

Pellet Fuels Institute

July 20, 2015

Chuck Coffin – Southeast District Manager

Stronger. By Design.

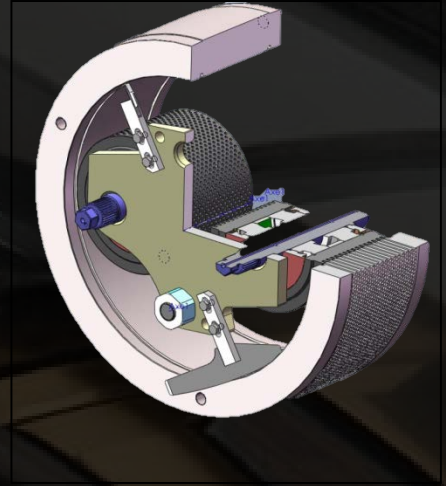
Knowledge = Value

SPHERICAL ROLLER BEARING SUCCESS STORY

Application: Pellet Mill

Challenge:

Pellet producer had to replace bearings in its roller shell position every 500 hours due to heavy loads, impacts and vibration.



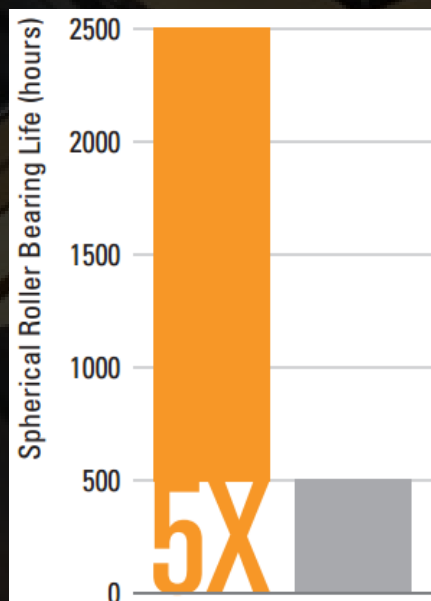
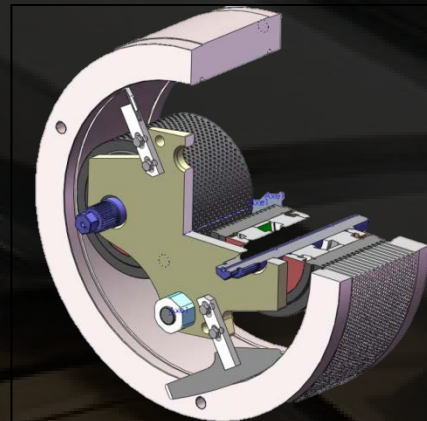
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SPHERICAL ROLLER BEARING SUCCESS STORY

Solution:

Bearing life was increased from 500 hours to 2500 hours by selecting an optimally designed bearing

Bearings had an operating temperature about 7% cooler than the previous design



TIMKEN

TIMKEN® SPHERICAL ROLLER BEARINGS

- Improved profiles reduce internal stresses and optimize load distribution to minimize wear and fatigue
- Longer rollers give you more surface area to carry higher loads, decreasing operating temperature and increasing bearing life
- Enhanced surface finishes reduce friction and result in improved lube film



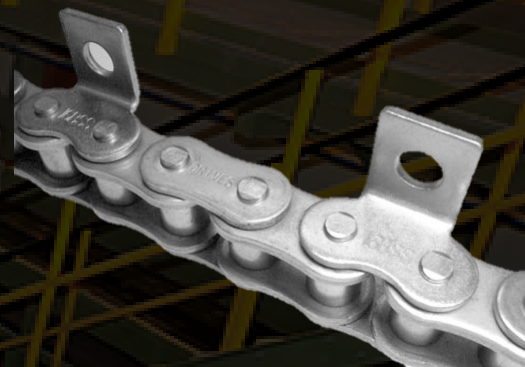
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CHAIN APPLICATION SUCCESS STORY

Application: Saw Mill

Challenge:

A lumber mill in Canada met a tough challenge. Stretched chain and out-of-time pusher attachments fed boards into the trimmer at an angle, leading to high scrape rates. Lubrication was dismissed because it often stained the finished lumber.



