

SmartBall®



**Sistema de
detección de
fugas en
tuberías que
contienen
Petróleo**

Alternative Leak Detection Technologies



- CPM
- Aerial Surveys
- Ground Surveys
- AFO Providers
- Pig-Mounted Systems
- Discrete Sensors
- Chemical Trace Methods
- Pressure Tests
- Etc

Limitations:

- Minimum Detectable Leak ?
- False Alarm Level ?
- Leak Location Capability ?
- Installation & Operation Cost ?
- Labor & Time Requirements ?



None Have General Acceptance

SmartBall Advantages: Sensitivity, Ease of Use, Reliability and Low Cost

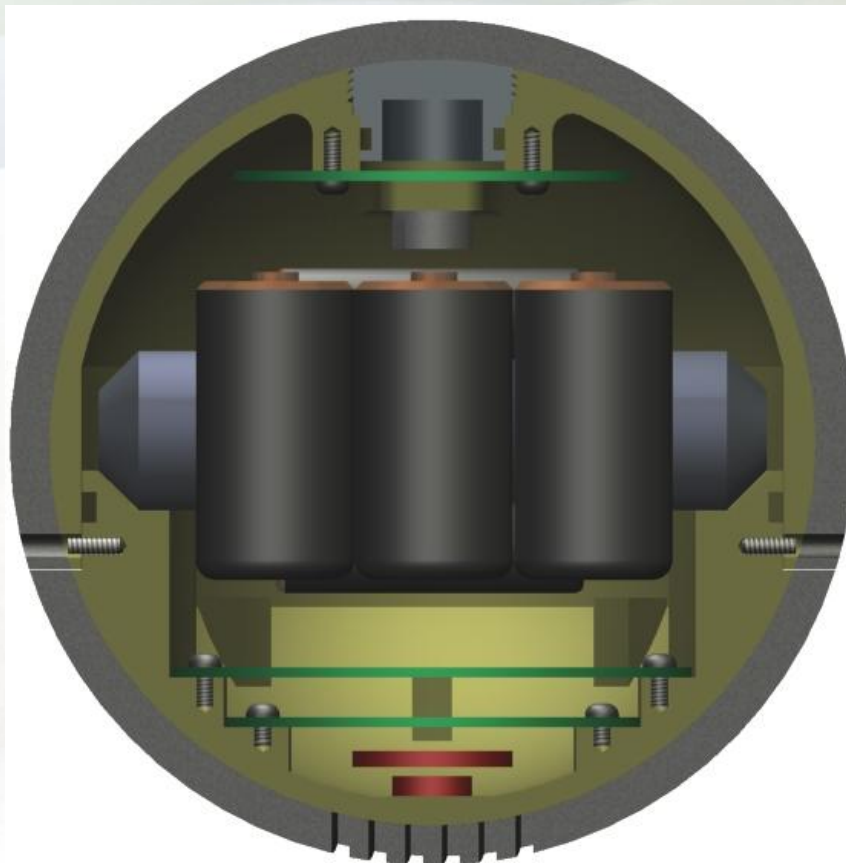
SmartBall® Equipamiento



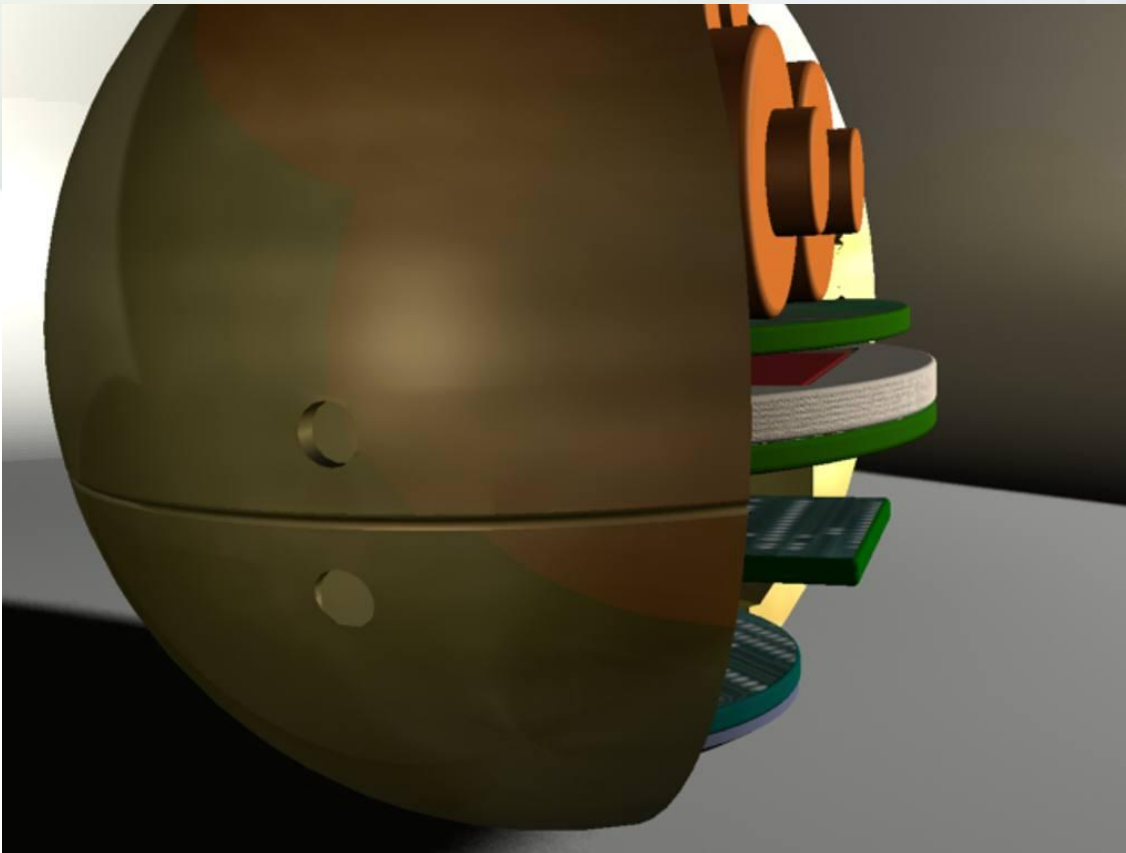
SmartBall® Sensores



- Sensor acústico
- Acelerómetros
- Magnetómetros
- Sensor de Temperatura
- Sensor de presión



