PETROSYSTEM Srl

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MULTI DIAMETER PIG

Product: Multi Diameter Pig
Grouping: Multi Diameter Pig
Version: 1.0

General function and application

The ability to pig Dual and Multidiameter pipelines offers the operator huge potential savings on piping costs and enables a growing number of offshore marginal fields to be exploited. The technique also allows use of smaller diameter risers for deep-sea projects.
Pipeline Engineering and Supply have developed a new Dual Diameter pig which is both cost effective and yet highly efficient for pre-commissioning, routine operations, pre-inspection cleaning and towing an inspection pig even with high drag. This development has pushed the boundaries of what is safely feasible in such technology and allows the operators more flexibility in the design of their pipeline.

A fundamental requirement for a pig that must traverse more than one pipe size is that it must have seals that will provide the necessary drive in each size. Pipeline Engineering's pig can provide this. The pig development allows changes in line size currently estimated at up to 60% increase. Typical diameters which can be address are 10" x 16", or 28" x 42" for example.

The pig design and development will be a bespoke product for each application – all pipelines are different - and Pipeline Engineering can provide advice, analysis and feasibility on the application as well as design, manufacture and testing. Currently all dual and multi diameter pigs of this step changes should be tested for efficiency especially when the demands on the pig are for de watering swabbing etc.

The main feature of the Multi Diameter pig is the paddle element of the pig which supports in the larger diameters and collapses in the smaller diameters. In the larger diameters the "fingers" of the paddle are extended and straight offering rigidity as can be show in Figure 1. By "feathering" the leading edge of the paddle the fingers are encouraged to collapse in the same direction when they encounter the smaller diameter. Once in the smaller diameter the fingers of the paddle remain collapsed offering little in the way of support and friction on the pipe wall. With this feature little wear is experienced and no marked increase in pigging pressure is required.

Via Gaspare Spontini, 29/4 - 00043 Ciampino (RM) – Italy Tel:+39 06 79321621 Fax:+39 06 79321160 Email: info@petrosystem.it Web : www.petrosystem.it