CONCRETE PRESERVATION TECHNOLOGIES

CORROSION. CONTROLLED

> Founded in 2005, CPT has gone from strength to strength. Our Directors have over 60 years of combined experience in concrete repair consultancy and the electro-chemical treatment of reinforced concrete structures.

CONTROLLING CORROSION
EXTENDING STRUCTURAL LIFE

At CPT we design and supply leading edge corrosion solutions for reinforced concrete structures and masonry encased steel frame buildings. Our innovative and independently tested products provide long-lasting protection for a wide range of structures including bridges, car parks, jetties and commercial buildings.

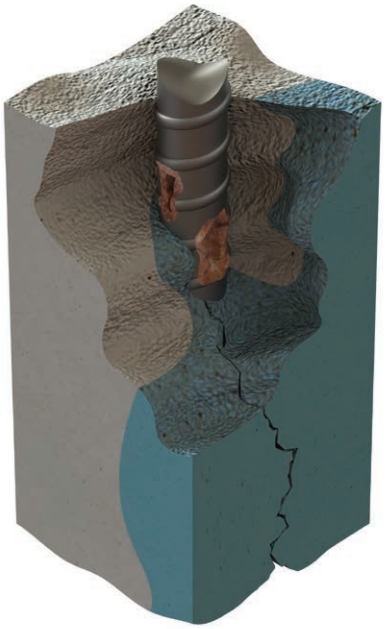
British Innovation, Global Success

CPT Directors have produced over 150 technical papers in the field of corrosion and concrete protection. Designed and manufactured in the UK, our unique, compact and compact **PatchGuard™** and **DuoGuard™** anodes have been installed on over 500 projects worldwide including Australia, the USA and the UAE. CPT innovations, protected by multiple patents, have been subject to comprehensive independent evaluation with over a decade of proven performance.

Controlling Corrosion, Extending Life

Our knowledgeable sales, production, R&D teams and distributor partners are all dedicated to ensuring customer satisfaction, delivering high quality industry leading products and specialist consultancy services. With research and development at the core of the company we are constantly developing our product range, enabling us to remain at the forefront of corrosion control technology.

If you manage or own a structure suffering from corrosion related cracking and spalling we invite you to contact us.



Corrosion damage

ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026
Cert No. 10159
ISO 9001

cpa
CORROSION PREVENTION ASSOCIATION

BPA
MEMBER OF THE BRITISH PARKING ASSOCIATION

CPT SERVICES

INNOVATION & EXPERTISE

CPT are unique. Alongside manufacturing world class products we offer a comprehensive range of specialist services from analysing, interpreting and summarising test data to post-installation monitoring.

Testing Services

CPT recognise that as an asset owner, or professional consultant, you need to understand what is happening to your structure but have no wish to be bombarded with complex and confusing data. We will test your structure, analyse and interpret the data, then summarise and communicate it to you in an easy to understand format. Testing services include visual inspection, chloride profiling, carbonation depth measurement, cover assessment, and half-cell potential mapping.

System Design

Our specialist experience in concrete repair and corrosion control enables us to offer a truly holistic approach to design, encompassing the full range of cathodic protection options. We have fully qualified staff, from BS EN 15257:2006 Level 1 Cathodic Protection Technician to Level 3 Cathodic Protection Specialist. By carefully establishing patterns of corrosion and targeting only those areas genuinely in need of protection we ensure that our designs are both cost effective and robust.

Product Supply

Our unique range of sacrificial and hybrid anodes, reference electrodes and monitoring systems, all designed and manufactured in the UK, ensures that we can provide solutions to the most challenging corrosion problems.

Monitoring and Assessment

Our corrosion protection systems are self-regulating and require no ongoing manual adjustments. However, our clients have the option of using CPT monitoring equipment to assess system performance. This allows steel corrosion rates and steel potential data to be monitored as part of a long term life care plan for the structure, following the guidance of BS EN ISO 12696:2016 Cathodic Protection of Steel in Concrete.

