

PIMA – NASHVILLE

**Paper Industry Management Association
Annual Conference - June 28th, 2005**

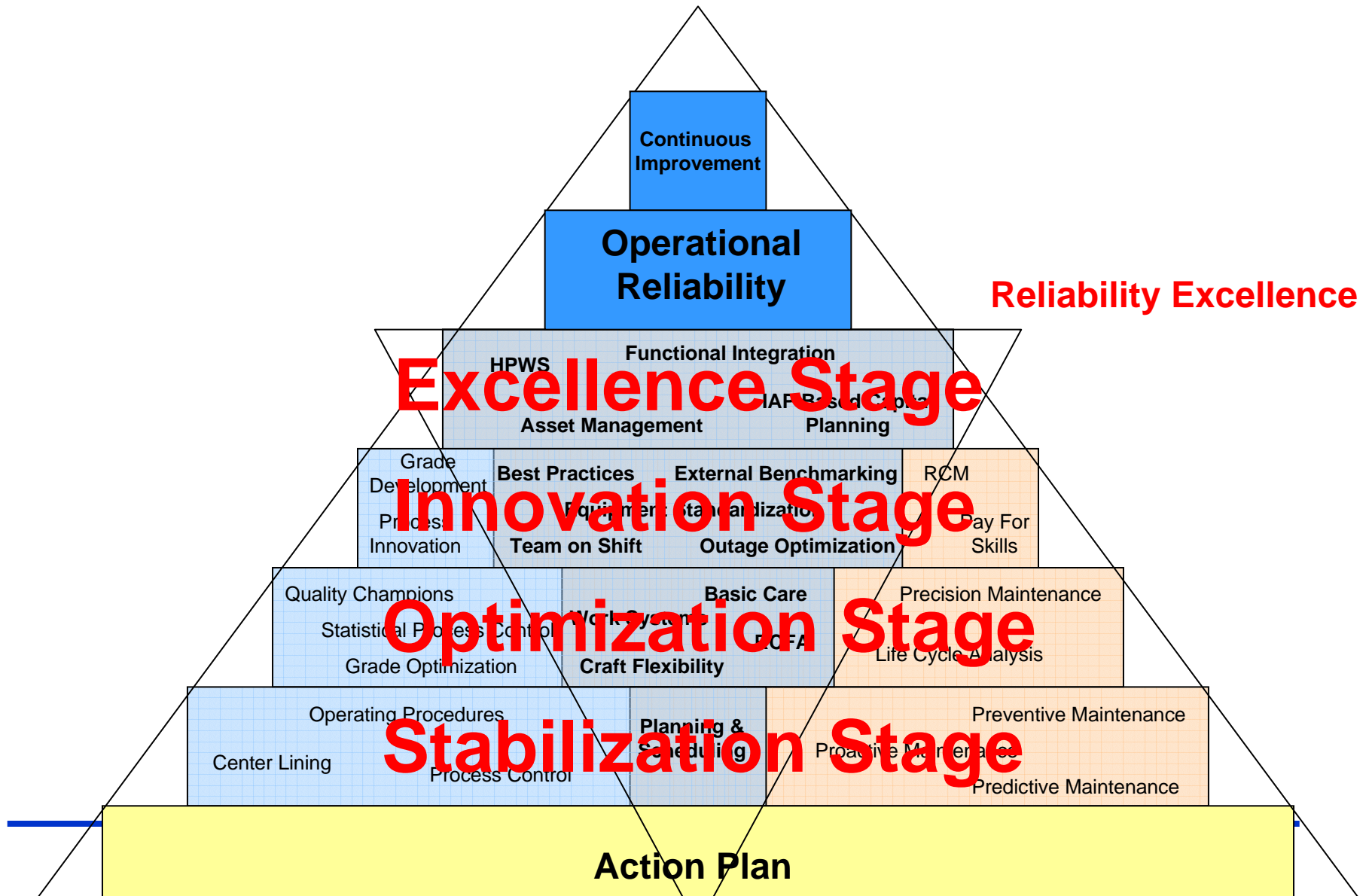
**"Manufacturing Culture Required to Sustain
Reliability"**

**Bob Taylor – VP Manufacturing – SAPPI Fine
Papers - North America**

THE RELIABILITY PARADOX!

