YieldPoint
Sensing the future

www.yieldpoint.com

d5SPLITSET® BOLT

d-SPLITSET® Bolt by YieldPoint

- Monitor Deformation and load on SS33, SS39 and SS46 International Rollforms SplitSet® bolt
- 5 measurement points
- Assess the Factor of Safety against bolt rupture
- Data will enhance many aspects of *engineering design*, *installation quality control*, *long-term operation assessment*, and *rehabilitation*
- Interchangeable with a regular SplitSet® bolt
- No change of bolt characteristics
- Deployment simply involves 3 steps:
    - install a modified SS bolt in borehole
    - slide and manually lock an electronic probe inside the modified bolt
    - Connect the probe to a data logger
- No configuration required
- All instruments are individually calibrated
- Only instrumented SplitSet® bolt in the world

Features:

- *Exclusive product*
- *Individually calibrated for highest accuracy*
- *High Load Resolution: 0.01ton*
- *Load Linearity: typically under 1.5% F.S. (0-24.0ton), high Load Accuracy: typically better than +/- 1.0ton*
- *No potentiometers used*
- *Individual calibration sheets provided*
- *Unique instrument ID and calibration coefficients stored in microprocessor*
- *Available in 5 anchor points*
- *On-board digital temperature sensor for temperature compensation*
- *Immune to hostile environment, shock and vibration.*
- *Easy to install and maintain*
- *Compatible with low cost peripheral devices for data logging, RF telemetry, Ethernet*
- *Competitively priced*

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*d*5SPLITSET® BOLT

Technology

How Does it work?

***d*5SPLITSET® BOLT** is based on miniature inductive displacement sensors installed along a flexible probe. The sensors are secured at fixed positions inside the probe. The 5 inductive sensors measure displacement against fixed 5 aluminum anchors inside the cavity of the bolt.

*d*5SPLITSET® will measure how a certain length of the SplitSet® bolt is stretching in response to load.

The amounts of displacement or load registered can be used to predict whether the cable may be slipping, or may be stretching, or may intersect a geotechnical feature.

The signal processing head of the d5SPLITSET® bolt is reduced to a diameter Such that the entire head can be recessed fully inside the bolt after installation. The extreme low profile of the solution is a factor of longevity.

Only a 4-conductors lead wire comes out of the bolt to connect to a data logger or manual readout unit.

Telemetry

The RS485 output signal can be transmitted over 1,000ft without amplification. Readings (one per strain gauge) are directly in tons allowing immediate interpretation of cable load.

Manual Readout

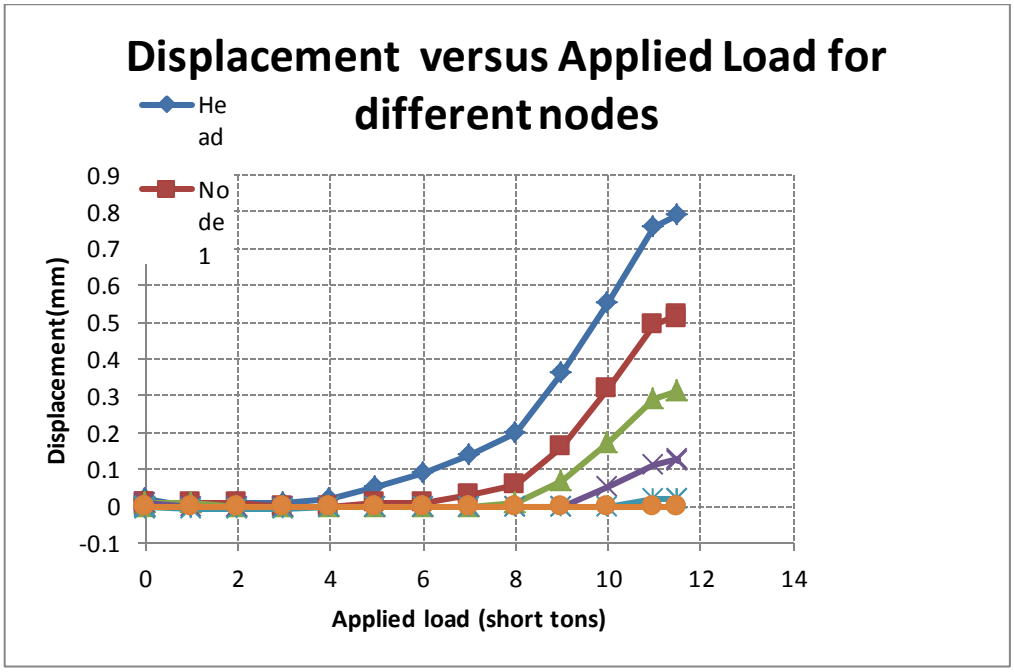
***d*-READER** is a low cost readout unit that provides sensor ID, sensor type, temperature and load data directly in °C and tons. **SensorViewer** provides USB connectivity with laptop or netbook PC.

