

AEHIC™: The essential tool for early detection, monitoring and ultimately prevention of Hydrogen Induced Cracking using Acoustic Emission

A hardware and software combination designed specifically to provide the optimal monitoring solution to a wide range of industries. AEHIC™ incorporates knowledge and experience in one single innovative device.

Description and Benefits

- HIC occurs as a result of aqueous hydrogen charging of steel in wet H₂S refinery process environments.
- AEHIC™ aims to detect HIC evolution in sour service assets before it progresses, important for the cost-effective maintenance of equipment which is susceptible to HIC.
- AEHIC™ is fundamentally based on the sensing and acquisition of acoustic signals which are generated by the degradation of steel.
- On board algorithms filter these signals using pre-determined data analysis and acceptance level thresholds and display the results of the data monitored over time.



- A safe and compact device conveniently designed for hard to access locations,
- A user friendly interface,
- A simplified output that can be interpreted and utilized by lightly trained personnel,
- An algorithm developed with FFS in mind,
- An upgradable software to fit several cases,
- A cost effective device that can extend the life of valuable assets.

Applications

Environments where carbon steel is exposed to hydrogen sulphide and equipment in sour service.

Oil and Gas: hydrogen related pipeline cracking, corrosion and leakage, degradation in piping systems and vessels, storage tanks corrosion, etc.

Other applications

Offshore: bolts failure due to hydrogen embrittlement, jackets foundation, piping.

Renewable energy: wind turbine blade, hub connections, gearbox low speed motion.

FPSOs: structures and bolted connections.

- **Software:** personalized updates to tightly suit the need, user requirements, operation thresholds, visualisation, web, App.
- **Hardware:** customisation, display, multi-channel, sizing.
 - Storage: local, PC-server, cloud technology.
 - Environment: Hazardous areas, ATEX, IP.

Offering and Damage Mechanisms

AEHIC™ features based pattern recognition, clustering and advanced filtering are currently implemented, they fit to:

- Hydrogen-induced cracking (HIC),
- Stress Oriented HIC (SOHIC).

AEHIC™ software offers a wide range of upgrades to fit any application where Acoustic Emission (AE) monitoring can be correlated to the following mechanisms:

- CO₂ Corrosion, Coatings Failure,
- Environmentally Assisted Cracking (EAC),
- High temperature attack (HTHA),
- Stepwise cracking (SWC),
- Hydrogen Embrittlement (HE) and Blistering,
- Stress corrosion cracking (SCC),
- Sulphide stress cracking (SSC).