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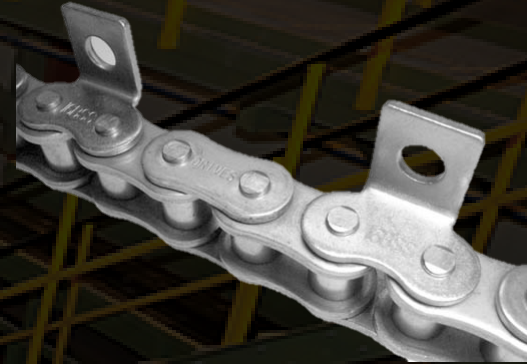
CHAIN APPLICATION SUCCESS STORY

Solution:

Chains were installed with wear resistant pins, 81X chain with pusher attachments every 6th link increasing wear life by three times the original.

Cost Savings:

Compared to the previous chain installation, the Timken Drives solutions reduced the mill's annual production losses by 66% and saved \$58,352



TIMKEN

TIMKEN® CHROME HARDENED PIN CHAINS

- Exceptional pin wear resistance reduces chain elongation (stretch) and can increase wear life 3X+ over conventional premium chains
- Outstanding wear and shock load performance, even at elevated temperatures and marginal lubrication
- No reduction in working loads
- CHP chain is directly interchangeable with standard ANSI chain



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HOUSED UNIT APPLICATION SUCCESS STORY

Application: Saw Mill

Challenge:

Sweden Based Company experienced challenges keeping its chain conveyor running. The cast iron housed units only lasted three to four months before heavy shock loads, dirt and debris damaged the bearing inserts.



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HOUSED UNIT APPLICATION SUCCESS STORY

Solution:

Solid Housed Unit bearings were installed with high performance seals. The bearings continued running uninterrupted for over two years, increasing bearing life six fold.

Savings:

Replacement costs alone, over a two year period added up to \$1,700.



Initial Cost	Replacement Costs (Over 2 Years)					
Competitor Housed Unit \$190.00 plus \$150.00 (2 Hours Installation) \$340	\$340	\$340	\$340	\$340	\$340	Total Replacement Cost Over 2 Years = \$1,700
Timken SRBSB Housed Unit \$290.00 plus \$38.00 (30 minutes Installation) \$328	\$0	\$0	\$0	\$0	\$0	Total Replacement Cost Over 2 Years = \$0



TIMKEN

TIMKEN® HOUSED UNITS

- Triple Lip seals
- Ball vs Tapered vs Spherical Roller
- End Covers
- Ease of Installation
- Split to the shaft



COUPLING APPLICATION SUCCESS STORY

Application: Drive System

Challenge:

US mill has vertical shaft and could not keep lubrication in their gear coupling









TIMKEN

Stronger. Commitment. Stronger. Value. Stronger. Worldwide. Stronger. Together. | Stronger. By Design.

TIMKEN® QUICK-FLEX COUPLINGS

Solution:

- Lubrication Free
- No Maintenance
- Quick Element replacement
- Adjustable Torque???

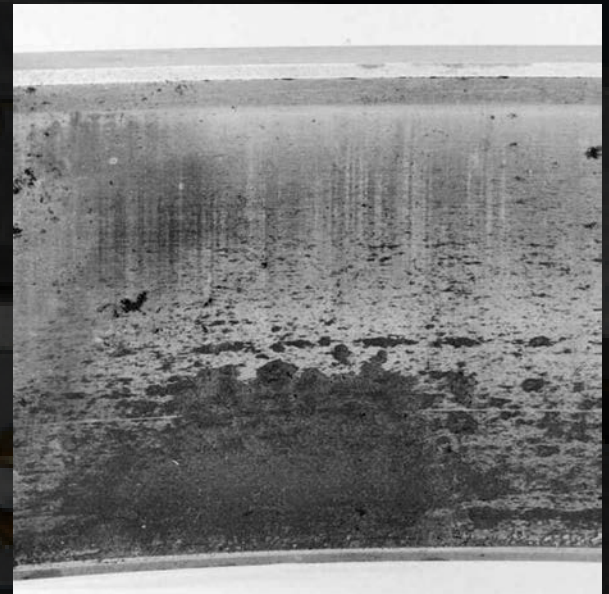
Initial Coupling Cost		Replacement Costs		
Standard Competitors' Grid Coupling – 1100T10	Timken QF3150 Quick-Flex Coupling	Standard Competitors' Grid Coupling – 1100T10	Estimated 8 Hours Labor to Replace Coupling	Total Cost of Coupling Replacement*
 \$1,850	 \$1,850	 \$1,850	 \$960	\$2,810 <small>*Competitor grid may be replaced one time before entire coupling needs replaced.</small>
		Replacement Insert	30 Minutes to Replace Insert	Total Cost of Coupling Replacement
		 \$200	 \$60	\$260

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TIMKEN® SERVICE ENGINEERING APPLICATION SUCCESS STORY

Challenge:

A Pellet Mill company was using a grease lubricant, and bearing life was unsatisfactory due to lubrication film breakdown and bearing raceway damage



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TIMKEN® SERVICE ENGINEERING APPLICATION SUCCESS STORY

Solution:

Timken Engineering Dept. ran a film thickness review of the customers grease and found it was insufficient under operating conditions.

