



# Steel Shield Technologies (Asia Pacific) Limited

**28 Years Serving the Industry**

**ABF Technology Enlightens the World of Lubrication**

**World's No.1 Ionic Levitation Lubrication Technology**

## **UNION PACIFIC RAILROAD REPORTS**

**Steel Shield Technologies Has Redefined Lubrication.**

**Advanced Boundary Film Technology - There is No Better Protection Against Wear.**

**Un-Treated Bearing Wear**

**ABF Treated Bearing Wear**

**ABF TECHNOLOGY**

**Not Just Oil... IT'S TECHNOLOGY**

METAL TREATMENT & LUBRICATIONS





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More Production and Less Down Time  
**Rail Equipment Shield-Metal Treatment**  
with ABF Technology is the Solution

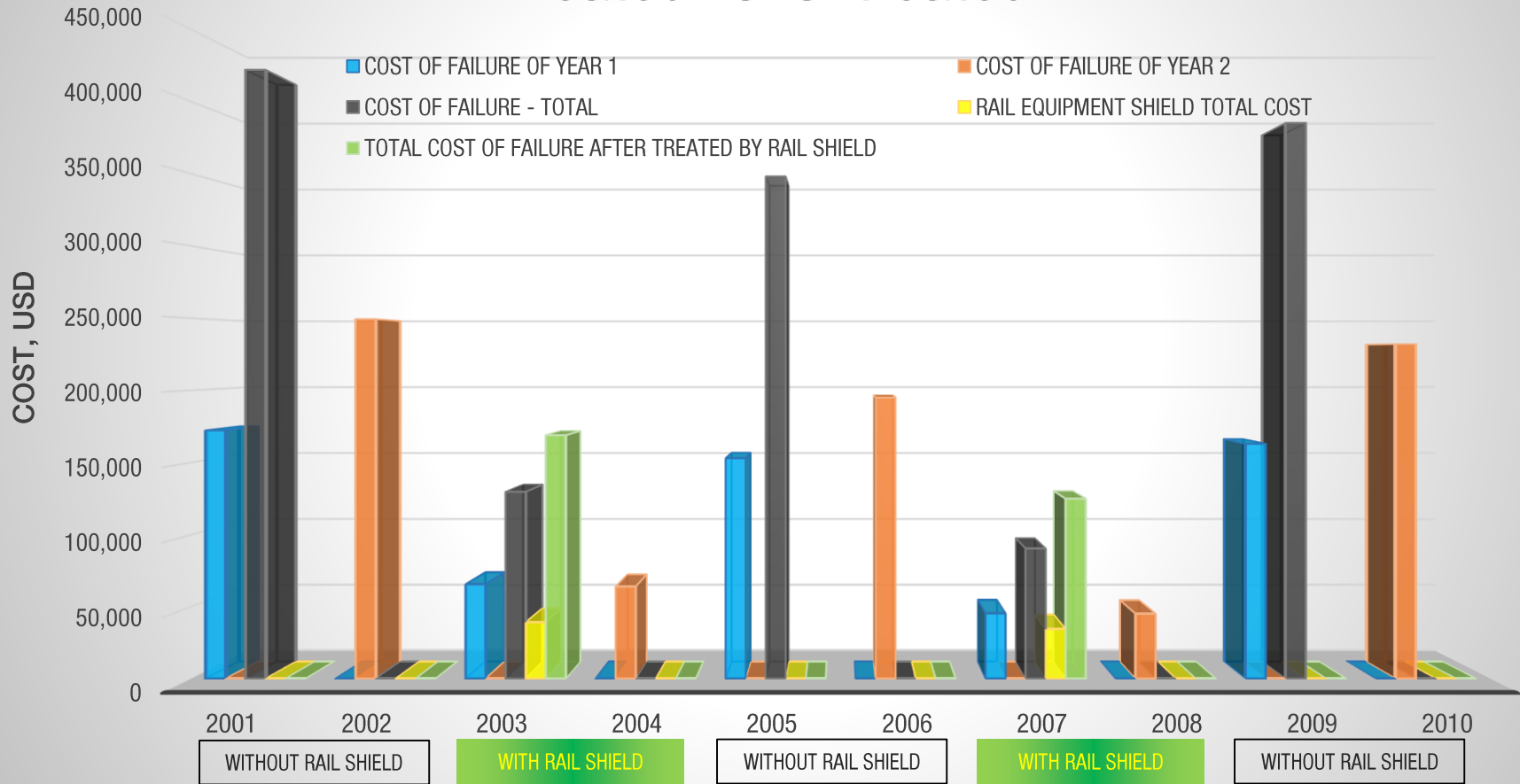


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## UPRR M/W COST OF FAILURE COMPARISON TREATED VS UNTREATED

EXHIBIT A

### UPRR M/W COST OF FAILURE COMPARISON *Treated vs. Untreated*





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## RAIL EQUIPMENT SHIELD WITH ADVANCED BOUNDARY FILM TECHNOLOGY

- Advanced methods of tribology that improve lubricity and load carrying capacity
- Reacts chemically under thermal conditions with the contacting metal surfaces, to form a complex surface-attaching film of protection
- Surface smoothing is accomplished resulting in improved spread characteristics of the surfaces themselves
- Increases fluid film strength resulting in greatly reduced wear while imparting extreme pressure properties (EP)

## BENEFITS OF USING RAIL EQUIPMENT SHIELD METAL TREATMENT

- Increases Train Velocity
- Improves On-Time Train Performance
- Extends Parts Life and Component Reliability
- Reduces Maintenance and Downtime
- Reduces Metal-To-Metal Wear
- Reduces Fuel Consumption
- Reduces Operating Temperatures
- Provides Smoother Operation
- Protects Moving Metal Parts