CPD Seminars

CPT offers a 1 hour in-house seminar fully approved by the CPD Certification Service. Typically held at your offices over lunchtime, our free of charge seminar will be supplemented by product and equipment samples and will feature relevant case histories. The seminar will help you to identify the mechanisms of deterioration and to specify effective solutions to extend structural life, minimise maintenance costs and enhance asset value.

INTERNATIONAL EXPERIENCE

Protecting Concrete Structures Around the World

Stormont, Northern Ireland
Roof slab protection

Arosa Bridge, Spain
Bridge pier protection

Cape Don Lighthouse, Australia
Heritage structure protection

Otanigawa Water Gate, Japan
Marine structure protection

Marseille Harbour, France
Concrete frame protection

Kyle of Tongue Bridge, UK
Pre-stressed beam protection

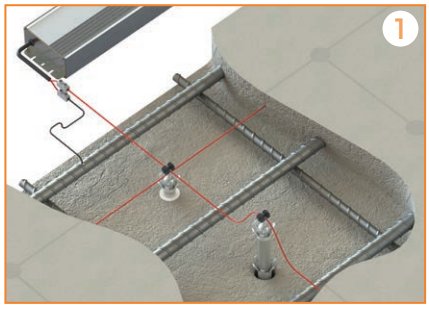
DuoGuard™ Hybrid Anodes

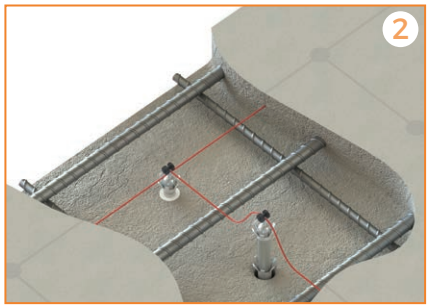
DuoGuard is the world's first self-regulating, hybrid sacrificial anode system. Featuring new generation electro-chemical technology, DuoGuard follows the guidance of BS EN ISO 12696:2016 Cathodic Protection of Steel in Concrete and is designed to stop reinforcing steel corrosion caused by chloride salts and carbonation for up to 50 years.

How is DuoGuard Different?

DuoGuard features innovative dual technology utilising the same embedded anode in both an impressed current and galvanic current role. The anodes are connected to an external power source to arrest active corrosion, typically taking 7 to 14 days. The anodes are then disconnected and attached directly to the steel reinforcement. Made from a sacrificial metal, the anodes will start to corrode (be consumed) in preference to the reinforcing steel. Cracking and spalling is prevented, the repair cycle is broken, health and safety risks mitigated and asset value enhanced. DuoGuard is uniquely flexible and can be readily adapted to treat whole structures or target 'hot spots' of corrosion.

Best of all, DuoGuard is maintenance-free making it a uniquely cost effective long term solution.





How Does DuoGuard Technology Work?

STAGE 1 – DuoGuard anodes are installed into contaminated areas of reinforced concrete, identified as being at risk of corrosion, by simply drilling 30mm diameter holes and embedding the anodes in DuoCrete SD mortar.

The anodes are then temporarily connected in groups to a power supply using titanium wire. Just a couple of connections are required for a circuit of up to 200 anodes. A constant voltage power supply is used to drive a current from the installed anodes to re-passivate the corroding steel.

STAGE 2 – After 7 to 14 days the power supply is no longer required and the same anodes are connected directly to the steel reinforcement to provide maintenance free corrosion protection by means of a galvanic current. This has the effect of maintaining the environment created during stage 1, controlling corrosion for years to come.

