



CUPS REMEDIATION SOLUTION WITHOUT PIPE LIFT-OFF

CAPABILITIES STATEMENT

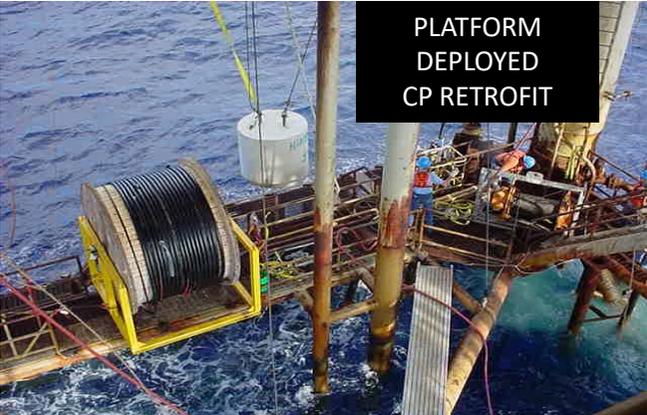
In collaboration with **TRENTON**
Wax-Tape® Systems





Combining Disruptive Technologies and Proven Engineering Capabilities

CORROSION CONTROL SOLUTIONS



CUPS – THE HIDDEN CHALLENGE

- ① CUPS presents a real threat to piping integrity and the most common cause of external piping failure in ageing assets due to:
 - Highly localised deterioration
 - Difficult to inspect
 - Major impact to pressure containment and loss of production
 - Potential explosion and adverse business impact
 - Challenging to repair online
 - Significant repair cost

- ② Root Cause of CUPS:
 - Design of pipe support allows crevices to be formed
 - Displacement and vibration of pipes
 - Protective coating damage
 - Crevice corrosion
 - Wear (metal to metal contact)
 - Galvanic corrosion





