PMAC CPacq User Operated Cathodic Protection System

PMAC Inspection

The PMAC CPacq is a user operated simplified Cathodic Protection (CP) inspection system that does not require the presence of a CP engineer and can be used by data recorders, ROV pilots or any other survey/inspection personnel. Based on the use of the Silver/Silver chloride Half Cells, the system gives real time data measurement for both subsea pipelines and structures. Continuous CP and field gradient (FG) readings can be read simultaneously coupled with contact measurement when required.

The system may be used for multiple CP survey types including;

- Direct Contact CP readings – for absolute potential readings on pipelines and structures.
- Proximity CP readings – using either a direct link to the asset under inspection or by use of a remote cell for free flying.
- Field Gradient readings – when the twin cell probe is fitted the system will display field gradient readings in both proximity form and during direct contact allowing for anode activity to be monitored.

The package contains the following items:

- 1 x Single Cell Type Contact/Proximity CP probe complete with Silver/ Silver Chloride (Ag/AgCl) half cell with 1m whip
- 1 x Ag/AgCl remote reference cell on a 12m marinised cable, for proximity readings without direct connection to the asset
- 1 x Subsea electronics pod
- 1 x copy of the display software for installation on the user's computer with licence key for installation to one computer
- 1 x zinc test block
- 3 x calomel reference cells
- 1 x whip end for connecting the electronics pod to an ROV
- 1 x full instruction manual with recommended procedures
- 1 x Spare Inconel Stab tip

Probes

The system can fitted with either a single half cell probe for contact and proximity only inspections or with a twin half cell probe when Field Gradient readings are also required to determine anode activity and current output in addition to the CP readings.

Both types of probe use Ag/AgCl half cells (matched for use with twin cell probe) which may be replaced if necessary should the cells become polarised. Both probe types use the same connection to the subsea electronics pod and have replaceable stab tips made from Inconel for its galvanic and hardness properties.

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process measurement and control systems

Both probe types are approximately 60mm in diameter with the single cell probe approximately 300mm in length whilst the twin cell is 500mm in length. The single cell probe weighs 0.25kg in water (0.9kg in air) whilst the twin cell probe is 0.5kg in water (1.7kg in air).

Subsea Electronics Pod

Based on the existing and proven PMAC CP Inspection system, the PMAC CPacq system uses a Subsea Digitiser utilises the latest technology increasing reliability and decreasing the potential for interference from external sources as is often found with topside or inbuilt ROV CP systems.

The digitizer has multiple outputs of RS232 and RS485, to allow transmission of the data either by twisted pair or by ROV data multiplexer. The unit is rated for a depth of 1500m, optional deep units to 3000m are available. Dimensions are 139mm diameter and 230mm length and weighs just over 1kg in water. The unit comes as standard to run off either a 24vdc supply or 110vac.

A minimum of three copper conductors are required to run the unit in contact and proximity modes at the same time. If there is not at least one copper conductor available or the vehicle has lack of space or power then it is possible to use the unit topside or with the remote cell plugged directly into the pod. We have yet to fail to find a workaround so contact us if you have a problem.

Software

The system is controlled by a proprietary Java based software package to display the gathered data. This simple software may be installed on any computer removing the need for a dedicated PC.

The user interface is simple with only three function buttons for removal of background noise, offsetting the proximity CP and taking a contact reading.

The software outputs a RS232 serial data string of the continuous proximity CP that maybe used for video overlay or logged by another method if required.

Optional Items

Twin Cell probe

for use in gathering FG data as well as contact and proximity CP complete with matched pair Ag/AgCl half cells.

Converter / Power unit

Combined unit for RS 485 to RS 232 conversion where the signal from the ROV is coming up in RS485 mode and a 24v power supply for when the Electronics pod is being used topside on a desk rather than installed on an ROV.

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