

Airport Fueling Pipeline and Finger Lines

Internal pipeline inspection by UT (Push-pull) Piglet® system

WE KEEP THEM FLYING

When combined with the highly experienced field crews at A.Hak Industrial Services, our pipeline Piglet® and Push-pull Piglet® services offer a powerful, integrated solution to validate the safety and integrity of airport fueling systems, with minimal impact on business activities.



AERO FUEL



**Multiple services, singular solutions
for the Oil, Gas & Petrochemical Industry**

For airport operators, integrity and safety are top priority. The implementation of inspection and maintenance services to airport fueling lines is crucial, however this can mean a disruption to operational activities, potentially leading to financial loss and customer dissatisfaction. Finding a way to maintain safety and integrity without impacting on business activities is one of the major challenges facing airport operators.

A.Hak Industrial Services is the market leader in providing integrated solutions. Our unique combination of services means we have the tools, resources and expertise to inspect airport main lines as well as finger lines in one inspection time window, with minimal disruption to system operations.

Building on the success of our patented Piglet® family, we have developed the Push-pull Piglet® system. The system allows ultrasonic inspection of many different pipeline branches, both under-ground and above-ground, with minimal impact on the operational availability of the pipeline system. When combined with our pipeline Piglet® system for the inspection of the main airport line, we are able to offer, as one integrated, cost-effective package, a full inspection of airport fueling systems that will reduce safety risks and validate integrity without disrupting operational activity.

BENEFITS OF UT PUSH-PULL PIGLET® SYSTEM

- Validation with minimal operational interruption
- One integrated package
- Full service supplier
- Complies with standard integrity codes and requirements
- Allows inspection in jet fuel (no need to empty lines)

UT PIGLET® SYSTEM

A.Hak Industrial Services' pipeline Piglet® inspection system offers a suitable solution for the inspection of 'non-piggable' pipelines. The tool is highly versatile with the ability to perform ultrasonic inspections in pipelines with lengths of over 60 km in one run. Usually unpiggable features such as small radius bends, dual diameter, mitre-bends, full bore unbarred tee-pieces and single entry set-ups are within the capabilities of this flexible, bi-directional tool.

The piglet's ultrasound sensor, with rotating mirror, enables measurements to be taken of the complete circumference of the pipe. The wall thickness, inner radius and distance measurements are monitored online in real-time during the inspection run, via a fiber-optic umbilical cable – additionally, the piglet can also be operated as a 'free-swimming' inspection tool. This allows the overall condition of the pipeline to be determined immediately and the worst defects localized instantly, with all raw ultrasonic data stored for detailed post-processing analysis.

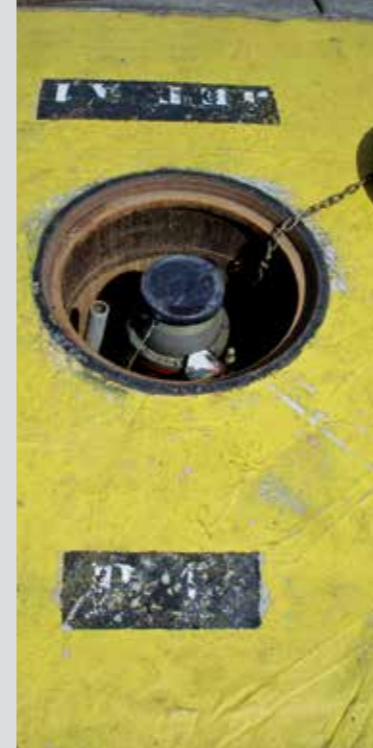
UT PUSH-PULL PIGLET® SYSTEM

A.Hak Industrial Services' unique push-pull inspection system has the capability of inspecting airport fueling finger lines, with one of the most accurate and detailed ultrasonic analyses of the inspected pipes, available in the industry.