MICROCRYSTALLINE WAX-TAPE

TRENTON WAX-TAPE SYSTEMS

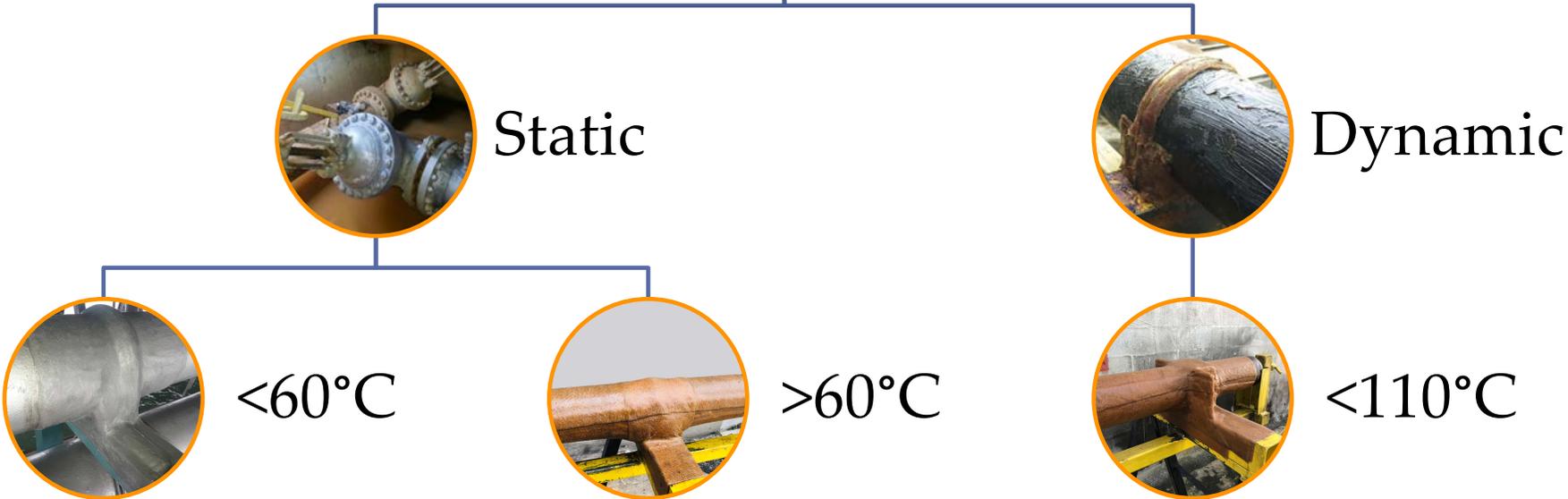


1. Inert and **not biodegradable**
2. Conformability to **irregular fittings**
3. Compatibility with many **types of materials**
4. **Minimal** surface preparation
5. **Easy to apply** – Easy to cut and mold into desired shape
6. Can be applied over **wet surfaces**
7. **Hydrophobic** - Acts as a barrier that prevents contact with air, water, and micro-organisms.
8. **No drying or curing time**
9. **Expands and contracts** based on the operating environment.
10. Resistance to **weathering and UV (sunlight)**.
11. Will **not dry or crack**.
12. **Environment Friendly** - Non-toxic, non-carcinogenic, low Volatile Organic Components (VOCs)
13. Can be **painted** after tape firms up. (Acrylic Latex, or other water-based paints, etc.)

TRENTON WAX TAPE SYSTEM FOR PIPE SUPPORTS



TRENTON Wax-Tape® Systems





TRENTON WAX-TAPE SYSTEM

STATIC PIPE SUPPORT



TRENTON WAX-TAPE SYSTEM FOR STATIC PIPE SUPPORT: < 60° C



SOLUTION FOR PIPE SUPPORT WITHOUT PIPE LIFT-OFF:

- 1) TEMCOAT 3000 PRIMER
- 2) FILL PRO AS FILLER
- 3) WAX-TAPE # 2 AS TAPE WRAP



- **MAXIMUM DISPLACEMENT LIMIT: 4MM**

TRENTON WAX-TAPE SYSTEM FOR STATIC PIPE SUPPORT: > 60° C



SOLUTION FOR PIPE SUPPORT WITHOUT PIPE LIFT-OFF:

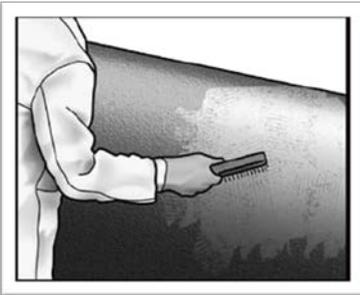
- 1) TEMCOAT 3000 PRIMER
- 2) HT-3000 AS FILLER
- 3) HT-3000 AS TAPE WRAP

- **DISPLACEMENT LIMIT > 40 MM**
- **MAXIMUM OPERATING TEMPERATURE LIMIT:
110° C**



APPLICATION PROCEDURE: STATIC PIPE SUPPORT

Step 1 – Surface Preparation



- Hand wire brush (SSPC SP2 or ISO St2)
- Wipe surface so that its free from loose scale, dirt and old loose coatings.

Step 3 – Apply Wax-Tape



- With downward-facing starting point, apply the wax-tape #2 firmly with 50% overlap.
- Press the tape firmly to remove air bubbles.

Step 2 – Apply Primer



- Apply Temcoat 3000 thoroughly and firmly press primer to displace moisture.
- Fill in gaps and voids between pipe and support with Wax-Tape #1 or for pipes operating between

Step 4 – Inspection

- Ensure adequate overlap
- Ensure no trapped pockets of air or water
- Ensure all edges are firmly pressed down, sealed and tapered especially on each end of the wrap application.
- Wax-Tape #2 does not required curing so it can be backfilled immediately
- *If ambient site temperature is below 50 F/10 °C, warm up the wrap before application.*



TRENTON WAX-TAPE SYSTEM

DYNAMIC PIPE SUPPORT



TRENTON WAX-TAPE SYSTEM FOR DYNAMIC PIPE SUPPORT



SOLUTION FOR PIPE SUPPORT WITHOUT PIPE LIFT-OFF:

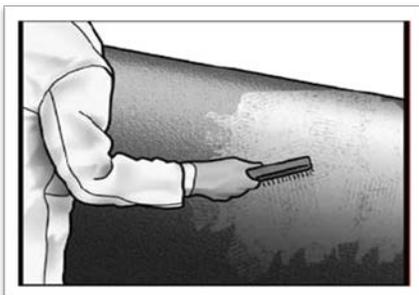
- 1) TEMCOAT 3000 PRIMER
- 2) HT-3000 AS FILLER
- 3) HT-3000 AS TAPE WRAP

- **DISPLACEMENT LIMIT > 40 MM**
- **MAX OPERATING TEMPERATURE LIMIT: 110° C**



APPLICATION PROCEDURE: DYNAMIC PIPE SUPPORT

Step 1 – Surface Preparation



- Hand wire brush (SSPC SP2 or ISO St2)
- Wipe surface so that its free from loose scale, dirt and old loose coatings.

