

# Technical Insulation for Reducing Risk, Lowering Costs & Reducing Environmental Impact

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Pyrogel®

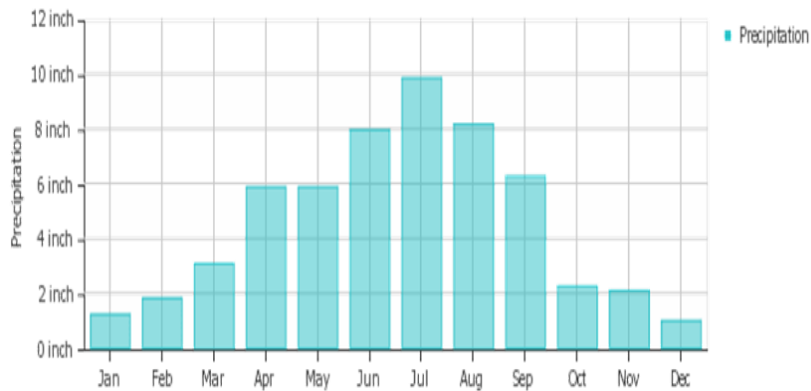
## Agenda

- 01** CUI Case study Introduction
- 02** The Solution – Pyrogel XTE
- 03** 10 Years in service – visit report
- 04** Summary

# CUI Case Study

## The Problem

Mineral wool insulation system historically employed



Average precipitation (rain/snow) in Chungmu, South Korea Copyright © 2016 www.weather-and-climate.com

- Extensive CUI over many years
- Reduced throughput – Especially during wet weather.
- Continuous inspections increased costs.
- Process unstable.
- MW Degraded resulting in increased Energy use

Watch the video - [A Decade of Superior protection](#)

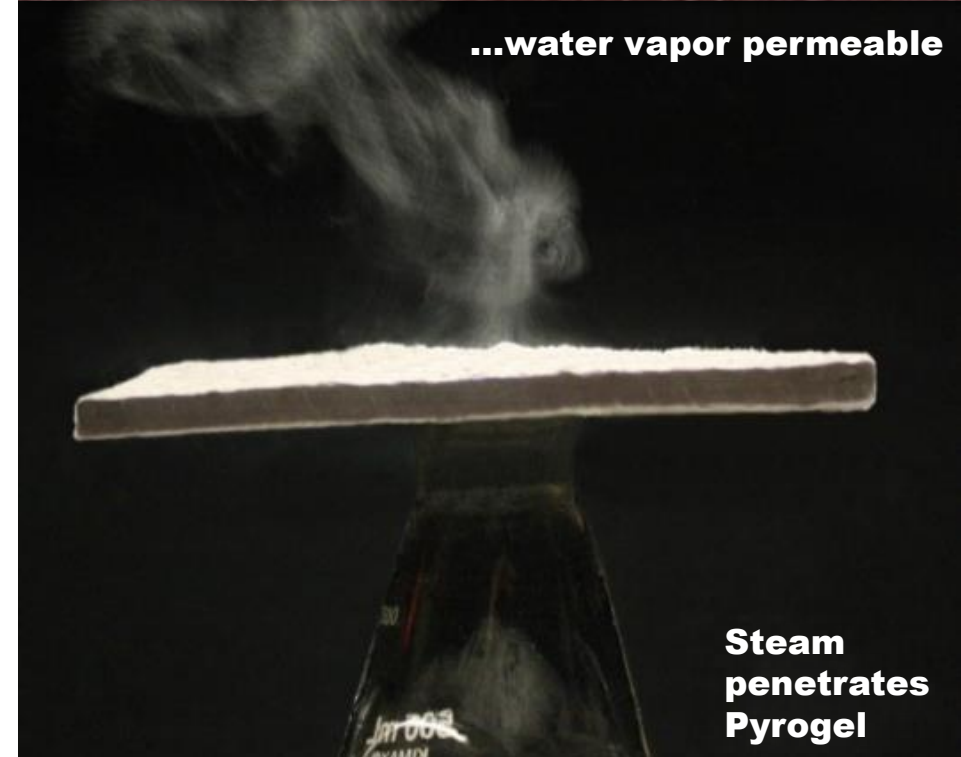


# The Solution – Pyrogel XTE

- Pyrogel is water repellent and will not absorb water
- Water vapour permeable – allowing vapour to escape
- pH is engineered to be  $>7$  to prevent corrosion
- Pyrogel does not degrade and will perform consistently for the lifetime of the plant.



