)
- Longer life (22% to 68% increase in ISO L10 life)
- Interchangeable with the standard Deep Groove Ball Bearings
- Possibilities of downsizing



↑ NSK Deep Groove Ball Bearings

## Cost Saving Breakdown

Before	Cost p.a.	NSK Solution	Cost p.a.
 Old Bearings Costs	€ 150	Replacement Bearing Costs	€ 25
 3 Breakdowns / 6 hour change over for 2 people / Labour cost €20 / hour	€ 720	No Breakdowns	€ 0
 3 breakdowns / 6 hours / Loss production cost €1.500 per hour	€ 27.000	No Breakdowns	€ 0
<b>Total Costs</b>	<b>€ 27 870</b>		<b>€ 25</b>