



Combined Cathodic Protection and Pressure (CCP&P)

Case Study article



CCP & P

Background

Cathodic Protection (CP) and pressure (P) are measured by separate sensor units that require separate installations, separate maintenance regimes, separate batteries or power supply connections and separate communication systems where they are remotely monitored. Our current system can only measure CP and utilizes 2G communications which are likely to be inoperable in the near future. The combined sensor will enable us to reduce the number of remote monitoring systems across the NTS and future proof the capability into the future.

What's new?

The project developed and trialled a low maintenance combined CP and Pressure remote monitoring solution for nitrogen sleeves. By developing and trialing a combined solution for collecting and relaying integrity information the project has shown a reduction in manufacturing, installation, and maintenance costs.

The benefits

The following benefits were identified during the project:

- Automatic monitoring of nitrogen sleeves will quickly identify sleeves which are in danger of running dry and reduce the cost of operational teams constantly having to visit remote sites to check / top up.
- CP and P is feasible and works in practice and will result in significant cost savings i.e., one logger instead of two.
- The project has identified that the solar option, where feasible, will significantly increase the battery life. Battery replacement with off the shelf batteries will deliver an immediate saving (i.e., £30 instead of current £140) plus less need to replace batteries.

		Costs
Using existing products from the marketplace capital costs (capex) by installing two separate units	Capital cost (purchase and installation) of a standalone CP sensor unit is estimated as £2000	£2,000.00
	Capital cost (purchase and installation) of a standalone pressure sensor unit	£2,050.00
	Maintenance and asset management costs (opex) by having one unit	
	Lifetime (10yr) opex cost for a standalone CP sensor unit	£1,500.00
	Lifetime (10yr) opex cost for a standalone pressure sensor unit	£1,500.00
	Total	£7,050.00
Reduction in Capital costs by installing one unit	Capital cost (purchase and installation) per combined unit	£2,500
	Maintenance and asset management costs (opex) for a combined unit	
	Lifetime (10yr) opex cost for a combined unit (estimated)	£1,500
	Total	£4,000.00

The cost of installation and operation for 10 years by the innovative method is therefore:

CP & Pressure capex + CP & Pressure opex £2500 + £1500 = £4000 per nitrogen sleeve
 The cost saving per sleeve is therefore £7050 - £4000 = £3050 saving per sleeve

Outcomes

The SPIRET units were developed taking into consideration that the current 2G and 3G networks are being scaled back and could be switched off in the near future making a significant number of monitoring kits obsolete. The communications unit has been designed in such a manner as to allow it to be replaced as LTE/5G etc technologies emerge, thus building in an element of future proofing. The SPIRET unit uses a secure web API architecture to communicate with a portal.



As part of the Business plan in the RIIO-2 period, 2000 units will be installed throughout the NTS. The SPIRET unit has the potential to be a viable solution for remote monitoring of CP performance, these were not deployed as a formal tendering process was required to invite various remote monitoring suppliers to bid for the contract.

As National Gas own the IP to the CCP&P SPIRET device we have the opportunity to allow Des19ncor (or another manufacturer) to license the technology from us.