SmartBall® Casing

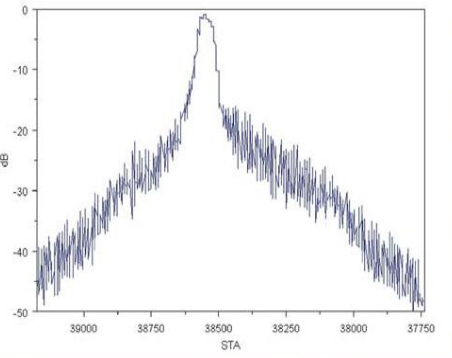
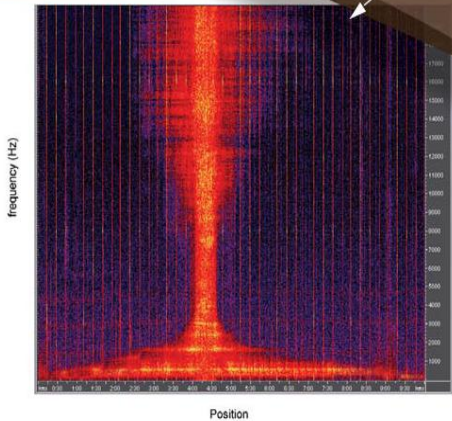
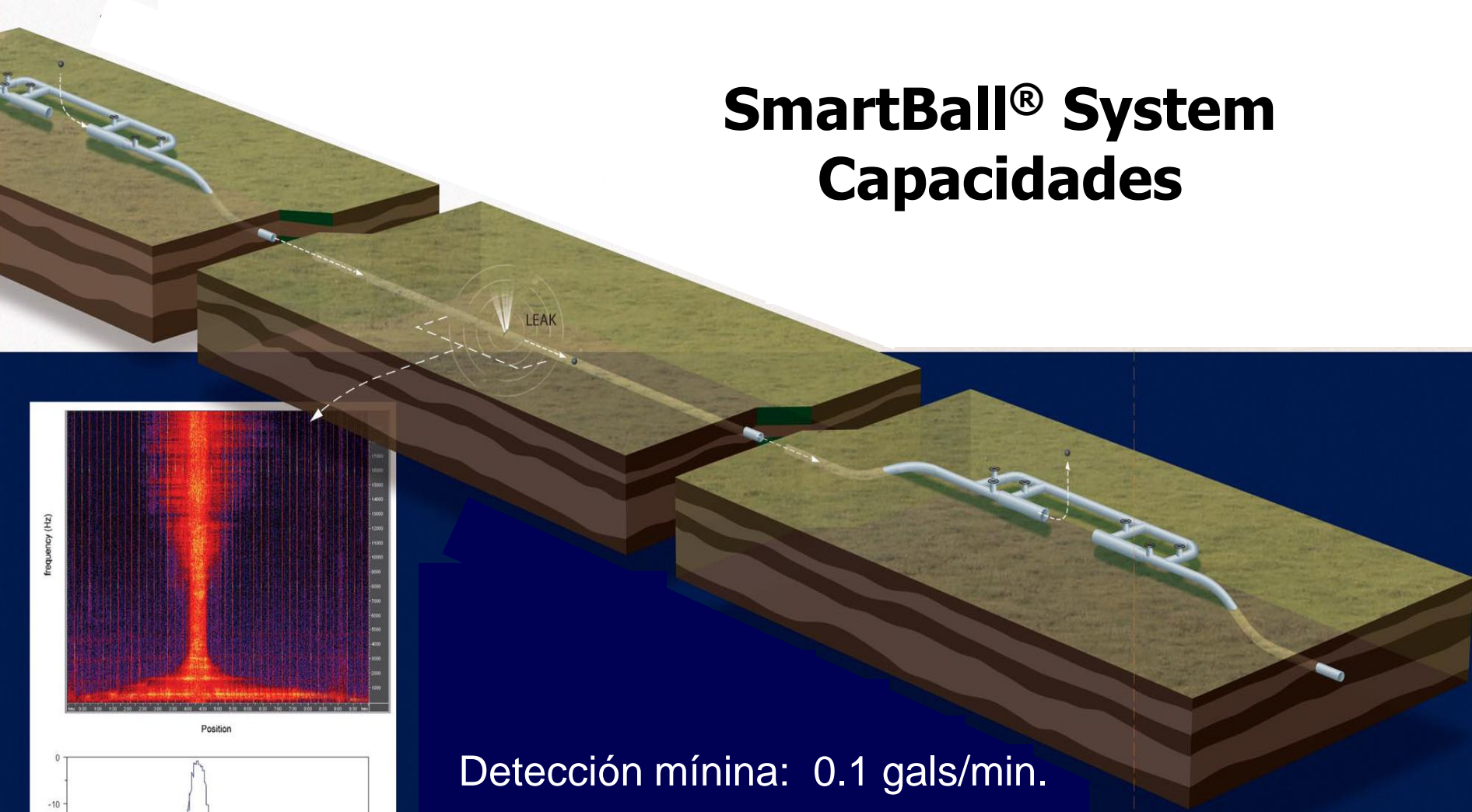


Poliuretano

Material aprobado para el uso del Smart Ball.

Maxima sensibilidad a la reduccion del ruido ambiental

SmartBall® System Capacidades



Detección mínima: 0.1 gals/min.

Localización de fuga: ± 1 m

Tamaño del caño: 4in +

Rango: 170 hours

10in Spec Details

for **10 to 65 inch*** diameter oil and gas lines

Tool Specifications:

SPECIFICATION	SMARTBALL™
Outer Diameter of Sphere	8.9 inches
Pipeline Size	10-inch to 14-inch Lines
Power source	Rechargeable Cells
Maximum pressure	2000 psi
Temperature Range	-10°C to 70°C (-14°F to 160°F)**
Minimum Pipe Diameter	NPS 10 Schedule 80 or Lighter, NPS 12, NPS 14*
Maximum Run Time	170 hours
Pipeline Product	Crude Oil, Synthetic Crude, Refined Products or Natural Gas
Product Flow Rate	Liquids 1 ft/sec (0.3m/s) or greater*** Gas 8 ft/sec (2.5m/s) or greater***

*Pipe sizes greater than 14 inches can be accommodated using SmartBall overshell.

