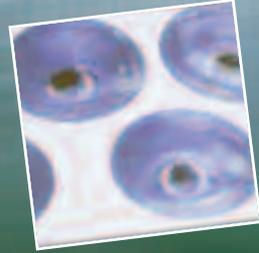
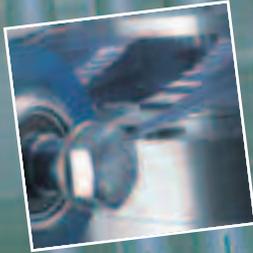


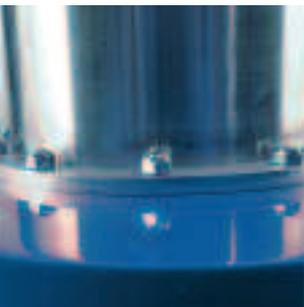
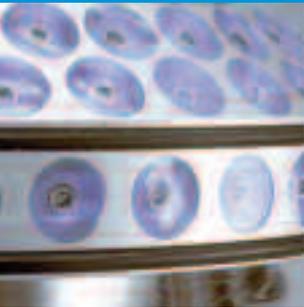
The In-line Video Inspection Pig



Why Pipesurvey International?

Pipesurvey International is an internationally operating service company for the pipeline industry. The company was raised in order to meet with a growing demand of latest technology pipeline integrity tools. Being a relatively new and dynamic company, at the same time its personnel can boast on decades of experience in pipelines and services.

Pipesurvey International employs a team of highly qualified experts on all the relevant fields of technology, such as NDT technology, software development, data analysis, mechanical and electrical engineering, system design, pig design and pipeline services in the widest sense of the word. Besides, Pipesurvey International maintains close cooperation with a research group of an outstanding university, with full access to latest resources of technology and facilities.



Take a look inside!

“What if we could just take a look inside that pipeline to see what is really going on?” is an often heard exclamation of pipeline operators.

Well, as of today you can!

Pipesurvey International has developed the In-line Video Inspection pig. The In-line Video Inspection Pig is a unique inspection instrument that can be operated like a regular cleaning pig in operational pipelines. It is a completely autonomous system with on-board power supply, illumination and camera system, data storage and board computer. It can be operated without the use of an umbilical and will collect an ultra high resolution optical file of the entire internal pipe wall.

Since the In-line Video Inspection pig is operated without the use of an umbilical, basically unlimited lengths of pipeline can be inspected.

Why use In-line Video inspection?

In-line Video Inspection is a supplementary technique to other inspection methods, like caliper inspection or metal-loss inspection. The In-line Video inspection pig has its own unique strength, adding valuable information about newly constructed or operating pipelines. The In-line Video inspection pig is used for the inspection of:

- internal linings of pipelines, such as epoxy, polyurethane or cementing.
- internal mechanical damages or deformations

- 3rd party interference
- sub sea lines on lay barges
- valves and valve seats
- weld protrusions
- erosion
- scale and other contaminations
- T-bars
- internal corrosion
- verification of MFL or ultrasonic inspection data
- pipe couplings
- leakages
- pipeline distortions
- pipeline cleanliness before internal lining
- quality of freshly applied internal coatings

System description

The In-line Video Inspection pig is a dual module vehicle. The tool is wheel supported to guarantee a low-friction and smooth passage through the pipe.

The front module is assigned with the task of pig propulsion, power supply, board computer, data storage and pig location.

The rear module is dedicated to the illumination and data recording system.

The odometer system determines the location of any feature along the pipeline, while the on-board inertial system determines the clock position. The use of a GPS marker system is available to deliver any desired location accuracy.

Pipesurvey International has developed a unique system of high resolution optical image recording and processing. Four special, miniaturized camera's record images from a view perpendicular to the wall. The illumination system generates a very intense light beam across the pipe wall. Depending on pipe size, the In-line Video Inspection tool can obtain optical resolutions of less than 1 mm²!

Besides optical data, the In-line Video Inspection pig records data with regard to the pig's dynamic behavior. This offers information about pipeline movement, deformation, bend radii, misalignment, upheavals, land slides, river crossings, risers and other features.