**Pyrogel is super-hydrophobic, yet also...**



**...water vapor permeable**

**Steam  
penetrates  
Pyrogel**

# Site Visit Overview

Process Temp.	4"- 10"	> 12"	Equipment or Vessel
50-175°C <sup>1</sup>	Case 1 Case 8	Case 3 Case 7	
>180-300°C	Case 2 Case 6		
>300°C <sup>2</sup>		Case 4	Case 5

<sup>1</sup> ***High risk of CUI category***

<sup>2</sup> ***Hydrophobic durability. The hydrophobe of Mineral wool and perlite will degrade over time under such high temp.***



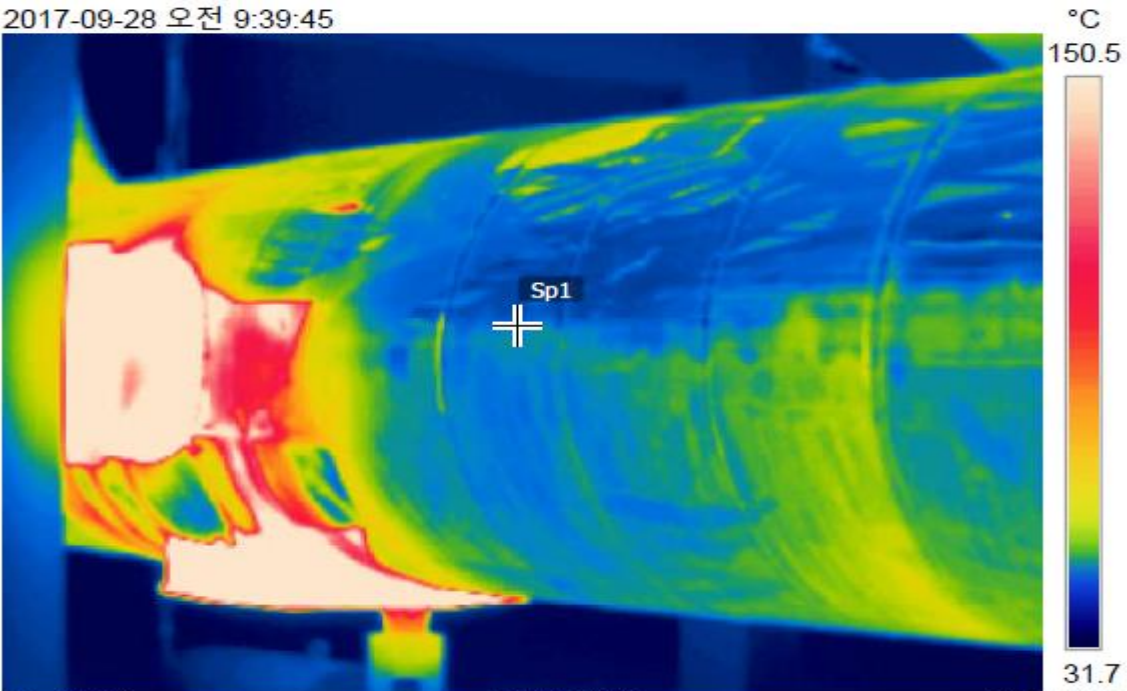
# Site Visit Results

## CASE 4 High Degradation Risk

NPS	36"
Process Temp.	430°C
Ambient Temp.	23.7°C
Wind Speed	1.4 m/s
Material	Pyrogel XT 50mm
Surface Temp. Measured	45.9°C (Probe) 46.5°C (FLIR)
Surface Temp. Calculated	53.9°C Emissivity 0.3