Step 3 – Apply Wax-Tape



- With downward-facing starting point, apply the wax-tape HT-3000 firmly with minimum of 50% overlap.
- Press the tape firmly to remove air bubbles.

Step 2 – Apply Primer & Filler



- Apply Temcoat 3000 thoroughly and firmly press primer to displace moisture.
- Fill in gaps and voids with Wax-Tape #1 or on pipes operating 60-110°C, use cut up pieces of HT-3000 instead

Step 4 – Inspection

- Ensure adequate overlap
- Ensure no trapped pockets of air or water
- Ensure all edges are firmly pressed down, sealed and tapered especially on each end of the wrap application.
- *If ambient site temperature is below 50oF/10oC, warm up the wrap before application.*

SGS REPORTS: STATIC AND DYNAMIC PIPE SUPPORTS

TRENTON
Wax-Tape® Systems



SGS to inspect and witness:

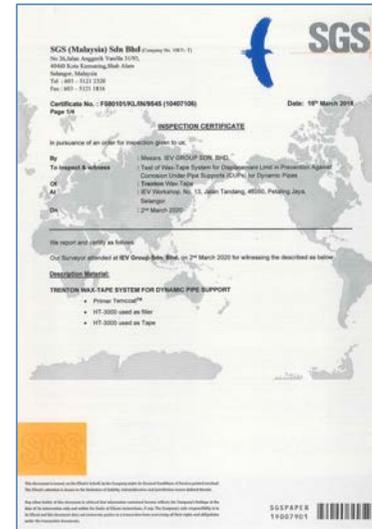
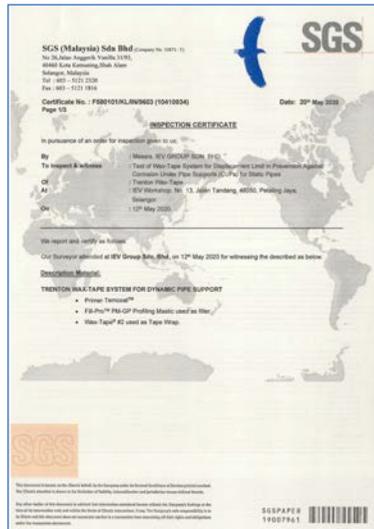
Objective: To test and quantify displacement limit of Wax-Tape systems in application to Corrosion Under Pipe Support for both Static and to Dynamic pipes.

Results:

- 1) Wax-tape system for static pipe support can tolerate up to 4mm in pipe displacement.
- 2) Wax-Tape system for dynamic pipe support can withstand more than 40mm in longitudinal displacement without showing any damage or disbondment
- 3) Vibration has no effect on conditions of Wax-Tapes.



SGS REPORTS: STATIC AND DYNAMIC PIPE SUPPORTS



Wax-tape Wrapping on
Static Pipe Support
Max displacement Limit – 4mm

Wax-tape Wrapping on
Dynamic Pipe Support
Displacement Limit > 40mm

CASE STUDY: PICTURES

TRENTON
Wax-Tape Systems





UNIQUE CHARACTERISTICS OF TRENTON WAX-TAPE AS A CUPS REMEDIATION SOLUTION WITHOUT PIPE LIFT-OFF

- ✓ Can accommodate **both static** and **dynamic pipe supports**
- ✓ Flexible and easy to conform on **irregular shapes** and remove **crevices** at pipe supports
- ✓ **Long-term** CUPS remediation solution
- ✓ Ease of application: **Surface tolerant**, no specialised equipment
- ✓ **Resistance** to UV exposure, chemicals, salts and weathering
- ✓ Applicable on **wet** and **dry** surfaces
- ✓ High operating temperature limit: **110° C**
- ✓ **Can be opened for inspection and re-application**



“COMBINING DISRUPTIVE TECHNOLOGIES AND PROVEN ENGINEERING CAPABILITIES”

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