- ❑ Knowing **WHAT** to do **TECHNICALLY** to achieve superior reliability practices is generally well known.
 - ❑ **AND** - There is a high degree of confidence in the business advantage gained through superior reliability results!
 - ❑ **BUT** - Sound reliability practices and superior reliability results are very rare?
 - ❑ **WHY?**
-

Technically – Reliability Components Are Well Known



The Competitive Advantage of sound Reliability Results are well documented – and accepted.

	<u>World Class</u>	<u>Average</u>
❑ Average life of electric motors	> 15 yrs	< 10 yrs
❑ Mean time between repairs for pumps	> 6 yrs	< 3 yrs
❑ Average vibration levels	< 0.1 in/sec	> 0.3
❑ Overtime, percent of total hours worked	< 3 %	> 10 %
❑ Emergency work	< 5%	> 15 %
❑ Total maintenance cost as percent of RAV	< 2%	> 3%

“Reliability impacts safety, environmental, quality, service, cost, and CTO”

So Why Are Superior Reliability Results and Practices So Hard To Find?

The Large **Gap** Between

What We Apparently **Know**

And What We Generally **Practice**

The Reliability Paradox !!

THE RELIABILITY PARADOX

**Five Basic Leadership Steps To Alter Our
Manufacturing Culture And Solve the Reliability
Paradox**

Five Basic Leadership Steps to Alter Our Manufacturing Culture and Solve The Reliability Paradox

STEP #1

Be Humble – and Learn !

“It is impossible for anyone to begin to learn that which he thinks he already knows “

