Teaching Your Equipment to Talk and Learn: Custom Sensor Development for IIoT and Machine Learning

The Stress Engineering IoT Applications Development Laboratory™

Your data is the heart and soul of the Industrial Internet of Things (IIoT) and Machine Learning (ML), but virtually no manufacturing systems are ready to leverage this transformative technology. IIoT and ML initiatives contemplate data, data analytics and systems with much greater fidelity than currently available from standard process data feeds. The environment envisioned includes sensors transmitting data from key locations on equipment or process systems, wherever they may be needed, to enable new actionable insights and decision making while providing a foundation to exploit machine learning opportunities. The problem is, there are very few off-the-shelf sensors available that can be conveniently adapted to the hardware to provide these new data streams.

No matter what industry, Stress Engineering likely has experience transforming machine components and mechanical elements into on-line IIoT-capable sensors designed to provide real-time operational data for equipment efficiency and process improvement. Long before computing power evolved to its current state, enabling the reality of IIoT and ML, we developed the sensor and data acquisition capabilities to help clients solve difficult equipment performance and efficiency problems. Stress Engineering IoT Applications Lab™ uses those same skills and capabilities, leading us to the forefront of these exciting new Industry 4.0 technologies!

Case Study
Creating Custom Sensors, New Raw Data Streams & Custom Analytics

A client engaged Stress Engineering to overcome throughput limiting problems on their fleet of retort vessels used to sterilize millions of products annually. Standard data feeds available from the retort itself were unable to shine a light on any equipment-related attributes that could be correlated to the problem. We were asked to conceive of an approach to create custom sensors that would provide new, relevant dynamic data streams that could be analyzed and then provide actionable, predictive insights relevant to early problem detection and root cause problem analysis, as well as ongoing process insights.

Click here to read about our approach.
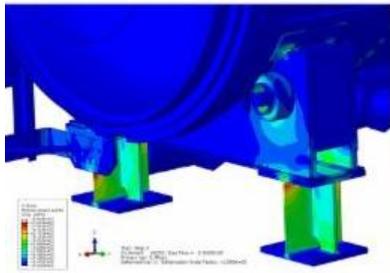
A digital twin of the retort system was used to identify the actual load path through the pedestals into the foundation. Once designed, each pedestal was calibrated in a load frame in our laboratory. The completed sensors were installed on the retort system to collect data in real-time.

Technical Resources

Industrial Internet of Things

Custom Sensor Development for IIoT and Machine Learning

Missed our previous newsletter?
Click here to read about Creating Competitive Advantage with the Industrial Internet of Things.

Stress Engineering Services, Inc. (SES) offers an integrated team of experts in creative design, functional engineering, design for manufacturing, materials, cost analysis, and reliability to deliver the highest level of innovation and technical success in developing products and packaging. SES provides expert engineering consulting services for:

- New Product Development
- Material Science
- Risk Assessment
- Human Factors
- Failure Analysis
- Package Development
- Testing
- Industrial Design

SES has extensive laboratory testing capabilities for evaluating materials, product performance, life assessment, and failure analysis. We have extensive simulation capabilities to predict mechanical, thermal, and fluid flow characteristics of complex problems.

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