We offered a grease with the characteristics required and customer bearing life was extended.



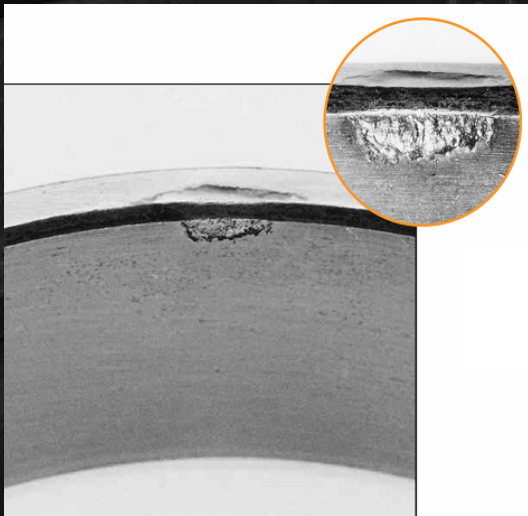
TIMKEN

TIMKEN® SERVICE ENGINEERING APPLICATION SUCCESS STORY

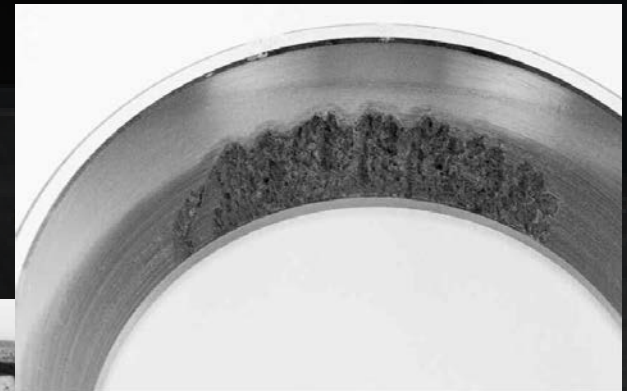
Challenge:

Customer was getting erratic bearing life

Installation Damage



Misalignment



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TIMKEN

TIMKEN® SERVICE ENGINEERING APPLICATION SUCCESS STORY

Solution:

Timken presented a training course on site at the customer to highlight proper installation procedures and best practices.



TIMKEN

A woman with dark hair, wearing a red shirt and a grey patterned scarf, is standing in front of a chalkboard. She is looking up and to the right, with her right arm raised as if writing or pointing at the board. The chalkboard is filled with various mathematical formulas and symbols written in white chalk, including \cos , \sin , \tan , \cot , \sec , \csc , \log , \exp , \ln , $\exp(x)$, $\ln(x)$, $\log(x)$, $\exp(x^2)$, $\ln(x^2)$, $\log(x^2)$, $\exp(x^3)$, $\ln(x^3)$, $\log(x^3)$, $\exp(x^4)$, $\ln(x^4)$, $\log(x^4)$, $\exp(x^5)$, $\ln(x^5)$, $\log(x^5)$, $\exp(x^6)$, $\ln(x^6)$, $\log(x^6)$, $\exp(x^7)$, $\ln(x^7)$, $\log(x^7)$, $\exp(x^8)$, $\ln(x^8)$, $\log(x^8)$, $\exp(x^9)$, $\ln(x^9)$, $\log(x^9)$, $\exp(x^{10})$, $\ln(x^{10})$, $\log(x^{10})$, $\exp(x^{11})$, $\ln(x^{11})$, $\log(x^{11})$, $\exp(x^{12})$, $\ln(x^{12})$, $\log(x^{12})$, $\exp(x^{13})$, $\ln(x^{13})$, $\log(x^{13})$, $\exp(x^{14})$, $\ln(x^{14})$, $\log(x^{14})$, $\exp(x^{15})$, $\ln(x^{15})$, $\log(x^{15})$, $\exp(x^{16})$, $\ln(x^{16})$, $\log(x^{16})$, $\exp(x^{17})$, $\ln(x^{17})$, $\log(x^{17})$, $\exp(x^{18})$, $\ln(x^{18})$, $\log(x^{18})$, $\exp(x^{19})$, $\ln(x^{19})$, $\log(x^{19})$, $\exp(x^{20})$, 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TIMKEN

Answer the door when knowledge knocks