

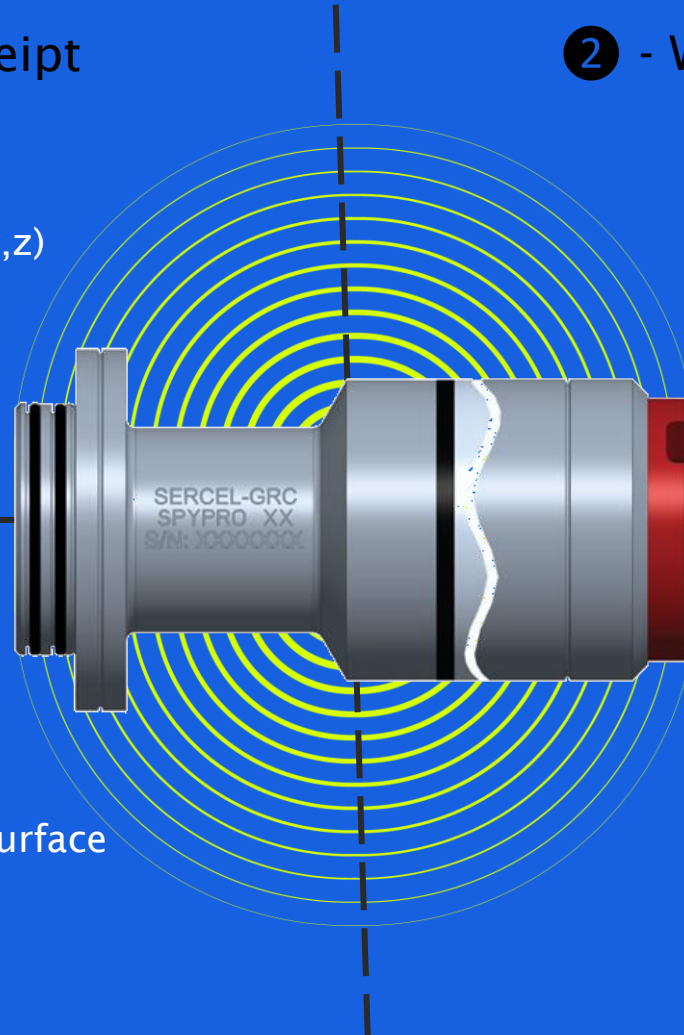
The 4 testing phases for Spy Pro sensor

① - Warehouse upon receipt

- Visual inspection
- Functionality test
- Excitation Pi, Pd, Tm, Vib (x,y,z)
 - Electrical test
 - Insulation test

② - Workshop connection to the motor

- Visual inspection
- Functionality test
- Excitation Pi, Pd, Tm, Vib (x,y,z)
 - Electrical test
 - Insulation test



④ - POOH

- Functionality test @set depth
 - Visual inspection
- Excitation Pi, Pd, Tm, Vib (x,y,z) @surface
 - Electrical test
 - Insulation test

③ - RIH

- Functionality test
- Excitation Pd @discharge sub
- Functionality test @set depth
 - Electrical test @set depth
 - Insulation test @set depth

Use Functionality test for ESP sensors format and record all test, observations and findings.

Recommendation for Spy Pro sensor test scheme according to Run Life (days)

0-181
Field Inspection
Functionality Test
Replace flange O-rings
Replace Pd cartridge (if apply)

182-365
Field Inspection
Functionality Test
Replace flange O-rings
Replace Pd cartridge (if apply)
Replace bolts and washers

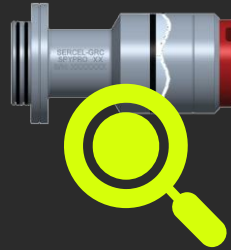
>366
Refurbish

- Without knowing the complete history of a sensor during its operating stage and without having records of the data during the entire run life of the sensor we would be unable to make any recommendation for reusing the sensor.
- Even though the sensor may look good externally, this does not mean that it can continue working under the conditions of the well.
- If the End-User wants to reinstall a sensor, then he must assume full responsibility for any behavior of the sensor downhole.
- For Refurbish contact to GRC Customer Support

Recommendation process to inspection and test for Spy Pro sensors

Visual Inspection

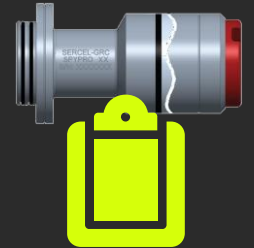
A thorough visual check to identify any obvious defects, damages, or irregularities in the equipment or components.



Functionality Test

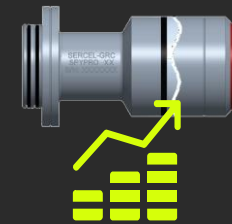
An assessment to ensure that the Spy Pro sensor operate correctly and performs all its intended functions.

Format: Functionality Test for ESP Monitoring System GRC.



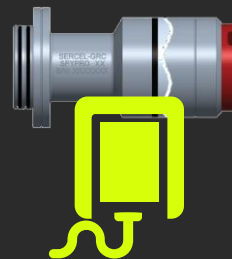
Pi, Pd, Tm and Vib

Using external device to apply pressure (hand pump), temperature excitation (thermocouple/RTD simulator) and stimulating vibration to confirm measure vibrations in all directions.



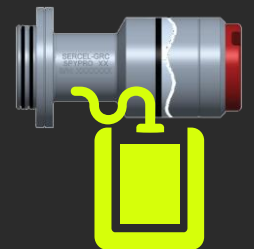
Electrical Test

Testing resistance, in forward and reverse to ensure proper operation using multimeter.



Insulation Test

Testing the insulation resistance of Spy Pro sensor to ensure there is no unwanted current leakage and that the insulation is intact and in range.



Use Functionality test for ESP sensors format and record all test, observations and findings.