**High temperature option to 125°C (260°F) can be made available on request.

***Min flow speed dependant on pipe size and product type.



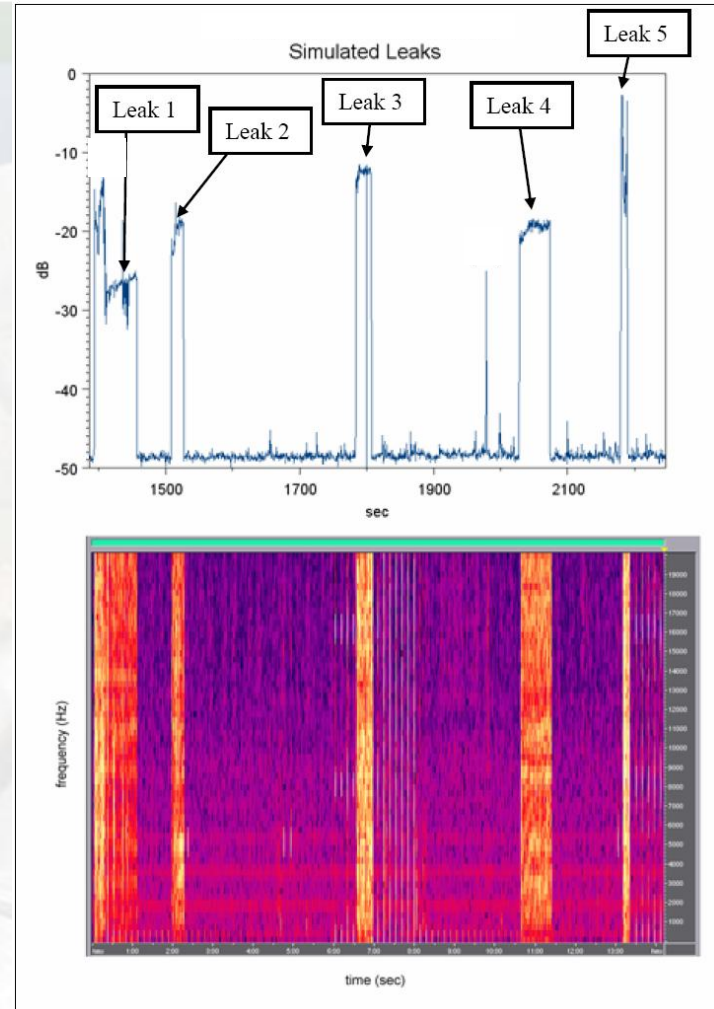
Procedimiento de lanzamiento