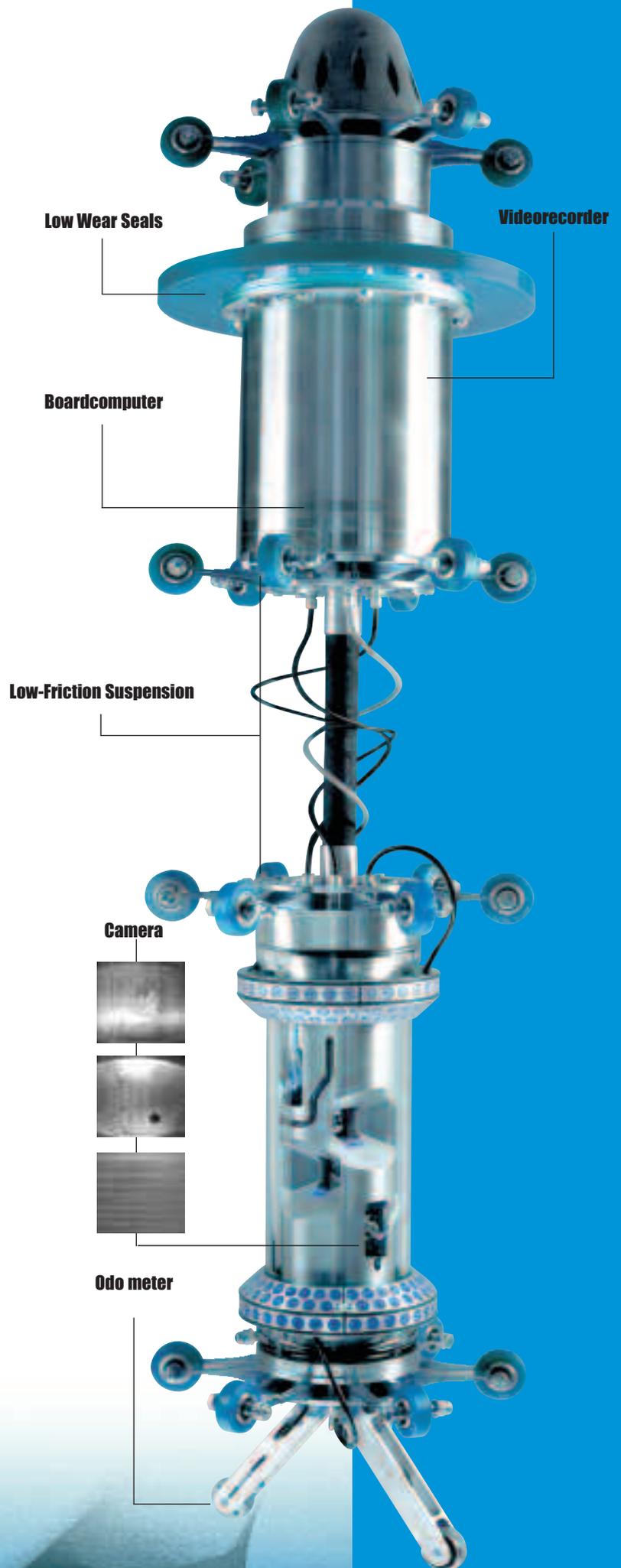
Data Representation

The end result of each pipeline inspection is a hard copy report with an analysis of the inspection data, together with the complete file of the entire pipe wall on DVD or any other format. The file can be viewed and examined in the Advanced Pipeline Video Software.

The Advanced Pipeline Video Software is an extremely powerful and highly user friendly diagnostic tool. It allows the user to view the whole pipeline or jump from feature to feature. Thus, the end-user is able to visualize all the detected features, zoom in on anomalies, and view the pipeline on variable scale, asses and quantify deformations, damages and other events. One can correlate video data with pig dynamics data, plot a velocity profile, and monitor pipeline profiles.

Each spot can be printed on a data sheet with log distance, weld distance, clock orientation and characteristics of the feature.

The software can be installed on the users PC together with the data and is a helpful instrument to interpret measurements. It enables the pipeline operator to prioritize pipeline remediation activities.



Turnkey Services

Pipesurvey International offers complete customer service. Prior to each inspection, Pipesurvey will hold a pre-inspection meeting with the customer to discuss and agree the running conditions, operational procedures, safety procedures, required facilities, pipeline access, general layout, GPS locations, adequate pipeline cleanliness and the mutual responsibilities.

For each job, Pipesurvey International mobilizes the calibrated In-line Video Inspection Pig with adequate spares, computer hardware for on-site data verification and well trained field engineers.

A field report is normally available within 24 hours after completion of the inspection and determines the completeness of the inspection data.

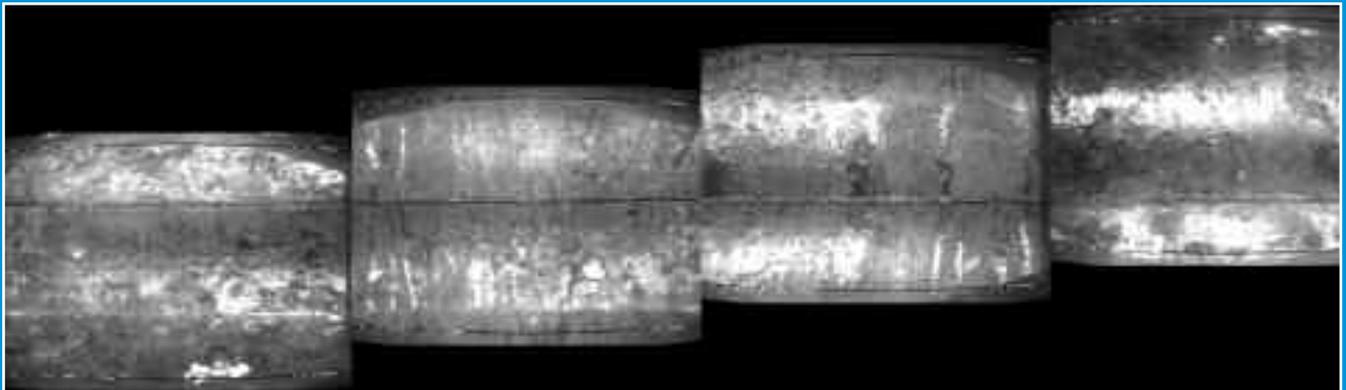
The final report is normally submitted within 30 days after completion of the inspection and contains:

- a complete set of processed data
- a copy of Advanced Pipeline Geometry Software
- a daily site report
- a complete list of categorized features in hard copy

Technical specifications of the In-line Video Inspection Pig

| | |
|------------------------------|--|
| Available sizes: | 12" - 64" |
| Min. required pipeline bore: | 75 -95% of nominal pipeline I.D. depending on pipe size |
| Optical Resolution: | 1.0 mm2 |
| Location accuracy: | +/- 0.1% of travel distance |
| Distance to girth weld: | +/- 0.1 m |
| Operating pressure: | 0 - 60 bar |
| Operating temperature: | 0 - 60 oC |
| Bend capability: | 1.5 D (12" & 14" : 3D) |
| Recording capacity: | 9 hrs. max. |
| Operating speed: | 0.5 - 4 m/s |
| Pipeline Media: | Natural Gas, Crude Oil, Finished products, Water, Air |

Specific technical specifications are available upon request.



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