



## Pipeline Inspection



PDM has recently completed a project to design, qualify and produce sensors and ancillary equipment for use on pipeline pigs for the Mardi Gras Transportation System in the Gulf of Mexico.

This is the world's highest capacity deepwater pipeline system; 725km long reaching depths of 1.9km. These pipelines have to be regularly checked for damage and wear; with a capacity of 1M barrels of oil and 1.5M cu ft of gas per day, downtime and therefore reliability, was a key issue.

As part of the design brief, PDM had to develop a rigid encapsulation process to ensure a void free watertight seal around delicate sensor coils wound with 25 micron wire.

Aside from process development, PDM undertook material selection to withstand harsh chemical and abrasive environments. The design of PCBs, bespoke interconnection systems, complex mouldings and mechanical assemblies underwent a number of iterations throughout the project in response to the customer's space constraints.

In order to verify all system components could withstand the extreme operating conditions, each part was subjected to pressure cycling to 5,600psi prior to dispatch.

Based upon the success of this project two new pipeline inspection tools have been commissioned using this technology for use in other deep-sea pipelines around the world.



### UNDERWATER FLEXIBLE AMPLIFIERS



For several years PDM has been producing encapsulated amplifiers for underwater use. This experience has led to the development of a flexible format with a set of in-line amplifiers.

PDM worked with the client to develop the protection and potting system for each of the amplifiers along with an appropriate interconnection system and the inclusion of an axial strain member to carry the load.

Accompanying this work has been the development of in-line connectors and a set of cable mouldings to polyethylene cable, which all have the same diameter as the amplifier itself. This project is now in the production phase with excellent results.





# New Products and Applications



## PDM AT OCEAN BUSINESS 2007

PDM will be exhibiting at the forthcoming Ocean Business exhibition being hosted by the National Oceanology Centre Southampton from 27th - 29th March 2007. Ocean Business 2007 is being held this year for the first time and will be an effective opportunity to exhibit up-to-the-minute products and meet colleagues within the industry. PDM will be showcasing a range of products, for commercial and defence applications, including connectors (Impulse, high voltage, fibre optic & hybrid) and cable assemblies.

PDM has extensive engineering experience, in the UK and overseas, in the design, manufacture and supply of subsea products under ISO 9001. Please contact us before the exhibition if you wish to discuss any projects in more detail at the show. We look forward to meeting you. PDM will be on stand number 48.



## PEEK CONNECTORS



### PEEK - A solution to delamination issues

Under certain extreme conditions, such as the proximity of the assembly to system protective anodes, bond delamination can occur at the interface between a polyurethane moulding and metallic connector. This has long been a major issue within our industry with potentially significant system reliability implications.

PDM has addressed this issue by adapting the very popular and versatile MHD range of Impulse connectors and can now offer them with a non-metallic PEEK (polyetheretherketone) body hence eliminating any metallic bond interface and effectively preventing any delamination failure. The MHD connector series is available in 5 shell sizes with up to 78 contacts with conventional and inverted options. If you would like more details please contact PDM.



## BEND CONTROL PRODUCTS

Bend control is an essential consideration for any application where a cable is terminated to a rigid component because it is at this interface where the cable can fail on bending. With over 15 years of experience PDM can offer considerable expertise in solving bend control issues. PDM is a market leader in bend control for the submarine cable industry and its materials and process have been mechanically proven under the most arduous test conditions.

PDM currently focuses on polyurethane bend control products where it has a wide range of tooling. PDM also has experience with EPDM injection moulded rubber bend control products.



**A selection of bend control products**



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