Key Benefits of DuoGuard Technology

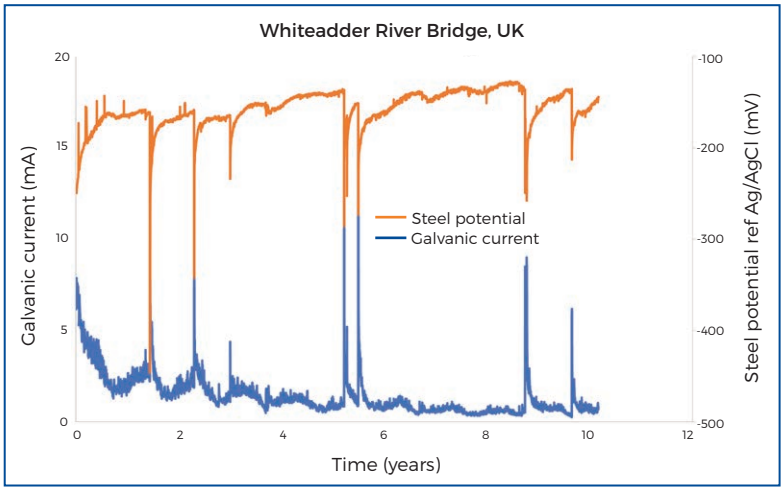
- ✓ Proven long term performance, independently assessed
- ✓ No expensive power units or control equipment required
- ✓ No ongoing maintenance costs
- ✓ Easily adaptable for small areas or entire structures
- ✓ Small and discrete for minimal invasive impact
- ✓ Performance can be easily monitored as part of a life care strategy
- ✓ Large charge capacity for a lifetime of up to 50 years

