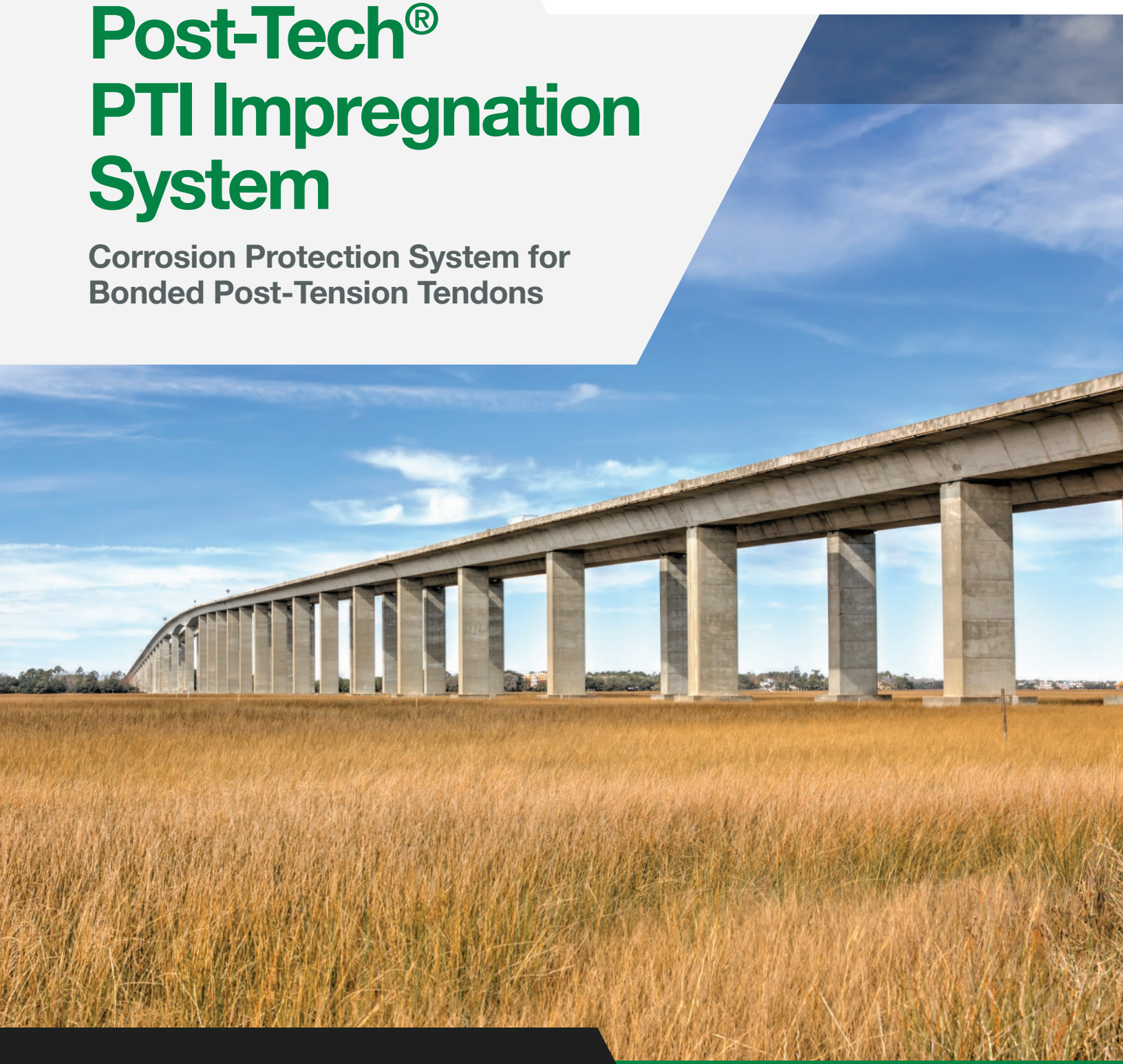
VECTOR CORROSION TECHNOLOGIES

Post-Tech® PTI Impregnation System

Corrosion Protection System for Bonded Post-Tension Tendons



We Save Structures™

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The Challenge

The repair and protection of grouted/bonded post-tension tendons can present unique challenges when voids and defective or contaminated grout create a corrosion risk.

