

CRL RESTORATION

STEEL FRAME CATHODIC PROTECTION



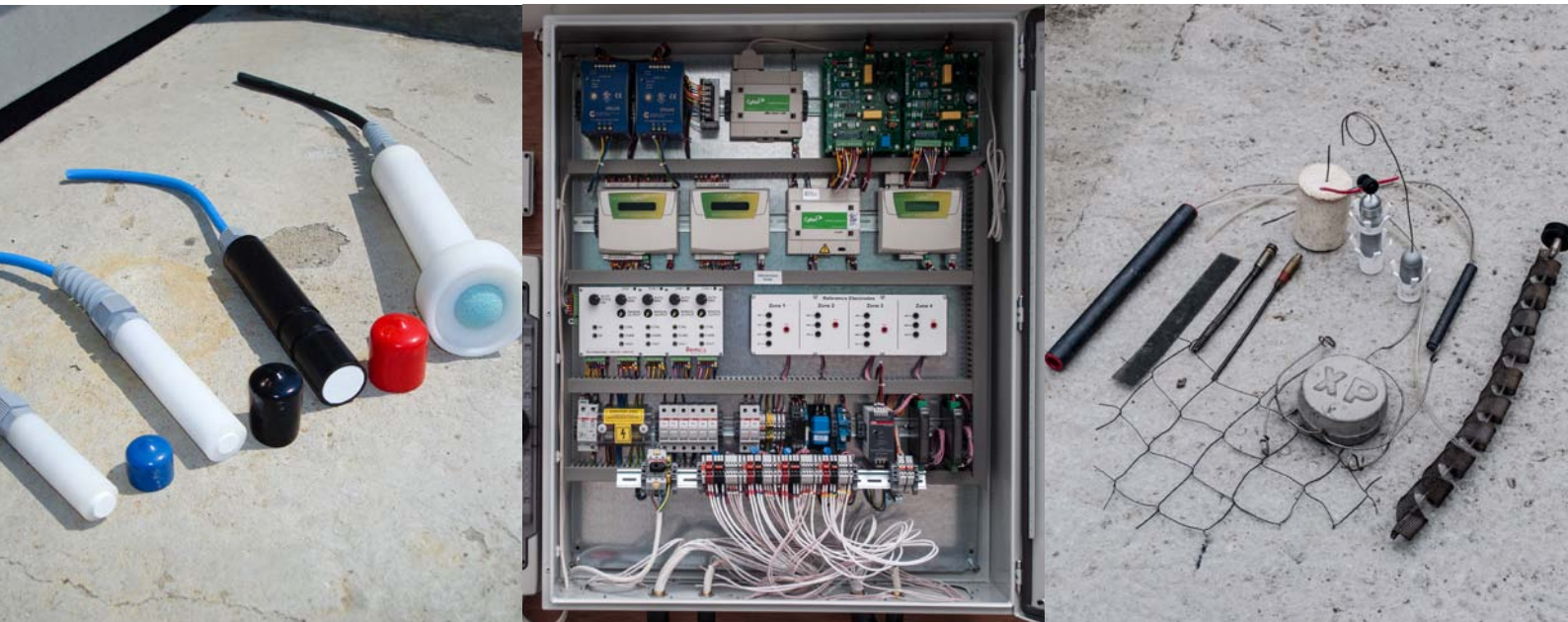
- UKAS accredited surveys ■ complete installations & commissioning ■
- feasibility studies & budget costings ■ on-going monitoring ■
- conceptual to full design ■ maintenance of installed systems ■

CRL RESTORATION specialise in the restoration, conservation, refurbishment and cathodic protection of historic, period and modern buildings and structures.

A large number of the structures requiring repair are steel framed buildings where the structural steel has begun to corrode leading to cracking of the building facades at the stanchion and beam positions, commonly known as **Regent Street Disease**. The onset of corrosion can be caused by a multitude of factors, such as defective pointing, cracks in the cladding or brickwork and general poor detailing. These factors, coupled with a porous cladding system allows moisture to penetrate into the voids resulting in corrosion of the steel frame. Over time, corrosion products, which occupy a volume ten times that of the steel,

are formed on the steel surface exerting pressure on the cladding and/or masonry which results in cracking and delamination of the building façade.