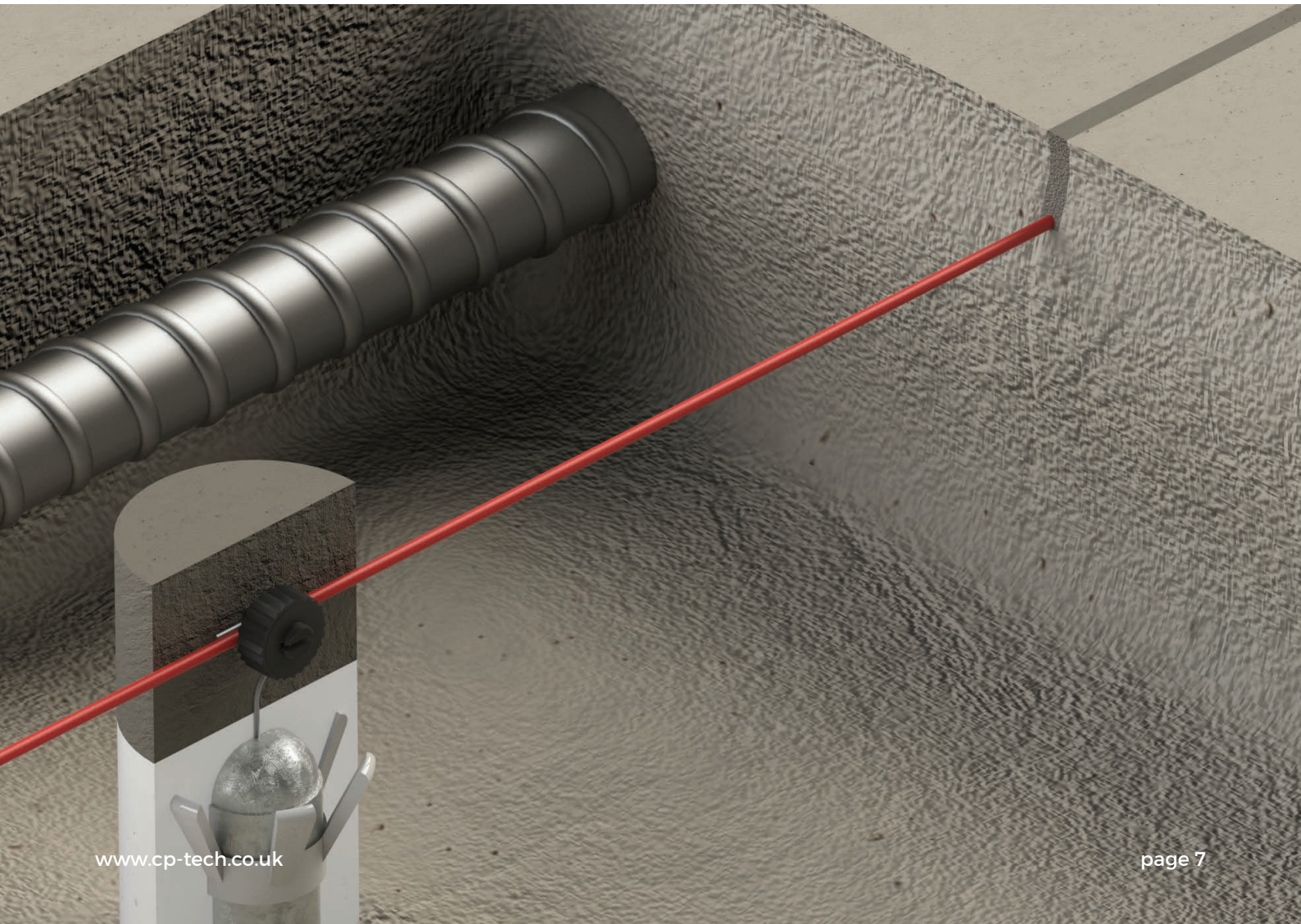
A DECADE OF MONITORING

Independent Long Term Assessment

The effectiveness of DuoGuard has been independently tested on six bridge structures by global technology specialists Aecom. The successful results now stretch back over a decade.

Aecom's robust testing programme includes detailed analysis of the current produced by the DuoGuard anodes and the subsequent effect that this current has on the corrosion potential of the steel. The results prove that the CPT technology works as specified. A full copy of this independent test data is available upon request.



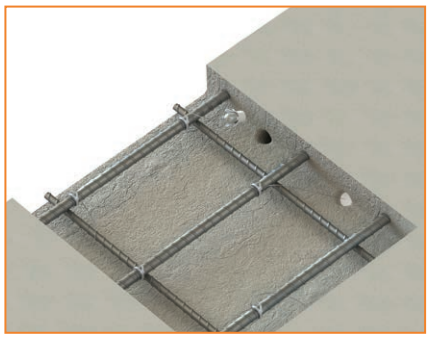


PatchGuard™ Galvanic Anodes

PatchGuard is the world's smallest sacrificial anode, designed to extend the life of concrete patch repairs. Featuring new generation technology, PatchGuard anodes prevent corrosion around patch repairs caused by chloride salts and carbonation for up to 20 years.

How is PatchGuard Different?

PatchGuard galvanic anodes redress the electrochemical imbalance induced through removal of contaminated concrete in patch repairs. Rather than the traditional approach of embedding sacrificial anodes within the patch repair area, PatchGuard anodes are located within the surrounding concrete. Protective current is delivered directly to the steel outside the patch which is at greatest corrosion risk as opposed to clean steel within the patch repair.



How Does PatchGuard Technology Work?

Cracking and spalling around concrete patch repairs is a widely recognised problem known as the Incipient Anode Effect, graphically illustrated in the picture to the left. To combat this destructive phenomenon, PatchGuard anodes are installed into 25mm drilled holes around the inside edge of concrete patch repairs. Each anode is embedded in DuoCrete PG grout and attached to the steel reinforcement within the patch repair via the integral titanium wire.

The difference in potential between the zinc alloy anodes and the steel reinforcement creates a driving voltage. A current is produced which renders the steel relatively cathodic and the steel is influenced for a radius of up to 500mm from each anode.

PatchGuard anodes are typically placed at maximum 500mm centres to ensure overlapping zones of influence and efficient current distribution. Because they are installed in the parent concrete, there is no need to use a bridging mortar or to compromise when it comes to choosing concrete repair materials or primers.