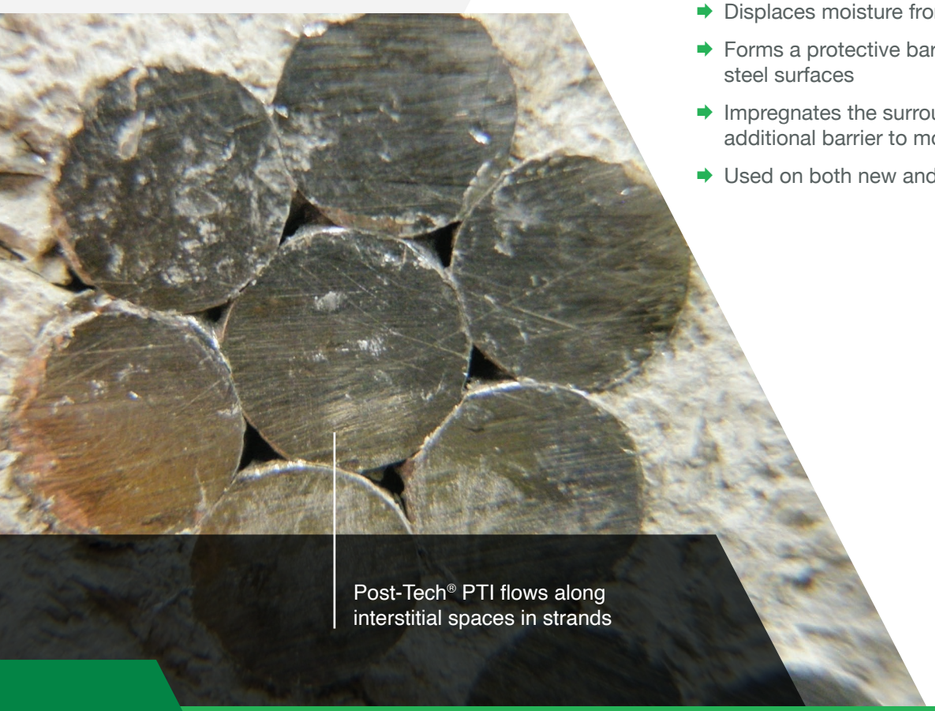
The Post-Tech® PTI Impregnation System is specifically engineered to mitigate corrosion in bonded post-tension tendons. The impregnation material is applied under pressure and travels along the length of strands to mitigate corrosion in tendons with grout defects such as segregation, soft grout, chloride contamination and voids.

Applications

- Post-tensioned bridges
- Other post-tensioned structures
- Grouted stay cables
- Suspension and hangar cables
- Prestressed concrete structures
- Buttonhead and paper-wrapped tendons

The Post-Tech® PTI system uses the naturally occurring interstitial spaces in high strength steel strands to deliver a formulated low viscosity dual action hydrocarbon silicon polymer resin.

- Displaces moisture from the steel surface
- Forms a protective barrier on any exposed steel surfaces
- Impregnates the surrounding grout for an additional barrier to moisture and oxygen
- Used on both new and existing structures



Post-Tech® PTI flows along interstitial spaces in strands

Post-Tension Corrosion

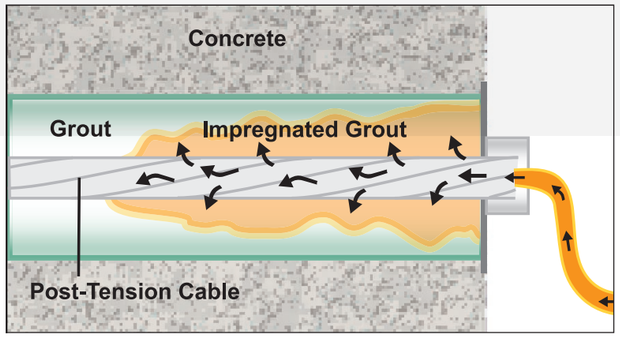
The long term durability of grouted post-tension tendons is dependent upon the protective characteristics of the grout. Unfortunately, in some cases, the tendon durability can be compromised by grout problems, including:

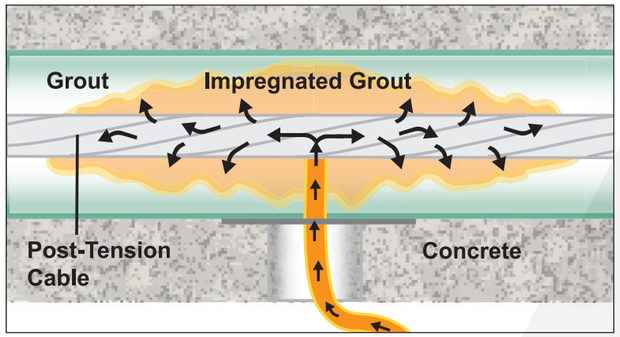
- Bleed water voids
- Voids due to improper grouting
- Segregated grout
- Chloride contaminated grout
- Soft (putty) grout
- Dissimilar grout materials

Insufficient grout protection can allow the post-tension strands to corrode and prematurely fail.