Impressed Current Cathodic Protection (ICCP) has been around since the early 19th Century to control corrosion in structures and was first used on a steel framed building in 1991. Well designed and expertly installed ICCP will stop any further corrosion occurring. Always at the forefront of technology, in the same year, CRL became the first company to successfully use this technique on a commercial contract at the Government Building in Dublin. Since that time CRL have been actively involved with the improvement of the systems, techniques and standards, and have gone on to install Cathodic Protection systems on numerous historic buildings throughout the UK.



CRL SURVEYS, our survey division, is UKAS accredited to undertake the initial condition surveys required to identify the nature and extent of any corrosion taking place, as well as identify the type and size of the steel sections requiring protection and the type and configuration of the backfill

originally used to encase the columns and beams. This allows us to then provide professional and informed advice on whether to implement corrosion control techniques, and if required to design

the optimum system for your structure. CRL offer the full package of carrying out the survey, designing and installing as well as monitoring the corrosion control systems. CRL offer a range of systems to suit all situations and the client's objectives in terms of cost and service life. Our systems are designed in accordance with the European Standards, EN12696 and installed by our CP Engineers and Technicians who are certified in accordance with EN15257.

CONDITION INVESTIGATIONS

CATHODIC PROTECTION is an industry standard for corrosion control of reinforced concrete. A small current at low voltage is passed between the anode and the steel reinforcement which makes the steel cathodic and stops further corrosion from occurring. These anodes can have a service life in excess of 60 years.

WHAT IS AN IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM FOR STEEL FRAMES?

The system consists of the following:

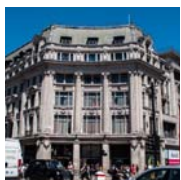
- Discrete titanium or ceramic anodes placed in the bed joints or alongside the steel frame members
- Reference electrodes placed next to the steel frame to enable the CP system to be monitored
- A low voltage power supply with a control and monitoring unit (TR Unit)
- Cabling between the anodes, steel frame, reference electrodes and power supply

Once the system is installed, it is monitored on a quarterly basis to ensure it is performing efficiently. A quality system installation will have minimal visual impact on the building with cables and control boxes hidden from view. The control unit is computer controlled, and can be fitted with remote access for on-going offsite monitoring and to allow adjustments to be made to the system.

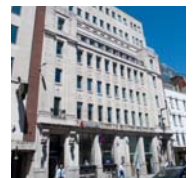
Cathodic Protection systems can be used to protect the whole building, or just particular sections where there is a high risk of moisture penetration and subsequent corrosion, such as exposed elevations, corners and roof beams.

Cathodic Protection systems are intrinsically safe for the building occupiers and power consumption is negligible. However, on-going management of the installed system is required to ensure optimal performance and to ensure a service life in excess of 30 years.

Cathodic protection reduces the amount of repairs required to the facades and ensures that future maintenance costs will be minimised. The technique, when used in conjunction with traditional repair methods, has the support of all the conservation groups who recognise its important contribution to the ongoing maintenance and management of steel framed buildings.



TRADITIONAL REPAIR techniques to remove the cladding where it is cracked and treat the exposed steel frame and reinstate the cladding is both expensive, time consuming and intrusive. Replacement materials can be difficult, if not impossible to obtain and labour costs for



the specialist trades required can also be quite high. This method of repair will also not stop further corrosion occurring in other areas where the cladding has not yet cracked. Cathodic Protection

CRL - ALWAYS AT THE FOREFRONT

not only enables the corroding areas of steel frame to be treated without removing the cladding system, but also offers protection to areas which have not yet begun to corrode. Cathodic Protection will reduce the initial refurbishment costs as well as the long term maintenance costs. This fits in well with current issues regarding sustainability since it reduces intrusive repairs and provides long term durability with minimal maintenance.

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