

Device for in-service control of PSLI/PSL2 pipelines toughness

CSIC has developed a System that allows to evaluate *in situ*, in a non-destructive way, the longitudinal welds in steel pipes. It is designed for evaluating longitudinal welds made by high frequency induction heating HFW (High Frequency Welding) or by resistance ERW (Electric Resistance Welding) as used in gas and oil pipelines.

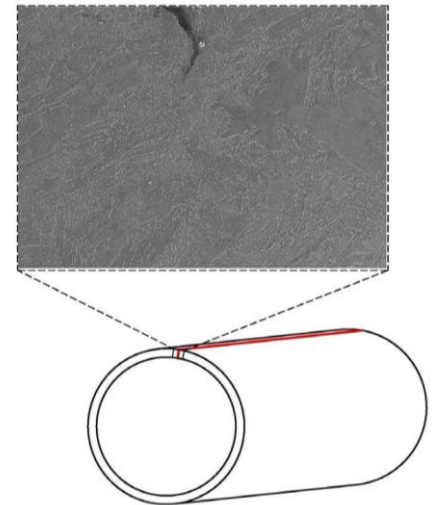
Industrial partners of measurement and quality control equipment manufacturers interested in licensing the patent for commercial exploitation are sought.

Patent License offered

Tool that guarantees safety in energy sector infrastructures

Periodic inspection of in-service HFW tubes is commonly done using Pipeline Integrity Gauges (PIGS) systems, which travel inside the tube and detect defects using technologies such as magnetic flux leakage or ultrasonics. The use of PIGS is limited to pipes of large diameter and without closed curvatures in their path. In addition, such systems do not allow to determine the toughness of the weld line, which plays a crucial role in predicting the integrity of gas pipelines. Recently, Alternative methods have been developed, but often require the use of finite element simulations and additional adjustments for each pipe.

CSIC researchers have developed a system that allows non-destructive evaluation of the toughness of the welding line in pipes in service manufactured by resistance or induction welding. It is a compact device that allows measurements to be made in the field. The equipment allows, through image analysis, to categorize the toughness of a pipe after comparing it with a safety value, and determines the probability of a catastrophic failure of the same with great precision



In-service failure due to low toughness of a gas pipeline HFW weld.

Main innovations and advantages

- Measurement system that offers a high reliability.
- It is a low-cost system that guarantees that HFW pipelines operate safely, which means invaluable cost savings.
- It is compact, portable and industry 4.0/5.0 ready.
- User friendly philosophy, allows its use without the intervention of expert staff.
- It can be used for inspections in gas pipelines, oil pipelines and welded components in general, etc.

Patent Status

Priority patent application filed suitable for international extension

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