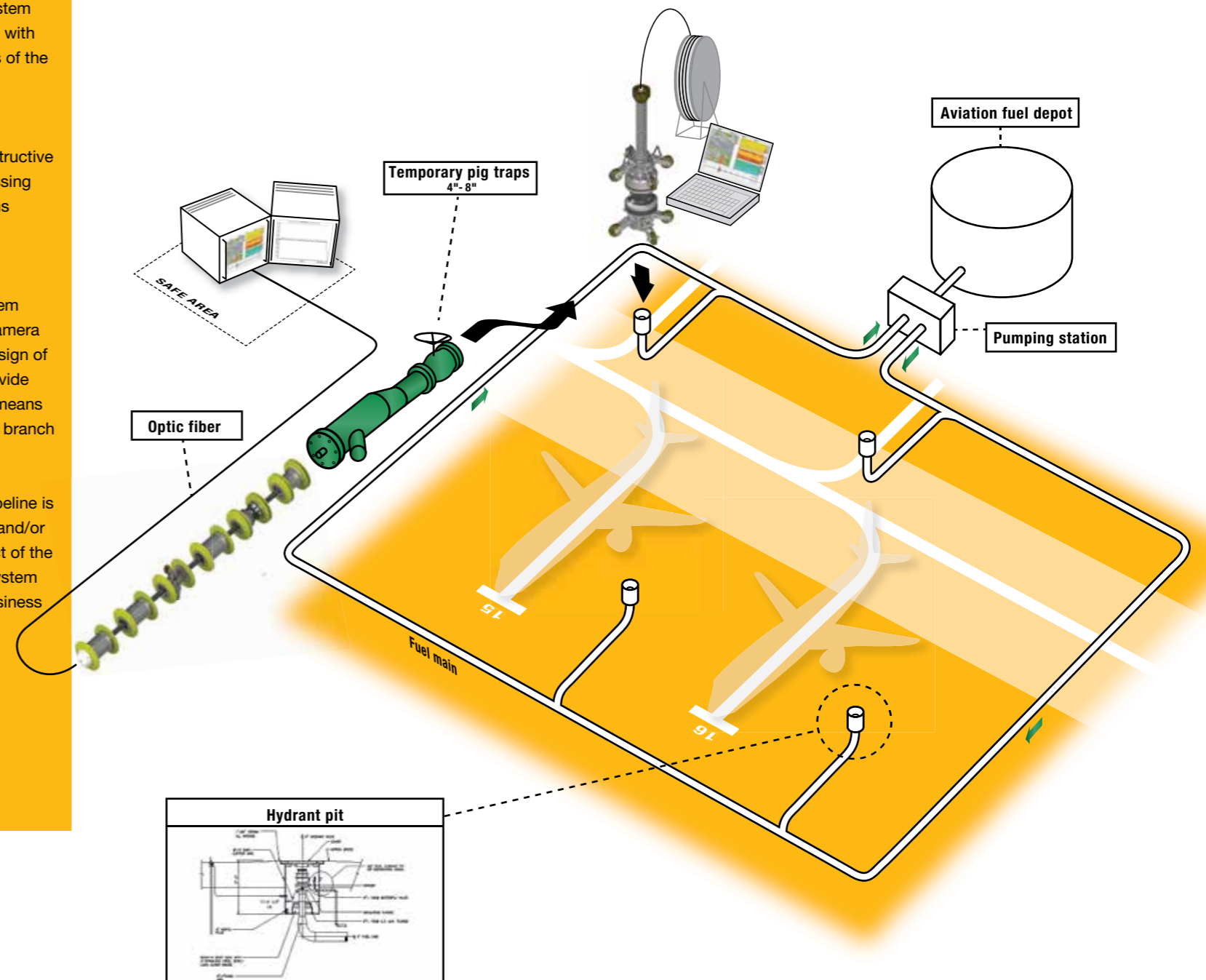
Push-pull systems, commonly used in combination with professional video equipment, provide a form of non-destructive internal pipeline inspection, which aids operators in assessing the general condition of their lines and identifying locations where cleaning, repair or replacement may be required.

The Push-pull Piglet® is an intelligent, versatile tool that combines the features of a tethered inline inspection system with the advantages and agility of a standard push-pull camera inspection system. The compact, lightweight, modular design of the piglet, in combination with the pushrod's ability to provide the required propulsion, power supply and data transfer, means a user-friendly, high performance, ultrasonic inspection of branch pipelines is possible, with all results presented online.

Since propagation of the Push-pull Piglet® through the pipeline is achieved by means of a semi-rigid pushrod, no pumping and/or fluid collecting facilities are required. Therefore, the impact of the inspection on the operational availability of the pipeline system is extremely minimal. To further minimize disruption to business activities, we also offer night operations.



Push-pull®
Can be used without launcher.



INTEGRATED SERVICES AT WORK

A.Hak Industrial Services' Push-pull Piglet® inspection system was first introduced during the inspection of a fixed airport hydrant fueling system located in French Guyana.

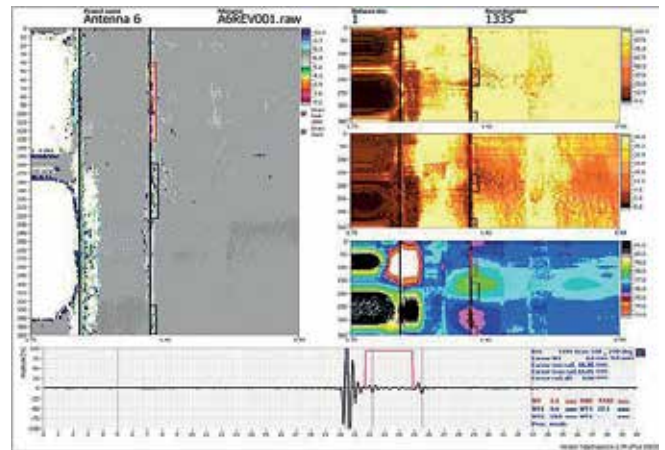
The main loading line from the kerosene depot to final valve chamber consisted of a 300 meter long section of 8" line, followed by a 70 meter long 10" section. Along the main loading line, a total of eight 6" branch lines, with lengths varying from 4 to 60 meters ran from the main loading line towards aircraft fuel hydrants.

While the main loading line was inspected by means of the pipeline Piglet® system, the Push-pull Piglet® method was applied for the inspection of the branch lines.

Prior to removal of the hydrant valve, the branch line to be inspected was isolated from the main loading line and depressurized. Once the hydrant valve was removed, a temporary valve and an extension spool piece were installed for safety and accessibility purposes. The push-pull UT inspection tool was then pushed to the end of the branch line.

The most challenging branch line configurations had a total length of 60 meters and required the inspection tool's passage of a 6" S40 1.5D 90° bend, a 6" S40 equal tee and another 6" S40 1.5D 90° bend located at respectively 3, 35 and 40 meters from the entry point.

The branch line inspections were performed during a normal day and the airport hydrant fueling system remained fully operational with the exception of the single branch lines which were inspected in consecutive order. The Push-pull Piglet® tool performed well and successfully completed the project in two normal working days.



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