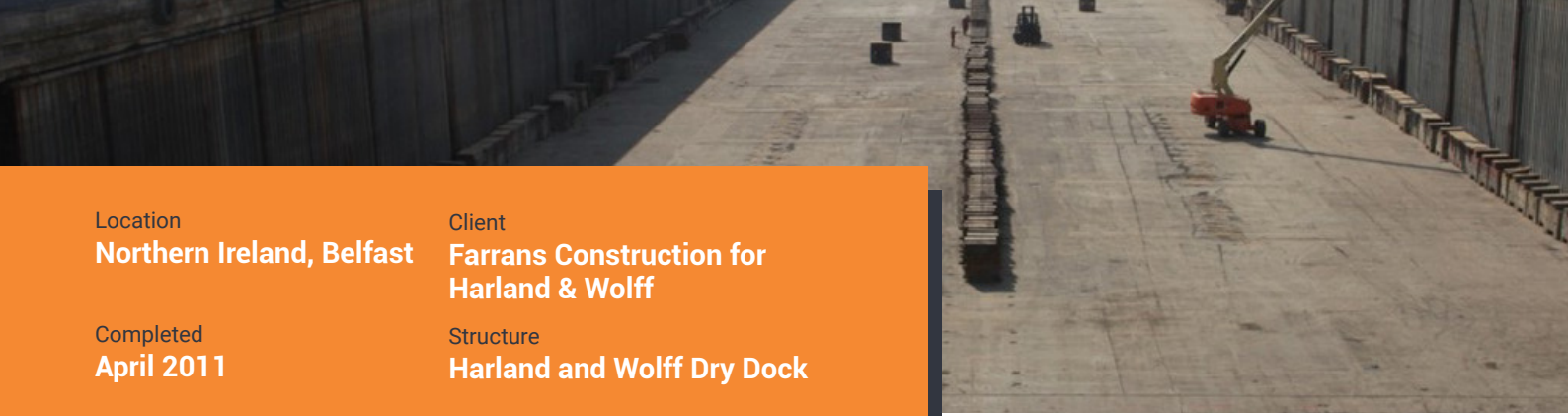Case Study

Belfast Dry Dock

The Harland and Wolff Dry Dock (known as the Belfast Dry Dock) was constructed between 1965-68 by Charles Brand and Sons to a design by Rendel, Palmer and Tritton. It is 1150 feet long by 160 feet wide and, when constructed, was one of the five largest docks in the world.

cpt

Location **Northern Ireland, Belfast**	Client **Farrans Construction for Harland & Wolff**
Completed **April 2011**	Structure **Harland and Wolff Dry Dock**

The Problem Identified

Belfast dry dock galleries were suffering from steel reinforcement corrosion due to exposure to chloride contamination from seawater.

The Solution Developed

CPT designed a DuoGuard™ hybrid anode system to stop ongoing corrosion and prevent further damage at the dock. DuoGuard 500 anodes were installed into the gallery area of the structure. Using an external power source, an impressed current was applied to stop active corrosion and render the steel passive. The DuoGuard anodes were then disconnected from the power source to self-generate a galvanic current, sufficient to maintain steel passivity and control corrosion.

To allow ongoing measurement of the corrosion control, the system was monitored using CPT's MN15 Reference Electrodes and CR1000 Datalogger, powered by an 18 watt solar panel.

The two biggest challenges on the project were working to the strict timescales and requirements set out by Harland & Wolff and seawater flooding of the galleries during the anode installation. The DuoGuard hybrid anodes were selected due to the speed and simplicity of installation, the supporting technical data and technical support offered by CPT and minimal maintenance requirements.

The Benefits Provided

Corrosion related deterioration of the Belfast Dry Dock has been halted. After the initial power up period using an external power source the DuoGuard system is self-powered thus minimising future maintenance requirements and associated life costs.

Belfast Dry Dock location

CPT Products Used

DuoGuard™ 500	**DuoCrete SD Mortar**	**MN15 Reference Electrode**
18W Solar Panel	**4,000 Anodes used**	

ISO 9001
Cert No. 10159