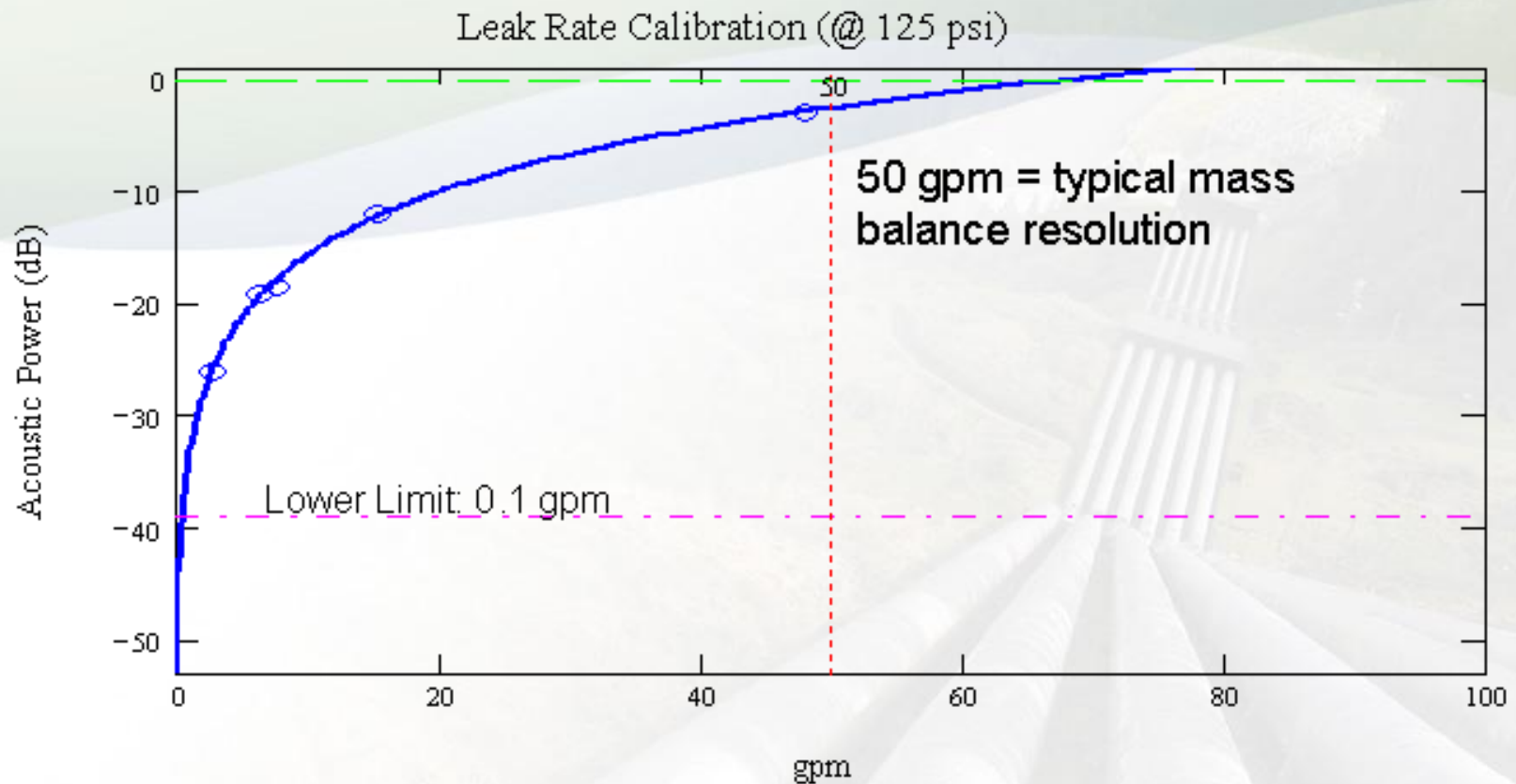
- Presentar el dispositivo
- Girar e insertar el dispositivo en el tubo del lanzamiento y presurizar.
- Calibrar con los escapes simulados necesarios.
- Lance el dispositivo en la cañería.