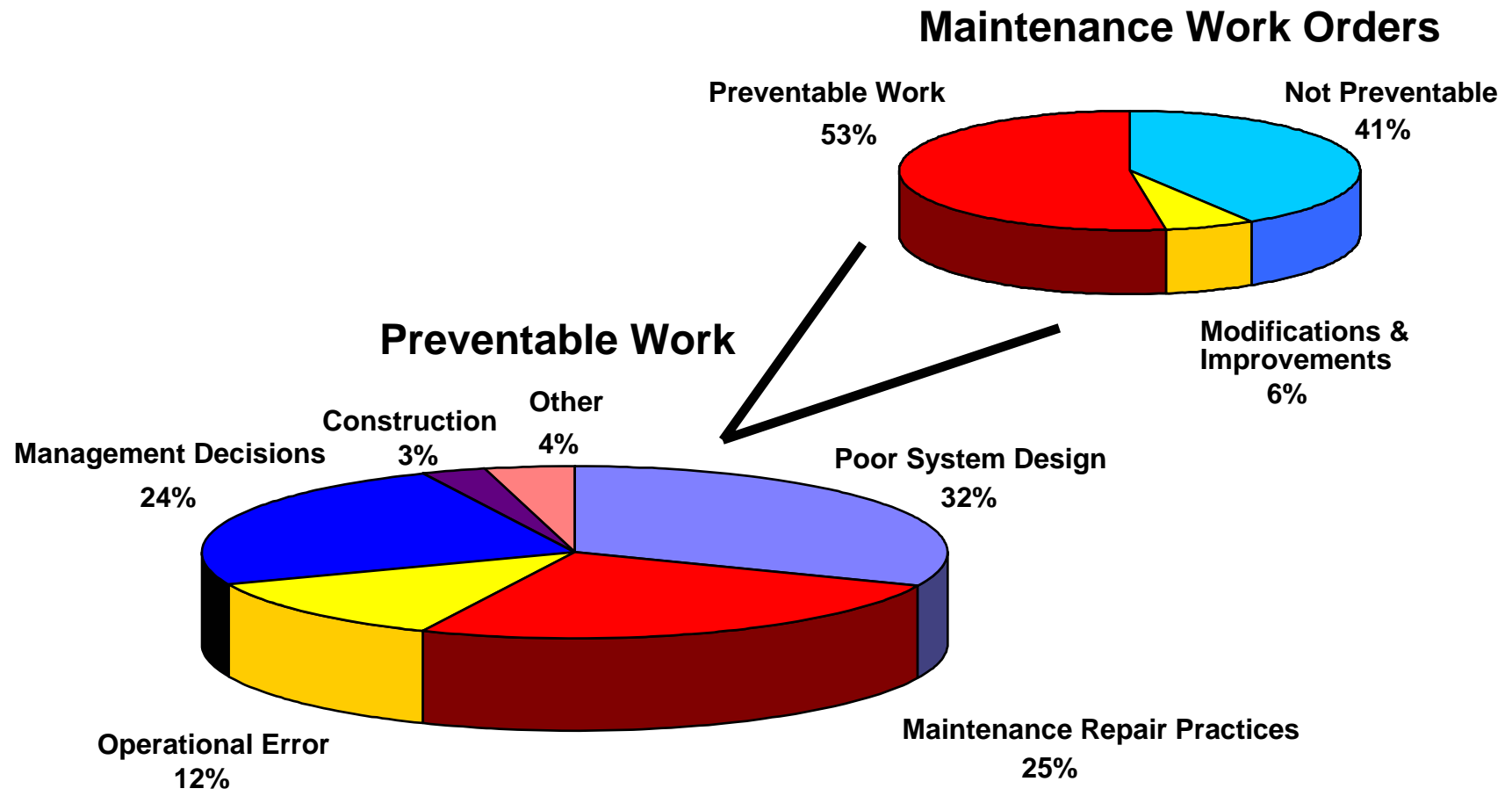
Epictetus

Roman (Greek-born) slave & Stoic philosopher (55 AD - 135 AD)

Humility, Learning, and A Willingness To Accept Reality Go Hand In Hand

Step #1 - Be Humble and Learn – the example of PREVENTABLE MAINTENANCE

Roughly 50% of Maintenance is Preventable



Step #1 - Be HUMBLE and LEARN - The experience of one NA Metals Producer – beginning in the 1980's

- ❑ **Inflation raised costs while market prices dropped**

 - ❑ **Globalization**
 - ✓ High quality Asian imports available at low price
 - ✓ Buyer's market

 - ❑ **Profit formula changed:**
 - ✓ **From:** $\text{Price} = \text{Cost} + \text{Profit Margin}$
 - ✓ **To:** $\text{Price} - \text{Cost} = \text{Profit Margin}$

 - ❑ **Shareholder value substantially eroded**

 - ❑ **Created an urgent need to improve results**
-

Step #1 - Be HUMBLE and LEARN - The experience of one NA Metals Producer – beginning in the 1980's

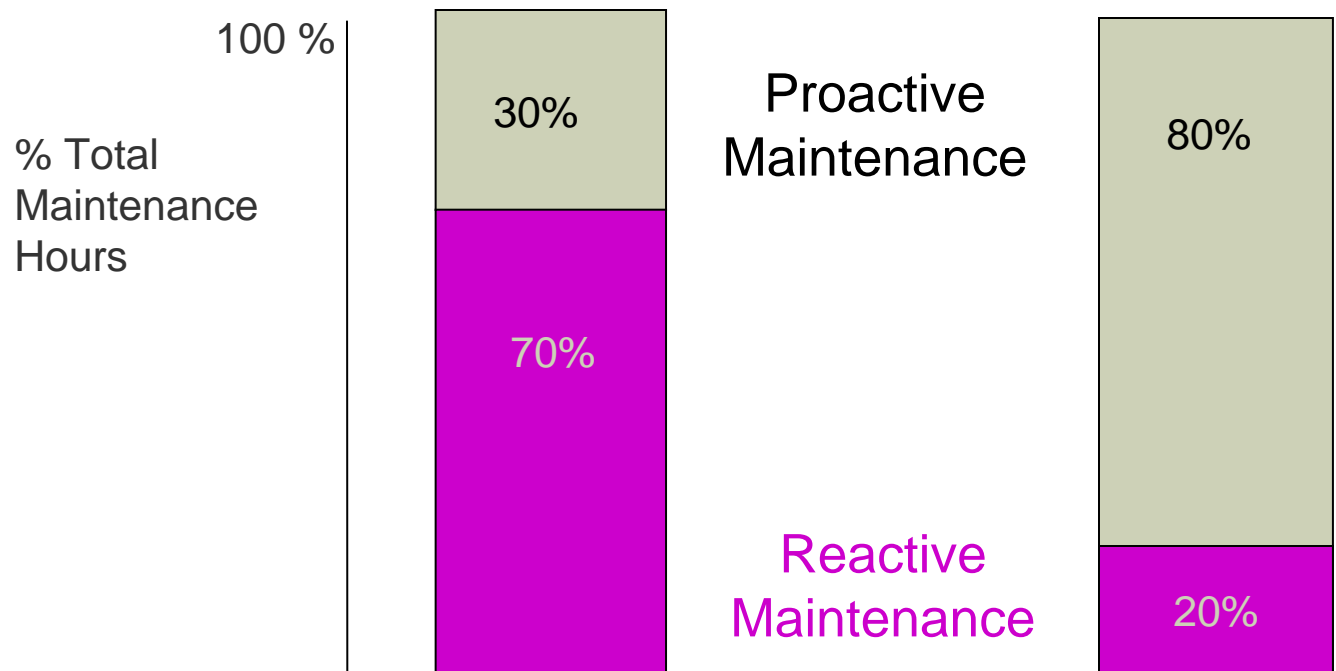
**Their Response to the Threat to Their Business –
Learn !!**