Application

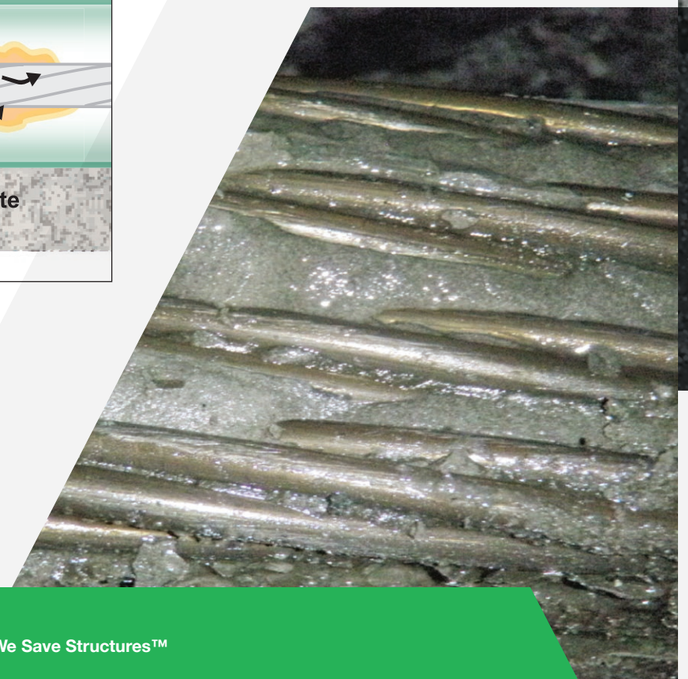
The Post-Tech® PTI impregnation process can be completed from the end anchorage or from intermediate locations along the length of the tendon. Experience has shown the Post-Tech® PTI impregnation material can flow through the interstitial spaces along the length of a tendon at least 250 ft (75m) from a single entry point.





Illustrations of Post-Tech® PTI Impregnation System being completed from the end of the tendon and from an intermediate location.

Example of impregnation being completed from the end of the tendon and the Post-Tech® PTI Impregnation material (highlighted in yellow) exiting the opposite end of strands 250 ft (75m) away.



Performance Verification

The Post-Tech® PTI Impregnation System has been subjected to rigorus testing to verify its ability to mitigate corrosion and extend the life of post-tension structures.

Salt Spray Testing

Laboratory tests were conducted using treated and untreated steel plates directly exposed to salt spray using 5% sodium chloride, simulated seawater and 5% sodium sulfate solutions.

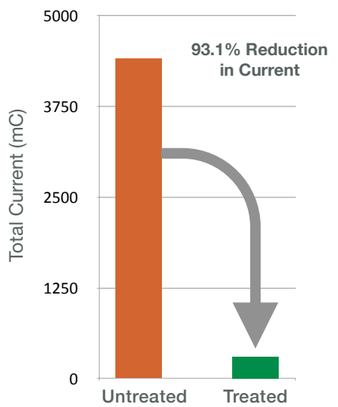
Salt spray testing on steel plate with untreated (left) and Post-Tech® PTI treated section (right).

Salt spray testing on untreated (left) and Post-Tech® PTI treated strand (right).

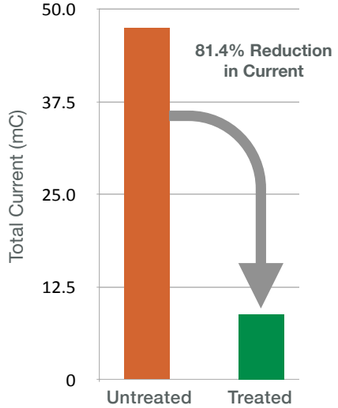
Potentiostatic Testing

Laboratory testing was also conducted to verify the performance of the Post-Tech® PTI Impregnation System on post-tension strands in chloride contaminated and chloride-free grout.

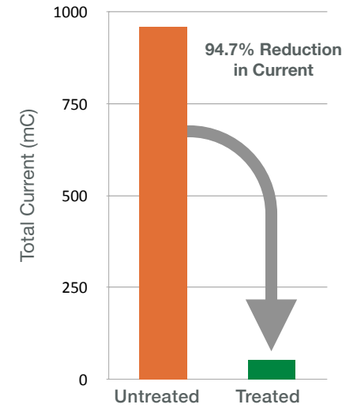
Post-Tech® PTI treated and untreated “lollipop” samples were subjected to a one hour potentiostatic corrosion test. The test automatically adjusts the applied current to maintain a constant steel potential of +200 mV versus a silver-silver chloride reference cell. In this test, resistance to corrosion is measured by the reduction in current passed. The Post-Tech® PTI treated samples passed significantly less current than the untreated controls.



Post-tension Strands in Chloride-Contaminated Grout (2% Cl⁻)



Post-tension Strands in Chloride-Free Grout



Post-tension Strands in Chloride-Free Grout with 4.5% Void

VECTOR CORROSION TECHNOLOGIES

Technology Development

Vector continues to lead the way with major research and development activities conducted at our two laboratories.

Vector's UK-based laboratory performs fundamental research in the area of concrete corrosion and cathodic protection of concrete.

Vector's North American product development lab is the proving ground for innovations in concrete anodes and post-tension corrosion mitigation technologies.

Post-Tech® Services

Vector specializes in the investigation and rehabilitation of bonded and unbonded post-tensioned concrete structures. Our Post-Tech® services include:

- Non-destructive Evaluation
- Moisture Testing / Corrosion Evaluation
- Cable Drying
- PTI Impregnation System
- Grease and Grout Injection
- Tendon Repair and Replacement

Scan for more information on our Post-Tech® PTI Impregnation System

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