**COST  
SAVING**



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## M/W EQUIPMENT CENTRAL REGION (POWER UNITS ONLY)

### CASE STUDY 1

- **Rail Equipment Shield-Metal Treatment (RES-MT)** was not used in Power Units or any other M/W components in 2001 and 2002
- In January 2003 **RES-MT** was added to the Power Units as well as transmissions, hydraulic systems, gearboxes and differentials
- In 2004 **RES-MT** was used in the same capacity as 2003
- **RES-MT** was purchased and added to M/W equipment components even though Case Study 1 is only showing the savings for Power Units

### Cost Saving Comparison of Union Pacific Railroad During 2001-2004



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**COST SAVED**

2001 & 2002 (Without RES-MT)	2003 & 2004 (With RES-MT)
Cost of Failures = \$172,296 + \$249,476 = <b>\$421,772</b> (average \$210,886 per year)	Cost of Failures = \$65,722 + \$64,021 = \$129,742 (average \$64,871 per year)
	Cost of RES-MT = \$21,195 + \$18,000 = \$39,195 (average \$19,598 per year)
	Total Cost to Union Pacific = \$168,937 (average \$84,469 per year)
	Savings to Union Pacific = <b>\$421,772</b> - \$168,937 = \$252,835 (average \$126,417 per year)
	Return on investment (ROI) with RES-MT = <u>\$252,835</u> - \$39,195 = <b>5.45 (545% Returned)</b>

\* (Note) This savings does not include man hours, rentals, downtime costs or delays

\* Return on investment:  $\frac{\text{savings} - \text{cost}}{\text{cost}} = \text{ROI}$





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## UPRR COST SAVING ANALYSIS FROM 2005 TO 2008

### CASE STUDY 2

- On January 1st of 2007 UPRR began using **Rail Equipment Shield-Metal Treatment**
- The following analysis is the data collected from UPRR (New Construction) 2007 and 2008 when **Rail Equipment Shield-Metal Treatment** was used in contrast with 2005 and 2006 when it was not

*Note: All repair cost are averaged due to core damage and applications*

*All repairs are due to poor lubrication and excessive wear*

*Repair costs do not include man hours, downtime, rentals or delays*



	Unit Repairs to	Cost Per Unit	Unit Repairs 2005		Unit Repairs 2006		Unit Repairs 2007		YTD Unit Repairs 2008	
			Units	Cost	Units	Cost	Units	Cost	Units	Cost
Total Cost of Units per Year	Engine	12,000.00	4	48,000.00	6	72,000.00	1	12,000.00	0	0
	Transmissions	11,000.00	3	33,000.00	4	44,000.00	0	0	1	24,000.00
	Differentials	1,300.00	2	2,600.00	4	5,200.00	1	1,300.00	0	0
	Hydraulic Pumps	4,000.00	10	40,000.00	8	32,000.00	4	16,000.00	5	14,000.00
	Valve Failures	935.00	3	2,800.00	3	2,800.00	0	0	2	2100
	Hydraulic Cylinders	600.00	12	7,200.00	15	9,000.00	6	3,600.00	5	3,800.00
	Hydraulic Motors	2,500.00	8	20,000.00	12	30,000.00	5	12,500.00	1	1200
<b>Total Cost of Repairs per Year</b>				<b>\$153,000.00</b>		<b>\$195,000.00</b>		<b>\$45,400.00</b>		<b>\$45,100.00</b>



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## CASE STUDY 2

## UPRR COST SAVING ANALYSIS FROM 2005 TO 2008

- UPRR started using **Steel Shield Technologies Metal Treatment** Jan 1, 2007
- UPRR purchased \$20,394.00 of **Rail Equipment Shield** in 2007
- UPRR purchased \$14,100.00 of **Rail Equipment Shield** in 2008



Year	2005	2006	2007	2008
Cost of Failures:	153,000.00	195,000.00	45,400.00	45,100.00
Cost of Rail Equipment Shield:			20,394.00	14,100.00
<b>Total Cost:</b>	<b>153,000.00</b>	<b>195,000.00</b>	<b>65,794.00</b>	<b>59,200.00</b>

### Cost Saving Comparison of Union Pacific Railroad During 2005-2008

2005 & 2006 (Without RES-MT)	2007 & 2008 (With RES-MT)
Cost of Failures = \$153,000 + \$195,000 = <b>\$348,000</b> (average \$174,000 per year)	Cost of Failures = \$45,400 + \$45,100 = \$90,500 (average \$45,250 per year)
	Cost of RES-MT = \$20,394 + \$14,100 = \$34,494 (average \$17,247 per year)
	Total Cost to Union Pacific = \$124,994 (average \$62,497 per year)
	Savings to Union Pacific = <b>\$348,000</b> - \$124,994 = \$223,006 (average \$111,503 per year)
	Return on investment (ROI) with RES-MT = $\frac{\$223,006}{\$34,494}$ = <b>5.46 (546% Returned)</b>



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\* (Note) This savings does not include man hours, rentals, downtime costs or delays





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## STORE STOCK ITEM NUMBERS

- RES-MT-16oz # 310-4437-0
- RES-MT-128oz # 310-4440-0
- RES-MT-5G # 310-4441-0
- RES-MT-55G # 310-4444-0
- RES-MT-300G # 310-4446-0



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IT'S TECHNOLOGY**

## SUMMARY

- **Rail Equipment Shield** has increased train velocity, improved on-time train performance, extended parts life and component reliability and reduced maintenance and downtime by treating the metal surfaces to reduce friction, heat and wear
- **After more than 8 years of use experience shows that Rail Equipment Shield has had no negative or detrimental effects**





## Contact US

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