Conducted global benchmarking research on:

- ✓ **Industry maintenance and reliability practices**
 - ✓ **Predictive maintenance technologies**
 - ✓ **Information systems**
 - ✓ **Reliability methodologies**
-

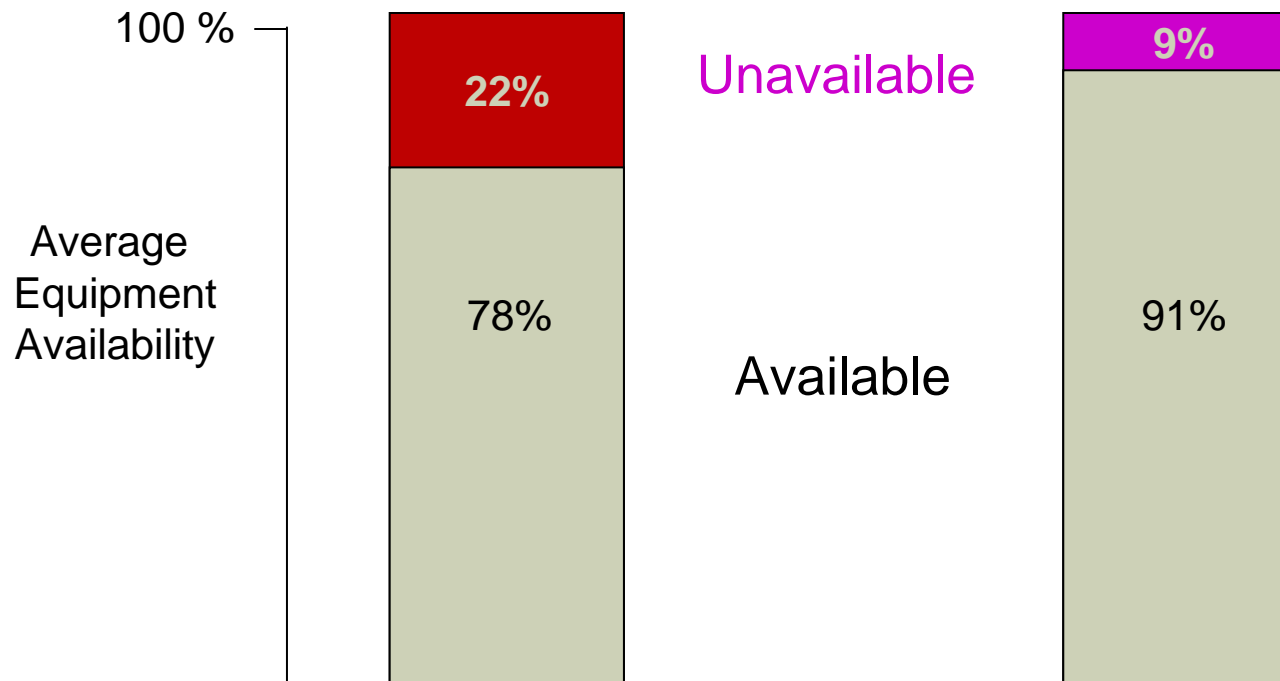
Step #1 - Be HUMBLE and LEARN - The experience of one NA Metals Producer – beginning in the 1980's

