

# NTN's Sealed Ball Bearings Quadruple Uptime on Milk Carton Printing Press

A large plant in the food processing and packaging industry was experiencing frequent bearing failures on two of the printing presses in its milk carton packaging line. Each machine utilized deep groove ball bearings that were lasting only an average of two weeks. This was resulting in 960 bearing failures every year, costing the facility over \$40,000 in annual maintenance and bearing acquisition costs.

NTN's engineering and sales support team performed a thorough analysis of the machines and determined the current bearings were failing as a result of contamination from the ink used for printing. Further evaluation identified the application's high temperatures were degrading the material of the single-lip seals, thus making the bearings even more susceptible to contamination.

## The NTN Solution

NTN's team recommended the plant switch to our heat-stabilized ball bearings with the NTN LU seal design incorporating a special high temperature seal material. NTN's LU double-lip contact seal maintains better contact with the sealing surfaces than single-lip seals, while the heat-resistant seal material employed in this application helps minimize seal wear and brittleness that can result from exposure to elevated temperatures. The combination of the improved seal design and material helped extend the life of the bearing by preventing contamination ingress into the bearing. Additionally, a special heat treatment was applied to the bearing steel to reduce thermal growth and further increase the operating life.

## The Result

The NTN solution lasted for two months - quadrupling uptime. Annual bearing failures fell from 960 to 240. The reduction in maintenance and bearing acquisition cost that resulted from the longer life led to \$31,114 of annual cost savings for the customer.



## VALUE ADDED BREAKDOWN

### MAINTENANCE REDUCTION

**\$18,000**

### REDUCED ACQUISITION COST

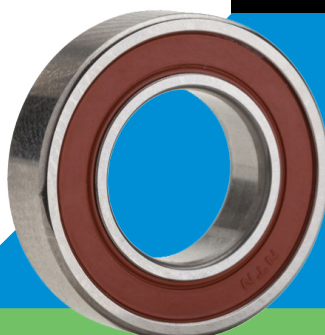
**\$13,114**

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### DOCUMENTED COST SAVINGS

**\$31,114**

CS-0867



**ANNUALIZED  
COST SAVINGS  
\$31,114**

# NTN SEALED BALL BEARINGS

## Grooved Type Sealing Figure for Excellent Performance (All Models)

A v-shaped groove is cut around the inner ring. Under centrifugal force, the outer surface of the 'v' acts to keep out dirt; the inner surface of the 'v' acts to seal in the grease.

## Double-Lip Seal Adjusts to Wear (LLU Spec)

The inner lip of a double-lip seal is pressed against the inside surface of the V-groove; the outer lip is spread open by the elastic force of rubber to create a small gap between the outer lip and the inner ring, creating a labyrinth effect (Figure 2). Should the inner lip wear, the contact pressure will decrease; however, the outer lip will get closer to the inner ring (Figure 1). In effect, a constant degree of sealing will be maintained; and, as a result, bearing service life will be noticeably lengthened.

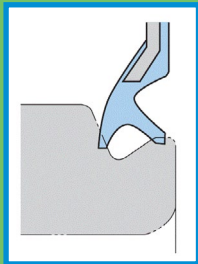


Figure 1

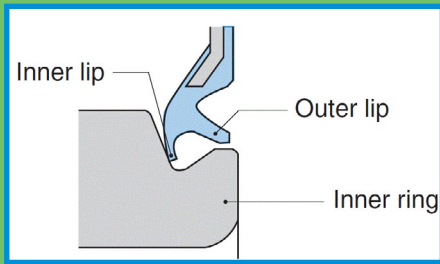


Figure 2

## Let us help you put downtime out to pasture.

We're here to help you achieve your productivity and performance goals. For more information, contact your NTN Sales Representative or call **1.800.323.2358**. For technical questions, email [eng@ntnamerica.com](mailto:eng@ntnamerica.com).

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