

Rosen Inspection, The Netherlands

The ROSEN Group of Companies provides pre-inspection pipeline cleaning on a large scale as part of its pipeline inspection services. Continuous development in this field, with the support of the ROSEN Technology & Research Center, leads to the development of new products that are made available for pipeline operators and contractors.

Two recent additions to this range of products are the combined brush/magnet cleaning pig and the Pipeline Data Logger for pig mounting.

The former features spring loaded brushes in combination with a row of magnets mounted between the customary front and rear discs. This design, available from 20 in. size upwards, has shown to be very efficient. The capacity to collect magnetic debris (such as welding rods) in a single run has shown to be higher than other designs, both in total weight collected and removal efficiency due to the combined effect of the brushes and magnets.

When performing pre inspection cleaning, often it is not well known in advance what type of debris can be expected in a particular pipeline. In these situations the combined brush/magnet pig offers a great improvement in project efficiency as the it performs a dual task in each run made.

The PDL is an instrument for

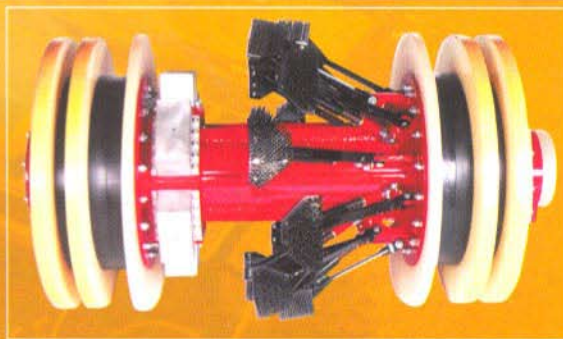


Figure 1. Typical brush and magnet cleaning pig.



Figure 2. Pipeline data logger in carrying case.

measuring process data and pig behaviour in pipelines, for mounting onto a cleaning pig (from 4 in. size).

In its initial year of service, the

instrument has proven its high standard of data collection in both fields of application. Pipeline temperature and absolute pressure have been accurately measured over the complete length of the pipeline, providing the pipeline operator with valuable process information.

The analysis of pig behaviour, as recorded by the differential pressure and acceleration sensors, has revealed highly interesting information about pipeline conditions. The unique feature of the PDL is that all peak values measured with a 500 Hz sampling rate are stored regardless of the storage interval (programmable from 0.25 - 2 seconds). As a result, even in large diameter offshore gas pipelines with very little weld penetration, the girth weld pattern is clearly recorded.

The combined information from the differential pressure and acceleration sensors allows clear identification of deposits such as scale and wax, and monitoring of the process of removal by cleaning pigging using descaling pigs.

The high differential pressure required by a pig to pass a restriction can be measured and correlated to the location of the restriction by benchmarking, and/or by comparison with the pipeline profile. The pipeline profile is available from the combined data of



cleaning pigs

acceleration sensors in the X, Y and Z axes, and often a restriction in the pipeline causing damage to a pig's gauge plate can be correlated to a specific location (for example, river or road crossing).

In a recent project, a 34 in. gauging pig suffered severe gauge plate damage preventing the scheduled

inspection pig run. The PDL was mounted on the gauging pig in order to locate the cause of the gauge plate damage and the run was carefully tracked with the well known ROSEN electromagnetic pig location system. Upon the retrieval of data from the PDL instrument, the large differential pressure peak caused by the

restriction could be matched exactly to the moment the pig passed a buried hot tap connection (coupon incorrectly placed).

As a result, corrective action could be scheduled immediately, avoiding all the cost and delays involved in mobilising a geometry survey inspection pig to a remote location.