Reliability Results



Step #1 - Be HUMBLE and LEARN - The experience of one NA Metals Producer – beginning in the 1980's

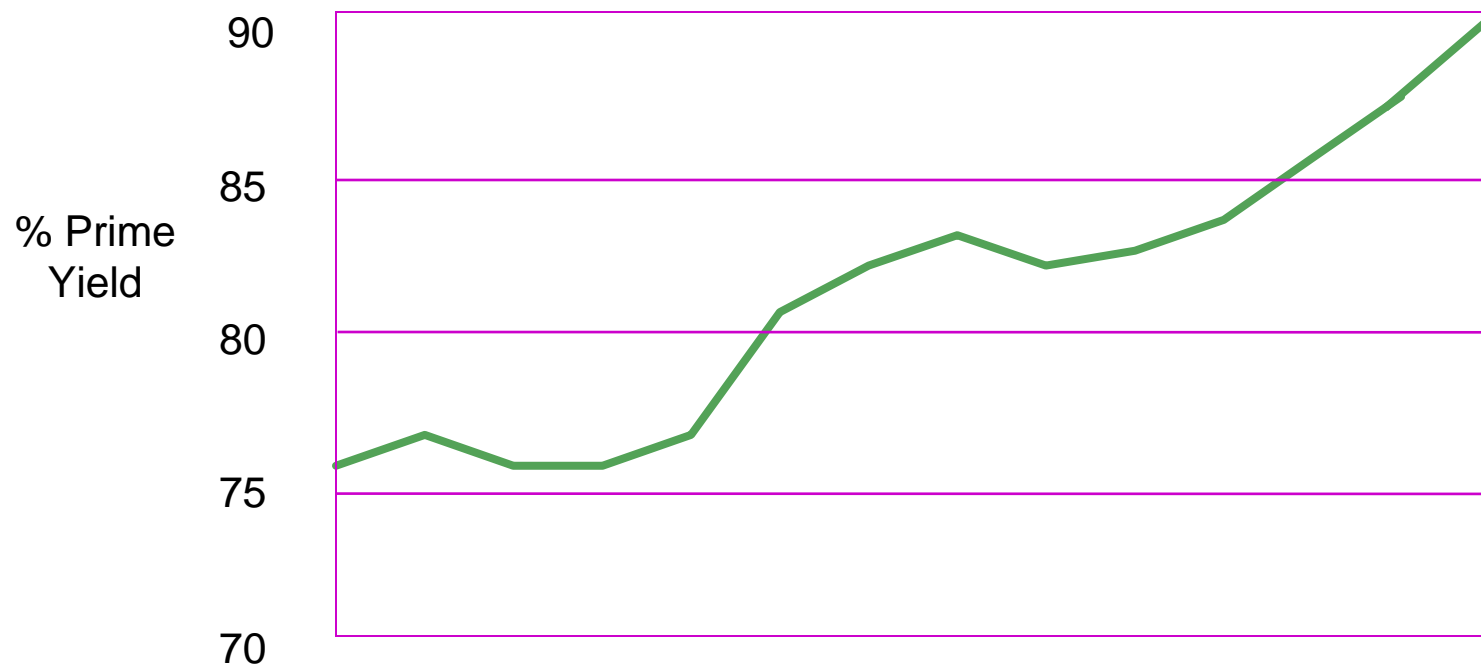
Reliability Results



Step #1 - Be HUMBLE and LEARN - The experience of one NA Metals Producer – beginning in the 1980's