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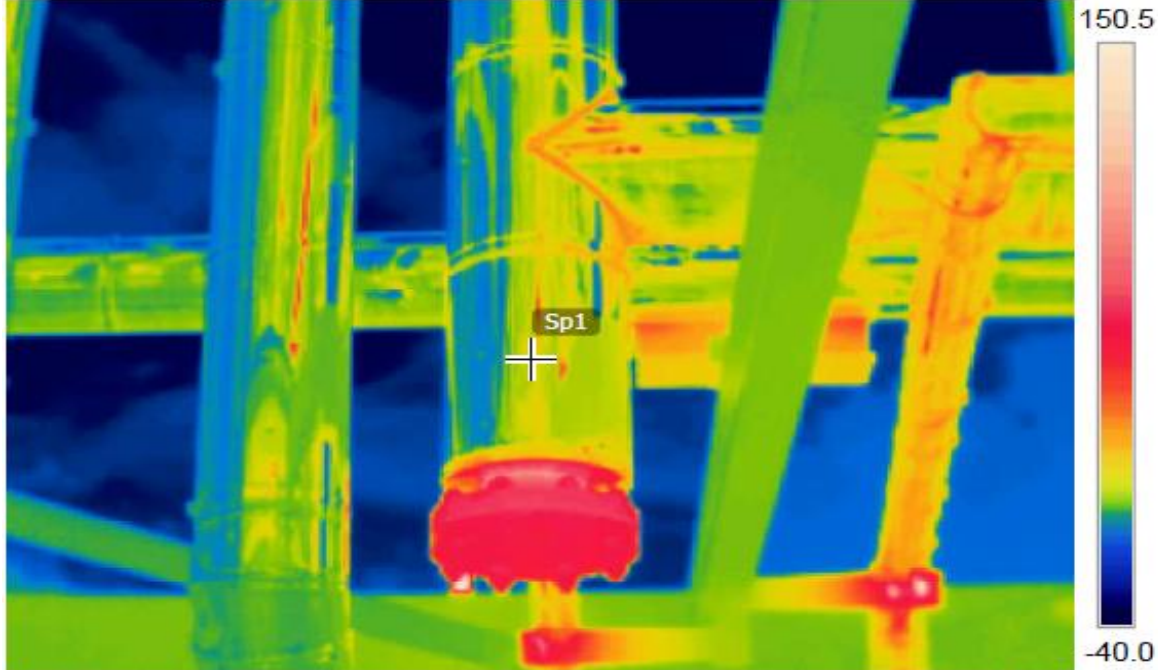
# Site Visit Results

## CASE 1 CUI Risk

NPS	4" Low Pressure Steam Pipe
Process Temp.	135°C
Ambient Temp.	22.7°C
Wind Speed	1.2 m/s
Material	Pyrogel XTE 20mm
Surface Temp. Measured	32°C (Probe) 33.8°C (FLIR)
Surface Temp. Calculated	31.2°C Emissivity 0.3



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IR\_4165.jpg

FLIR T335

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# Site Visit Results

## CASE 3 CUI Risk

NPS	14"
Process Temp.	90°C
Ambient Temp.	26.5°C
Wind Speed	0.7 m/s
Material	Pyrogel XT 20mm
Surface Temp. Measured	35.0°C (Probe) 33.7°C (FLIR)
Surface Temp. Calculated	36.3°C Emissivity 0.1