Key Benefits of PatchGuard Technology

- ✓ Independently evaluated as providing enhanced corrosion protection
- ✓ Maintenance-free
- ✓ Non-corroding titanium connecting wire
- ✓ Placed within host concrete for enhanced current distribution
- ✓ Small and discrete for minimal invasive impact
- ✓ Suitable for use with high resistivity patch repair mortars
- ✓ No requirement to pre-soak anodes
- ✓ Large charge capacity for a lifetime of up to 20 years

INDEPENDENTLY TESTED

More Targeted and Longer-Lasting Protection

PatchGuard has been proven to effectively combat both chloride-induced and carbonation-induced corrosion, providing long-term protection to the structure and maintaining its asset value.

An independent study carried out by Loughborough University, has conclusively demonstrated that PatchGuard anodes provide better targeted and substantially longer lasting protection compared with traditional anodes placed within patch repairs. A full copy of this independent study is available upon request..

Loughborough University

TECHNICAL SUPPORT

Concrete Testing & Investigation

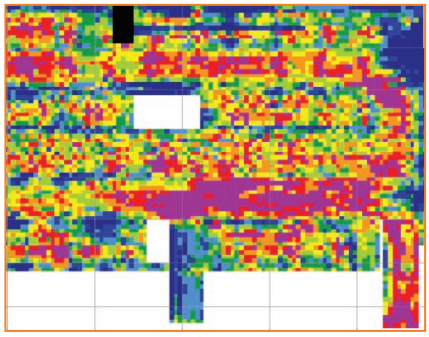
A thorough understanding of the cause and extent of corrosion activity in your structure is key to a successful repair strategy. CPT's corrosion experts, are on hand to help you at this critical first stage of the restoration process with our comprehensive testing, survey and monitoring capabilities.

The Key to a Successful Repair Project

Testing is a proven sound investment. On site investigations will identify where expenditure is required - both on the repair of existing defects and, crucially, on measures to prevent further deterioration. The EU funded CONREPNET study clearly demonstrated that, without appropriate testing, many concrete restoration projects fail to meet owner expectations in terms of the life of concrete repairs and the on-going durability of the structure.

Why Use CPT?

Our team of experts have an unrivalled depth of knowledge when it comes to corrosion processes and repair techniques. CPT offers a bespoke, flexible approach to testing. We provide you with meaningful data, accurately identifying patterns of corrosion and physical deterioration. From the evidence gathered we can develop short, medium and long term repair options and generate detailed specifications for tendering purposes.



Half-Cell Mapping Technology

Half-cell potential mapping is a powerful, non-destructive testing technique for assessing corrosion risk in accordance with ASTM C876-15. The image to the left displays corrosion risk across a section of car park deck, as identified by different coloured bands of potential. High-risk magenta and red areas correlate with traffic flow patterns and the distribution of de-icing salts, with corrosion particularly focused on the running isles and ramps. This detailed test data allows accurate targeting of your repair budget and enables pro-active measures to be taken, controlling corrosion before further damage is caused.

CPT TECHNICAL SERVICES INCLUDE:

- ✓ Hammer testing - identifies areas of delaminated concrete
- ✓ Cover meter survey- reveals the depth of steel reinforcement
- ✓ Carbonation testing - identifies the presence and depth of carbonation
- ✓ Chloride analysis – identifies the presence and depth of chlorides
- ✓ Half-cell potential mapping - identifies areas of corrosion risk
- ✓ Corrosion rate monitoring – tracks corrosion rates in representative locations

> Our experts are on hand to assist you with concrete testing, specification preparation and supply of corrosion control materials. Our aim is always to extend structural life and minimise maintenance costs.

CPT WORLDWIDE

Our International Distributors:

Australia
DuoGuard Australia PTY Ltd
Factory 7, 7-9 Brough Street, Springvale, Victoria 3174

France
Shemrock
15 ter rue Maurice, 69360 Sérézin-du-Rhône, 28863

Northern Ireland
Positive Solutions
The Hub, 366 Woodstock Road, BT6 9DQ, Belfast

Japan
Tokyo Kogyo Boyeki Shokai, Ltd
3-13-3, Nishi-Shimbashi, Minato-ku, 105-0003

New Zealand
Sika
85-91 Patiki Road, Avondale, Auckland

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