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Tech Note 130715.1: Increased Weight on Biofloat Sensors

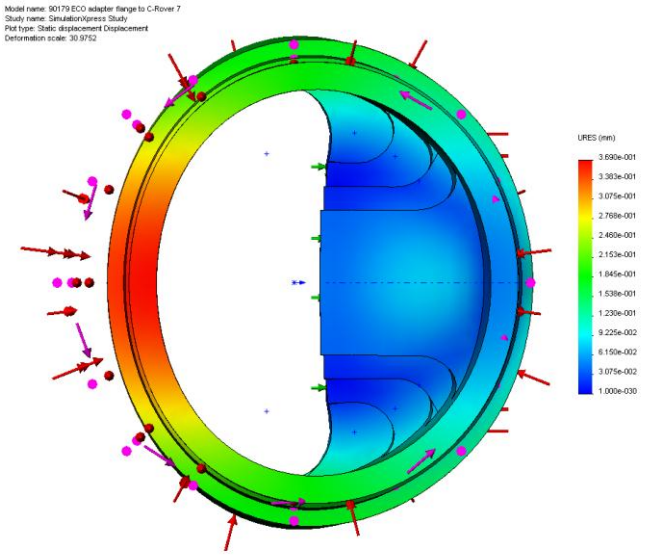
After long exposure of the Biofloat sensors to 2400 m of pressure, it was determined that the pressure housing containing the *ECO* sensor may leak. After 270 hours and about 15 pressure cycles at 2400 m, an O-ring (70A Durometer) squeezed into the gap between the *ECO* adapter and the end housing, and the sensor flooded.

The extreme rigidity of the end housing and the asymmetrical flexibility of the *ECO* adapter may have conspired to allow this failure.

WET Labs has designed a support structure within the *ECO* pressure housing to prevent this from happening. The increase in weight of the Biofloat sensor is from the addition of strengthening material.

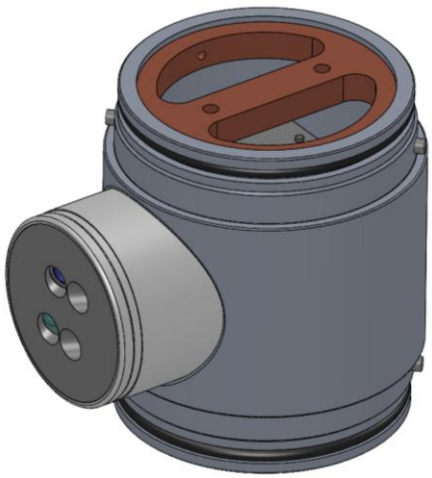
Original design:

2400 m.
FEA reads 0.37 mm, 0.015” deflection.
FS = 0.396. Measured deflection was 0.014”.
Model is accurate for comparing solutions.

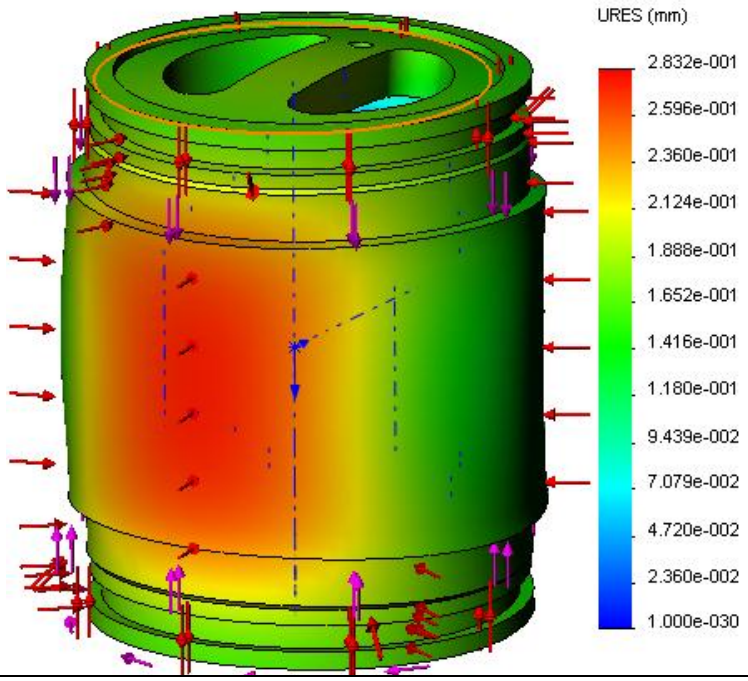


The part is shown in red-brown.

The part is 65 g, so a pair adds 130 g to this assembly.



Deflection at the O-ring is 0.0075”.



Recommendation

WET Labs recommends that customers with Biofloat sensors that do not have the new support structure refrain from extended deployments of 2000 m pressure. WET Labs recommends that these sensors only experience 1000 m of extended pressure exposure.

1. BOSS
    - BOSS-001, -002, -009, -010, -012, -013
2. BOSS-Lite
    - BOSSLITE -003, -004, -005
3. BOSS-Mini
    - BOSSMINI -006, -007, -008
4. ORCA
    - ORCA -068, -069, -070
5. REMA
    - REMA -001 through -026
    - REMA -031 through -035
    - REMA -056 through -067
6. REMB
    - REMB -041, -042