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FLIR T335

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# Site Visit Results

No Corrosion



**Insulated with  
30mm Pyrogel XTE**

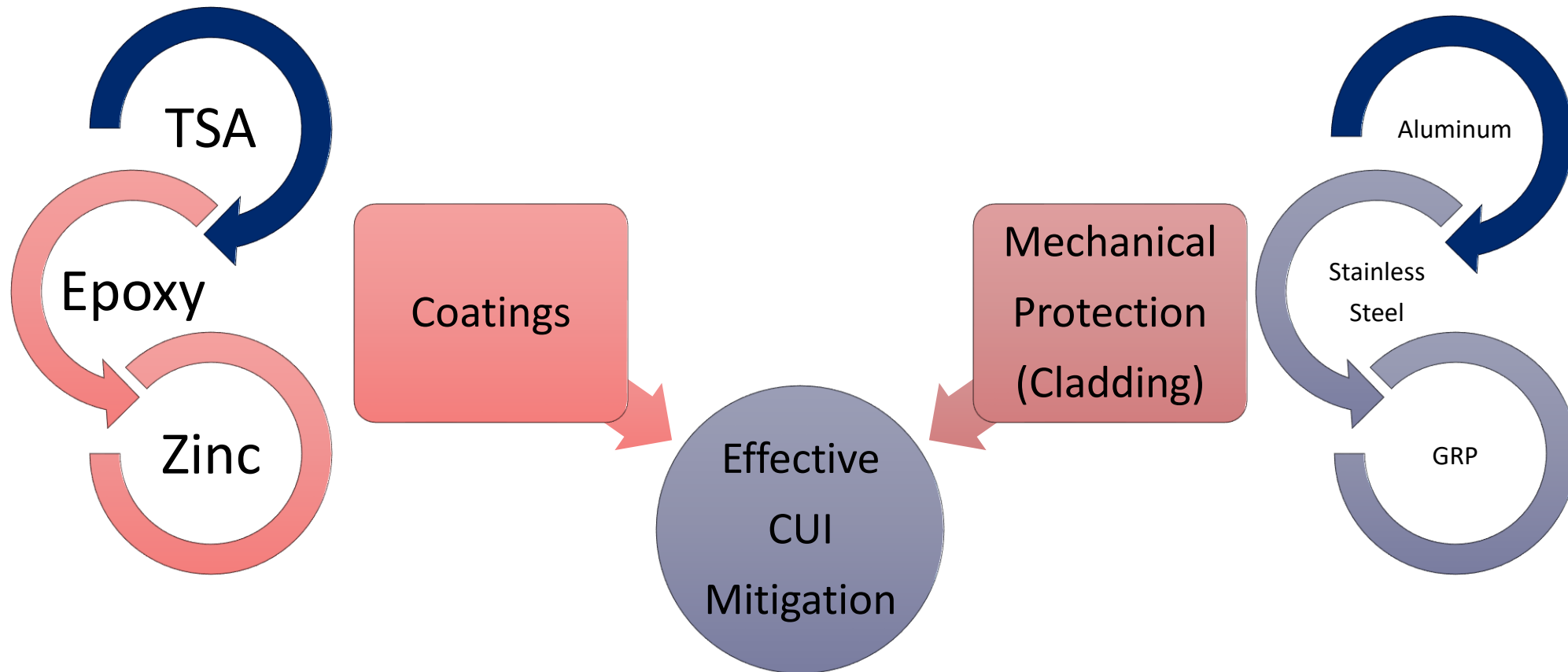


**NO CORROSION!**

# 10 YEARS OF SERVICE IN A MARINE ENVIRONMENT

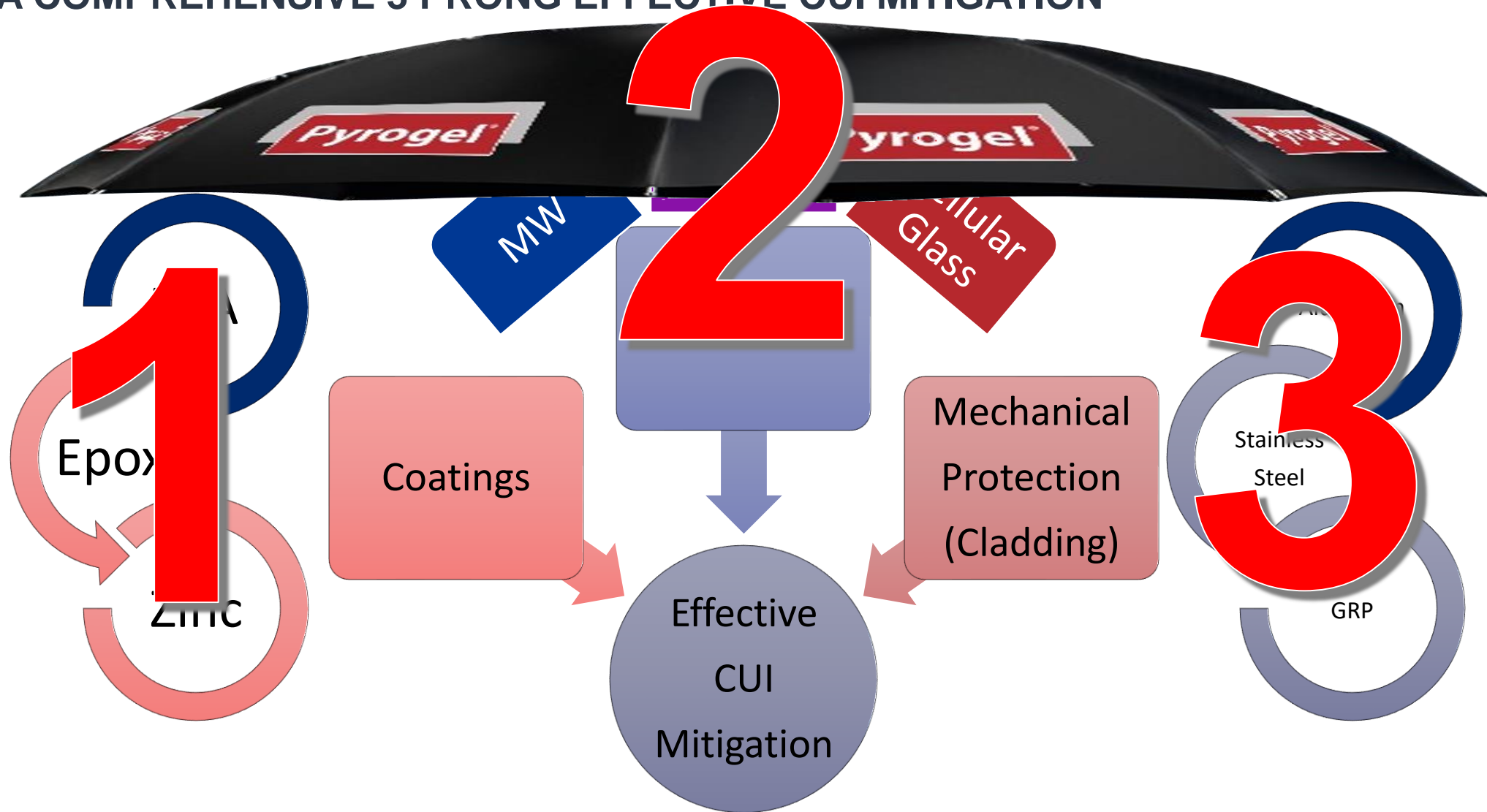


## TRADITIONAL APPROACH BASED ON COATINGS AND CLADDING

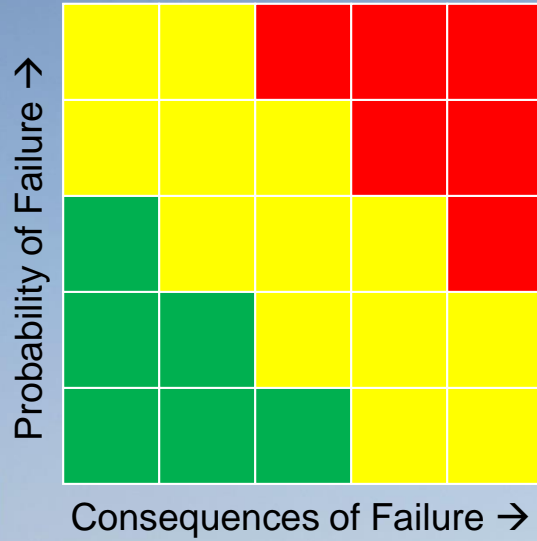




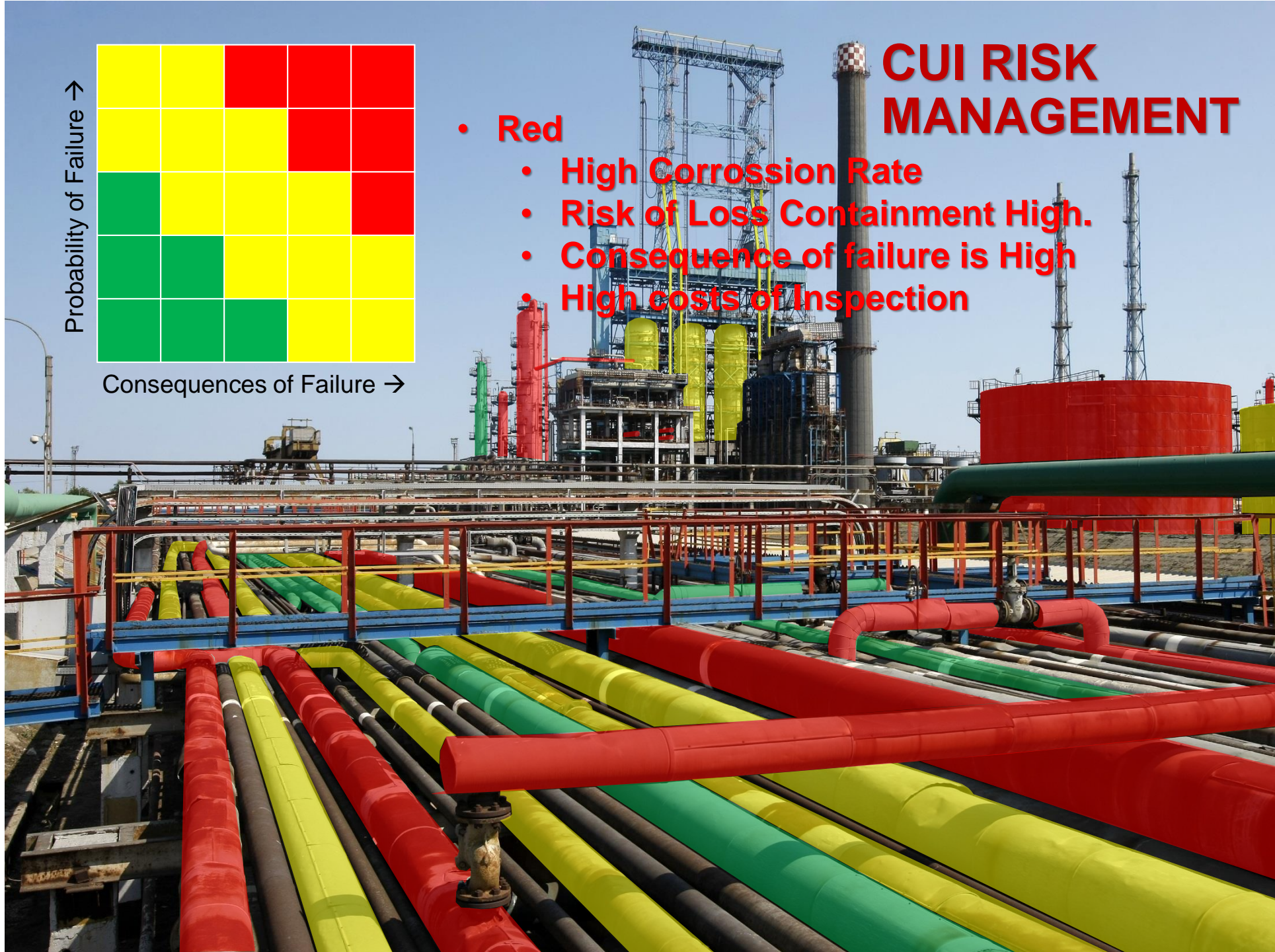
## A COMPREHENSIVE 3 PRONG EFFECTIVE CUI MITIGATION



# CUI RISK MANAGEMENT



- Red
  - High Corrosion Rate
  - Risk of Loss Containment High.
  - Consequence of failure is High
  - High costs of Inspection







# Long-Term Cost Savings with Pyrogel

## **REDUCE ENERGY COSTS**

Pyrogel does not degrade and will continue performing for the lifetime of the plant.

## **REMOVE & REUSE DURING MAINTENANCE**

Pyrogel can be carefully removed then reapplied without losing any of its insulation properties. Also reducing waste management costs.

## **KEEPS ASSETS DRY, PREVENTS CUI**

- Unlike surface-coated insulations, Pyrogel's durable water resistance is inherent and homogenously distributed throughout, for maximum protection against water ingress, even on cut edges
- Breathable, one-way valve for water
- Multi-layered, versatile blanket format eliminates the potential for water to accumulate at the 6 o'clock position on the pipe
- Thinner profile = smaller surface area exposed



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## Andrew Shaw

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