

**LOCTITE**<sup>®</sup>

# Manufacturing Best Practices for Plant and Equipment Reliability



**Henkel**

# Henkel. Solutions for All Your Maintenance Challenges.

## Maintain, Repair, Rebuild and Protect Industrial Equipment.

**Maximizing your production, minimizing unplanned downtime, and preventing equipment failures** are critical in every industry. Unreliable equipment can lead to lost time, expensive repairs, and safety issues that can seriously affect your bottom line.

At Henkel, we understand the challenges you face because we have long-term experience maintaining industrial equipment. Henkel and our **LOCTITE® brand** are the trusted partners of industries around the world to help **reduce costs, increase reliability and improve efficiency.**

## Your Challenges. Our Solutions. Your Benefits.

Henkel provides more than quality products – we provide solutions to many of the biggest challenges facing our customers. Let us put our expertise to work for you.



# Your Solution Partnership Process



Our industry experts can help you **IMPROVE RELIABILITY, SAFETY and EFFICIENCY**, and **REDUCE COSTS** through a number of services and programs.



1

Henkel conducts a plant evaluation with your facility or plant management team

2

On-site consulting identifies asset protection, reliability and cost savings solutions

3

Our team plans customized training to implement identified solutions

4

Henkel experts conduct training in departments as needed

5

Henkel continues in-plant consulting to further identify and implement cost-saving solutions

WORLD-CLASS  
MANUFACTURING

MANUFACTURING  
RELIABILITY

PROACTIVE:  
"Prevent the Unpredictable"

PREDICTIVE:  
"Replace Prior to Failure"

PREVENTATIVE:  
"Protect From Neglect"

REACTIVE:  
"Fix After Failure"



Visit us on the web for more information about maintenance workshops.

[www.henkelna.com/training](http://www.henkelna.com/training)

# Mechanical Basics & Failure Fundamentals

## Customized Modules - The Core Four



Preventing Fastener Loosening,  
Rust & Leaks



Preventing Cylindrical Parts Wear  
& Replacement



Sealing & Securing Air/Fluid Leaks  
On Tapered Threads



Preventing Gasket Leaks, Repair  
and Replacement

### ADDITIONAL BEST PRACTICES TRAINING MODULES:



Proper Metal Rebuilding & Shaft Repair



Preventing Slips, Trips, & Falls



Temporary & Permanent Belt Repair



Proper Wear Prevention & Rebuilding



Proper Anti-Seize & Lubricant Usage



Gear Box / Pump Repair & Rebuilding



Preventing Concrete, Expansion Joint,  
and Grout Issues



Surface Protection & Rust Prevention

## AFTER A MAINTENANCE WORKSHOP

Your skilled tradesmen will have the knowledge and the cost savings tools to:

### SAVE TIME

- Reduce routine maintenance tasks
- Reduce standard repair time
- Reduce redundant repairs

### REDUCE ENERGY COSTS

- Air leak 1/16 in. @ 100 psi @ \$0.065 per kWh = \$842 lost per year
- Loose connector on 480 volt, 30 amp, 3 phase motor = 13% more energy needed to run

### IMPROVE SAFETY

- Improve safety by eliminating personal injury hazards

### REDUCE FLUID CONSUMPTION

- Hydraulic leak @ 1 drop/second @ \$5/gallon = \$2,025 lost per year
- Reduce cleanup and disposal costs

## TRAINED, MOTIVATED AND EQUIPPED PERSONNEL DRIVE COSTS DOWN!

### AIR LEAK COST CALCULATOR

DIAMETER OF OPENING (IN.)	LINE PRESSURE AT 100 psi		
	CFM LOSS*	CUBIC FEET OF AIR LOSS/YEAR	COST PER YEAR
1/32	1.62	849,139	\$210
1/16	6.49	3,401,798	\$842
1/8	26	13,628,160	\$3,375
1/4	104	54,512,640	\$13,498
3/8	234	122,653,440	\$30,371
<b>COST PER kWh</b>		<b>\$0.065</b>	

\*CFM loss may vary based on the shape of the opening and assumes facility maintains air pressure 8,760 hours per year.

### OIL LEAK COST CALCULATOR

LEAKAGE RATE	GALLONS LOST			ANNUAL COST TO PLANT
	PER DAY	PER MONTH	ANNUAL GALLONS LOST	
ONE DROP IN 10 SECONDS	0.112	3.36	40.3	\$201.50
ONE DROP IN 5 SECONDS	0.225	6.75	81	\$405.00
ONE DROP PER SECOND	1.125	33.75	405	\$2,025.00
THREE DROPS PER SECOND	3.75	112.5	1,350	\$6,750.00
STREAM BREAKS INTO DROPS	24	720	8,640	\$43,200.00
<b>COST PER GALLON*</b>		<b>\$5.00</b>		

\*Typical gallon costs range from \$1.00 to \$2.00. However, the costs associated with leaks need to be considered, such as: cleanup labor, absorbents, transaction, shipping, storage, recycling and disposal.

# A Cost Savings Example From A Training Session



**Eliminate Fastener  
Loosening & Leaks  
Improves Safety &  
Reliability**

## Challenge

- Pulp and Paper Company: Pulp Fiber Line
  - Refiner processing wood pulp at approximately 158° F (70° C)
  - Highly Corrosive
  - Loosening fasteners due to vibration & leaking bushing
  - Causing costly/dangerous leaks

## Solution

- LOCTITE® Threadlocker used to secure flange bolts
- LOCTITE® 620 Retaining compound reliably seals bushing & retainer
- **Eliminating this issue will save over 70 hours and reduce 60 repetitive tasks**
- **Cost savings impact: \$59,371**

## Benefit

- Eliminate costly and harmful leaks
- Avoid any hazardous disposal costs
- Eliminate slip and fall hazard
- Reduce labor, no need for retightening bolts
- Equipment life extended

## Cost Savings Documentation

### EXECUTIVE SUMMARY

Acme Widgets - Hiddenville, ABC Distribution - Hiddenville, and Henkel Corporation have been working in partnership on various projects. This report contains a review of work completed with respect to the services and value that have been provided to Acme Widgets - Hiddenville in association with ABC Distribution - Hiddenville at no additional charge. The work is summarized as follows:

2016 Summary	
Total Activity Count	15
VALUE ADDED	
Total Hours Invested In Value Projects/Activities	18.25
Value of Test Samples	\$562.35
Value of Henkel-LOCTITE Engineering Services	\$3,987.50
COST SAVINGS	
Hours Saved	304.00
Annual Incidents Eliminated	300
Annual Material Savings	\$31,000.00
Annual Leak Cost Savings	\$268,138.37
Projected Annual Cost Savings	\$323,688.37
<b>Total Value</b>	<b>\$328,238.22</b>

Henkel Corporation is pleased to be your partner in conjunction with ABC Distribution - Hiddenville in this overview. We are providing the following information as verification of our commitment to providing you with value added services that far exceed the value of the products purchased. (MRO DISCLAIMER) Due to volume of users and varied uses of Henkel or LOCTITE® branded products, the following are considered estimates and do not include miscellaneous costs.



### Partnership Process Overview



Acme Widgets - Hiddenville  
ABC Distribution - Hiddenville

#### Meeting Date:

#### Prepared By:

John Doe  
Sales Specialist  
Henkel Corporation  
MRO Specialist

#### Prepared For:

Robert Smith  
Reliability Specialist  
Maintenance

#### In Association With:



Steve Smith  
Manager  
ABC Distribution



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