The integrity of a well relies on the collective integrity of a large number of components and sub-systems. Regular and accurate pressure testing is a critical industry requirement that helps to ensure the integrity and safety of barriers and wells.

Traditional testing methods utilize equipment that can be cumbersome to install and operate, but crucially may rely on devices such as rotating chart recorders. First patented in the late 19th century, chart recorders have several drawbacks—the recording range is restricted by the fixed diameter of the paper chart, but more importantly, resolution and sensitivity restrictions limit the precision and effective accuracy of displayed results. The need to visually interpret the chart compounds this issue—bringing an element of subjectivity in determining if the test criteria have been fully met. This can result in uncertainty and the risk of undetected failures.

In contrast, Greenlight seamlessly integrates modern technology in a portable platform to provide a much improved alternative to conventional pressure testing systems. Greenlight combines three main elements—an Ex certiﬁed high-precision pressure sensor; a compact Ex certiﬁed communications module; and in-house developed PC-based algorithms and user interface. In designing Greenlight, our engineers focused on four key areas—accuracy, precision, ﬂexibility, and ease of use.

Applications
- Pressure testing of wells, well systems and well components
- Integrity veriﬁcation of pressure bearing components or barriers

Features
- High precision ATEX-approved, Ex certified pressure transducer;
- 20 ksi working pressure; 5 year calibration interval
- Autoclave 9/16 medium pressure connection; HART digital signal
- Ex certiﬁed communications module; USB interface
- Software conﬁgurable pressure test criteria
- Automatic acceptance or rejection of test criteria

Benefits
- Improved integrity management
- Accurate and precise testing; unambiguous results
- Eliminates interpretation and subjectivity
- Easy to conﬁgure, install and operate
- Provides auditable proof of compliance

Regular pressure testing of well barriers is a vital contributor to well integrity and safety. Greenlight employs digital technology in a compact user-friendly platform to consistently approve or reject pressure tests against predetermined test criteria—objectively and accurately.
Accuracy and precision
Given the criticality of confirming the integrity of well components, accuracy and precision are fundamental requirements of any pressure certification system. With Greenlight, accuracy and precision are assured. Firstly, signals from the calibrated pressure sensor are transmitted digitally to the communication module using Highway Addressable Remote Transducer (HART) technology. This ensures signals are transmitted to the monitoring station without error and without interference from noise. Then pressure information is automatically analyzed and compared to predetermined test criteria in the digital domain. And finally the results are displayed with digital precision using detailed graphics. The elimination of visual interpretation removes any subjectivity and provides an accurate, unambiguous test result.

Flexibility
Greenlight’s pressure sensor is Ex certified so pressure testing can be performed on in-situ barriers and in close proximity to wellheads or other Ex-restricted zones. And its 20,000 psi (1,379 bar) working pressure means it can accommodate a wide range of pressure test envelopes. The Ex certified communications module is small and light, and provides the interface between the sensor and PC-based monitoring platform. The sensor connection utilizes the HART digital communications protocol which enables the module to be placed remotely from the sensor without loss of signal integrity, thereby contributing further to ease of installation.

Ease of use
Setting up Greenlight is made easy by its intuitive user interface. The monitoring software can be configured to cater for a variety of acceptance criteria, and will automatically flag a successful or failed test. This means that test criteria can be performed over extended periods without continuous human interaction. As soon as the test begins, the system displays a dashboard consisting of test parameters, a real-time pressure graph, and the status of acceptance criteria. As soon as the test is complete, Greenlight outputs the test results, which can be annotated, and an historical record of previous tests is updated.

Compared to conventional pressure testing systems, the combined advantages of Greenlight provide a step-change improvement to well integrity management procedures.