SmartBall Calibration



SmartBall Calibration



Leak Rate Calibration Curve

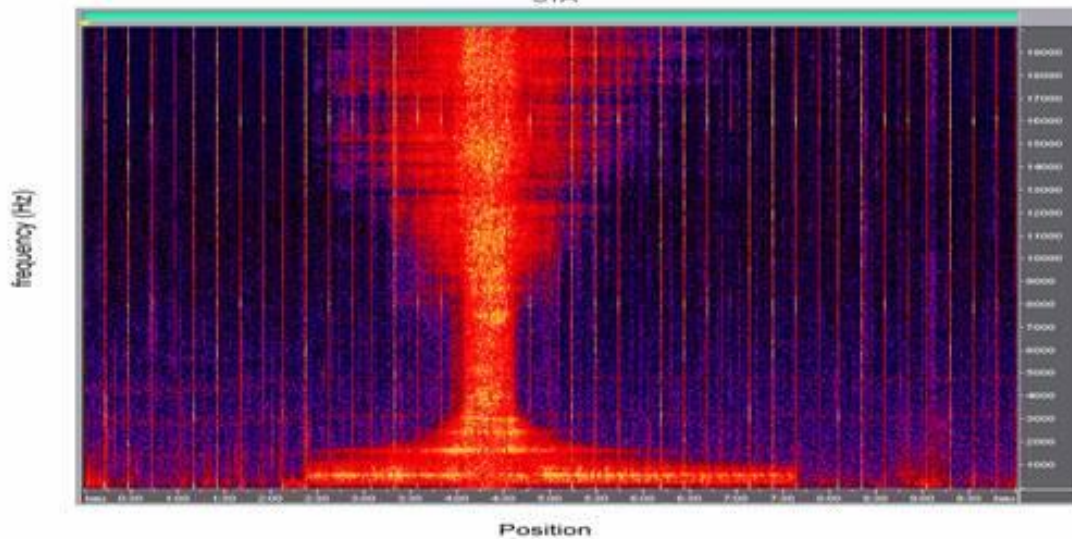
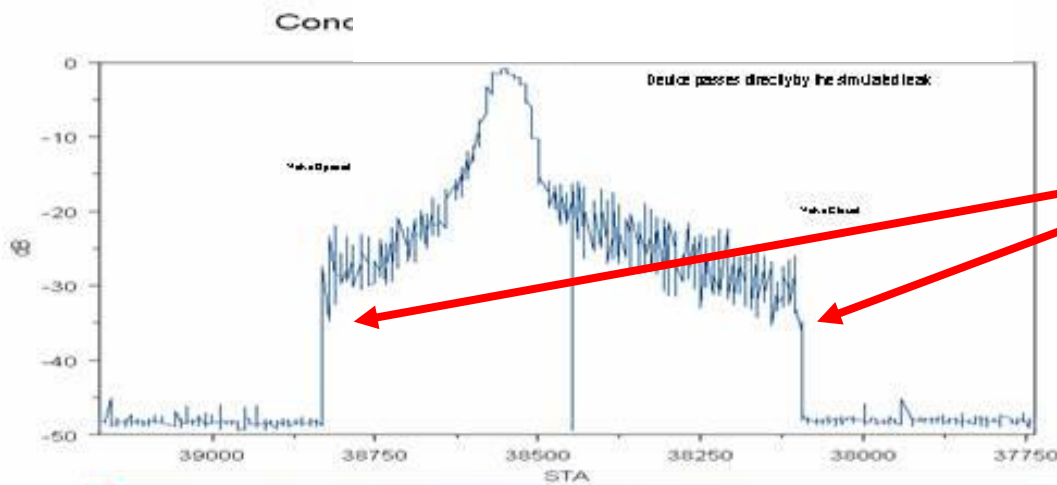
SmartBall Seguimiento



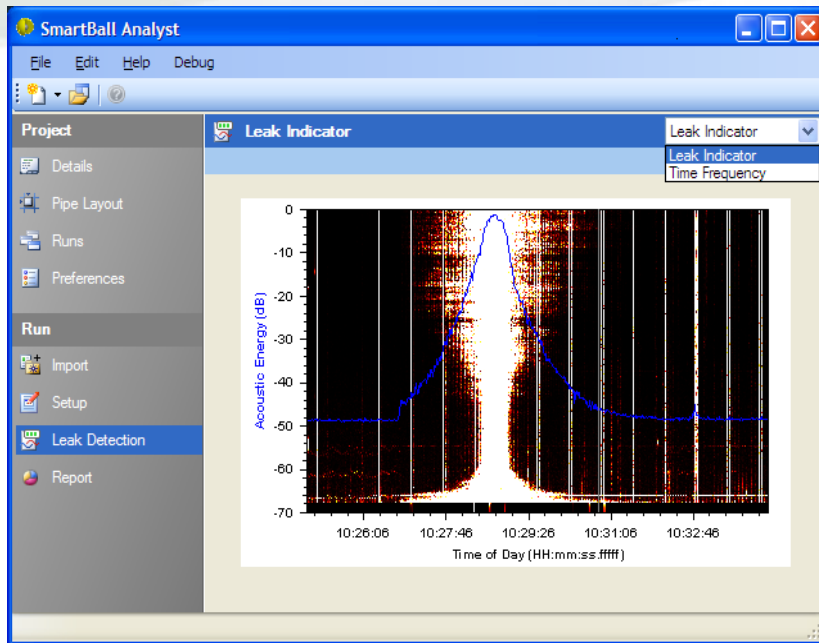
Electromagnetic Pig Tracker

Leak Visualization

Detecta
facilmente a >
500 m de la
fuga.



SmartBall Analyst V2



- Para usuarios no experimentados
- Identificación automática de fugas.
- Facilita la comparacion de manera sencilla.
- Datos en Zoom/Pan Data
- Generador de Reporte Automático