Reliability Results

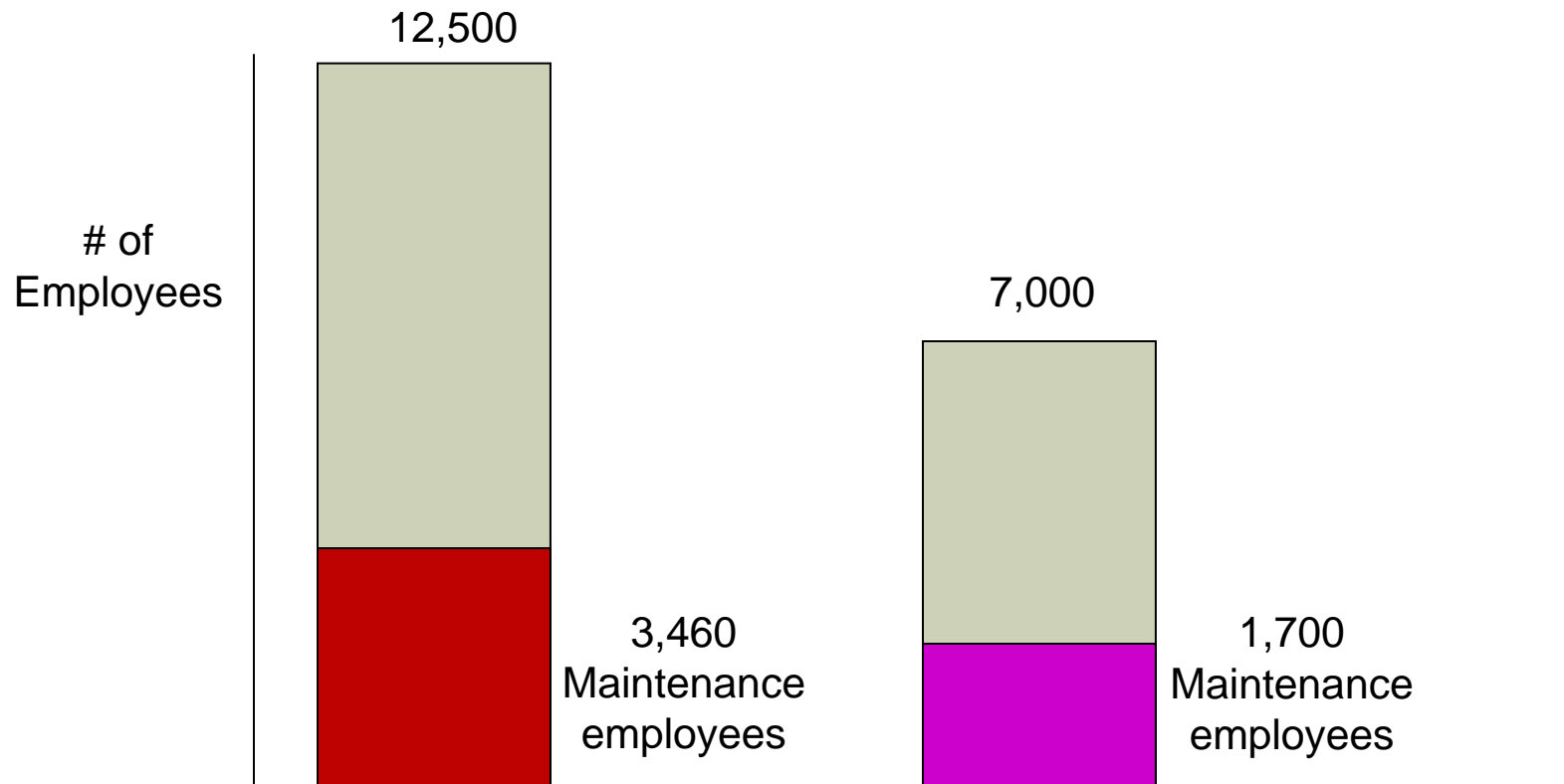
Quality increased from 76% yield to 91%



Step #1 - Be HUMBLE and LEARN - The experience of one NA Metals Producer – beginning in the 1980's

Reliability Results

Reductions achieved through voluntary attrition



Five Basic Leadership Steps to Alter Our Manufacturing Culture and Solve The Reliability Paradox

STEP #2

Know What Good Looks Like !