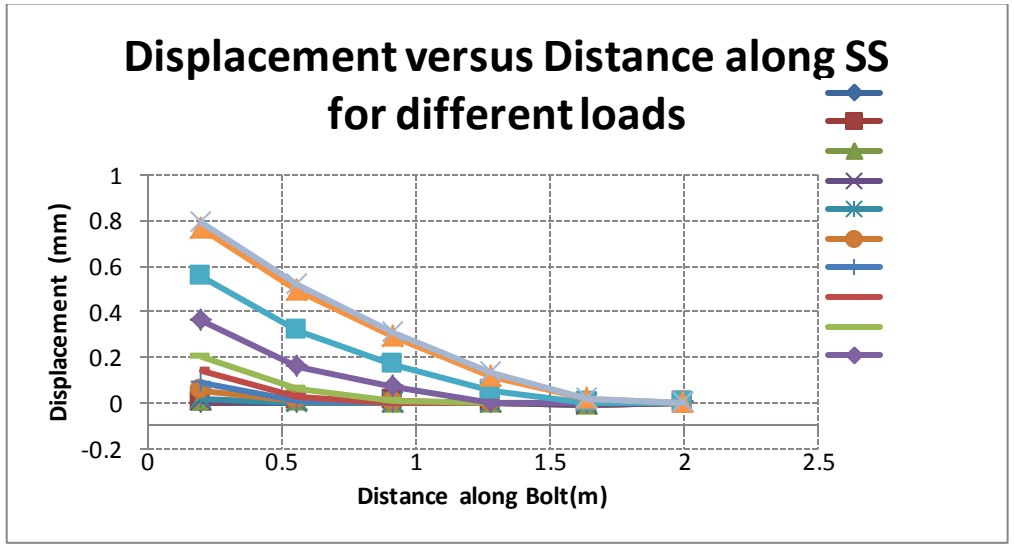
Data Logging

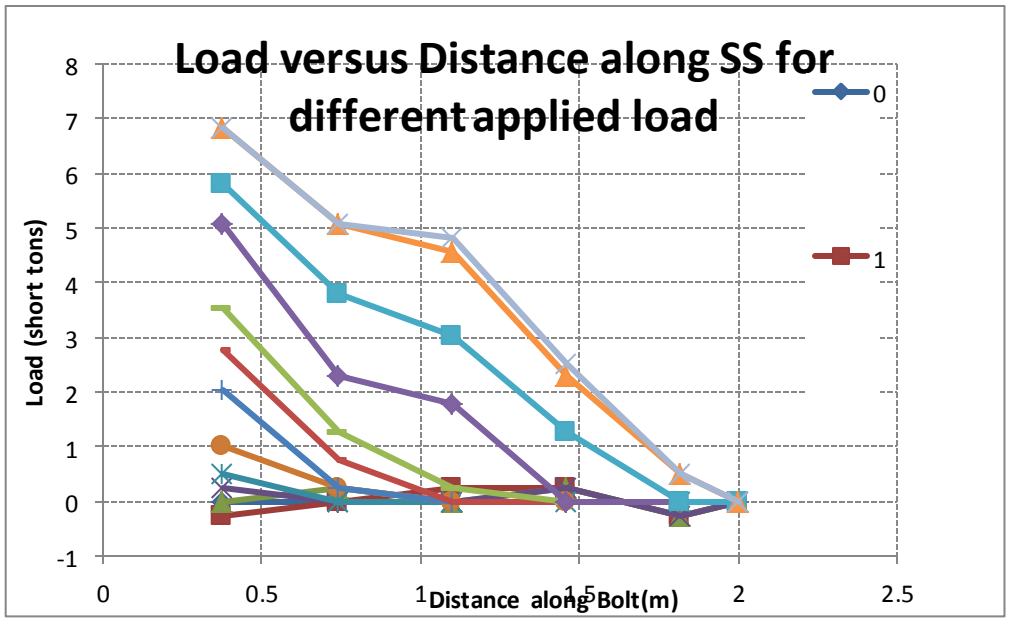
The d-LOGGER (32Mb memory) collects data at programmed frequency. Download to a PC is with a USB download cable (order separately). It requires no configuration.

Automated Data Retrieval

Clusters of sensors can be polled using YieldPoint **dMESH** wireless technology. Each low-cost node can interface several instruments directly to a TCP/IP network.


Displacement versus Applied Load for different nodes
Head
Node 1
Displacement(mm)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
0
2
4
6
8
10
12
14
Applied load (short tons)


Displacement versus Distance along SS for different loads
Displacement (mm)
1
0.8
0.6
0.4
0.2
0
-0.2
0
0.5
1
1.5
2
2.5
Distance along Bolt(m)


Load versus Distance along SS for different applied load
0
1
Load (short tons)
8
7
6
5
4
3
2
1
0
-1
0
0.5
1
1.5
2
2.5
Distance along Bolt(m)