In Results & Practice & Process

‘ Benchmarking - Plus ‘

Note – Leadership must be willing to learn in order to get an accurate picture of ‘what good looks’.

Step #2 - Know What Good Looks Like – The Results

	<u>World Class</u>	<u>Average</u>
✓ Average life of electric motors	> 15 yrs	< 10 yrs
✓ Mean time between repairs for pumps	> 6 yrs	< 3 yrs
✓ Average vibration levels	< 0.1 in/sec	> 0.3
✓ Overtime, percent of total hours worked	< 3 %	> 10 %
✓ Emergency work	< 5%	> 15 %
✓ Total maintenance cost as percent of RAV	< 2%	> 3%

Step #2 - Know What Good Looks Like – The PRACTICE – A More Difficult Proposition

- ✓ **Obvious deterioration in pump bases**
 - ✓ **Excessively leaking seals**
 - ✓ **Covers missing on lube containers**
 - ✓ **Craftspersons queuing up at a stores counter**
 - ✓ **Bearings running hot from poor alignment/balancing/lubrication**
 - ✓ **Operations where emergency work is the norm**
 - ✓ **Engineering design requiring a ‘blue-tip wrench’ for repairs**
-

Step #2 - Know What Good Looks Like – The PRACTICE – A More Difficult Proposition

- ✓ **Sight glasses on oil sumps that are not visible**
 - ✓ **Belts obviously worn from slipping**
 - ✓ **Conveyor table rolls that do not turn**
 - ✓ **Excessive packing leaks at pumps and agitators**
 - ✓ **Clearly inadequate oil levels**
 - ✓ **Motor ventilation covered with process debris**
 - ✓ **Excessive cycling of electric motors by operators**
-

Step #2 - Know What Good Looks Like – The PROCESS – A Much More Difficult Proposition

- ✓ **Reliability ownership that extends past the maintenance organization**
 - ✓ **Reliability as a collaborative effort between engineering, purchasing, production, and maintenance (and HR and Finance and IT)**
 - ✓ **Reliability metrics and systems widely understood by leadership**
 - ✓ **Reliability efforts justified in business terms**
 - ✓ **Reliability efforts that take full advantage of HPWS practices.**
-

Five Basic Leadership Steps to Alter Our Manufacturing Culture and Solve The Reliability Paradox

STEP # 3

Maintain High Expectations !

Step #3 - Maintain High Expectations

- ✓ **Maintain a low tolerance for poor results, poor practices, and poor performers.**
- ✓ **Be a boss when the role fits**
- ✓ **Never ignore a poor reliability practice as it will immediately lower the standard.**

Note – Leadership must know what good looks like for this to be effective.

Five Basic Leadership Steps to Alter Our Manufacturing Culture and Solve The Reliability Paradox

REASON # 4

***Have PASSION For Reliability Implementation –
It's The Only Thing That Will Overcome
Organizational Inertia !***

Step #4 – Be Passionate About Reliability Practices And Results

✓ Crank it up - Normal won't get it !

✓ Leadership must be felt !

**‘What gets talked about – what gets measured
– what gets recognized and rewarded – what
gets personally demonstrated – IS what gets
done !’**

Five Basic Leadership Steps to Alter Our Manufacturing Culture and Solve The Reliability Paradox

STEP #5

***Be Courageous – For The Obstacles
Will Be Many!***

Step #4 – Be Courageous

Opposition and Obstacles Will Come From Everywhere

- ✓ **The ‘Not Invented Here’ Group**
 - ✓ **The ‘We’ve Done It Before’ Group**
 - ✓ **Reluctant Union Leaders**
 - ✓ **Cautious Employees**
 - ✓ **Apprehensive Supervisors**
 - ✓ **Impatient Executives**
-

Five Basic Leadership Steps to Alter Our Manufacturing Culture and Solve The Reliability Paradox

Summary Of The Five Steps

- 1. Be Humble - and Learn**
 - 2. Know What Good Looks Like**
 - 3. Maintain High Expectations**
 - 4. Have a Passion For Reliability Practices and Results – Normal Won't Get It**
 - 5. Be Courageous**
-

Q&A

Thank You
