

battery
testing builds
maintenance
disposal



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1. about us

Source engineering provides full battery maintenance programmes for your organisation. We design, build, test and maintain your battery systems, which will give you complete peace of mind in the event of electrical power failure.

2. why outsource your battery maintenance programme?

If you are responsible for power provision at your organisation then there are a number of issues you must address. How can you maximise the life cycle of your batteries without threatening serviceability? The problem for facilities managers is that batteries die. The question is not will these batteries fail, but when. Replacing batteries on an emergency-call out basis, because of lack of life expectancy information, coupled with lack of sufficient replacement systems is an extremely costly way to manage your power provision.

More and more organisations that rely on standby batteries for back up power realise that proactive and consistent testing of their systems is an essential cost effective power assurance approach. This requires ongoing maintenance including detailed testing down to individual battery cell level.

Having an in-company employee technician carry out unit testing and then simply store test data, increases your manpower costs and does little for forecasting anticipated failure or assisting in predicting replacement needs. Implementing a standardised testing and maintenance programme including tracking batteries from life cycle initiation through its disposal phase enables your organisation to maximise life cycle, decrease non-scheduled outages and improve Return On Investment.

The overall benefits of outsourcing your battery maintenance programme, is a reduction in the guesswork and an ability for companies to reduce their battery replacement costs by scheduled replacement of necessary batteries only, whilst ensuring reliable power provision.

By outsourcing this crucial function to **source engineering** you can be sure of complete peace of mind.

3. how we can help

identify your needs

First we will conduct an assessment of your battery power needs. What do you have now and what are your future needs? This is carried out by our team of qualified engineers who are specialists in the field of battery systems.

design your solution

Each of our clients has individual needs, which means an individual solution. We will work closely with your facilities team to design the installation, battery requirements and your maintenance plan.

ongoing maintenance and support

Implementation of your battery maintenance programme means ongoing testing, replacement and safe disposal. We also produce comprehensive, user-friendly reports to minimise your administration. You will also have a dedicated project manager, who will keep you constantly updated and act as your main point of contact.

4. our services

We provide the following services to meet your battery requirements:

battery builds

In order to provide the most cost effective and safe environment for your battery system we design and erect stands for new builds, and supply and install necessary D.C cabling.

test and maintenance

Battery testing and monitoring has become a critical element of a complete power check up. Traditionally, that has meant discharge or load testing. During the last ten years new technology has emerged, providing a more accurate, less cumbersome alternative. At the centre of these developments is conductance testing. At **source engineering** we utilise conductance testing and monitoring technology, incorporating data logging, portable printing for on-site, instant reports, and user-friendly documentation.



The benefits of conductance testing versus load testing are:

- **Efficient:** if a load test fails autonomy, each battery would be subject to further individual tests to highlight point of failure, which is time consuming and costly.
- **On-line testing:** will not alter or cycle the battery during testing which causes premature ageing.
- **Accurate:** proven so accurate that many global telecommunications companies have discontinued load testing
- **Safe:** testers and monitors utilise conductance technology, which eliminates the hazards posed by heat and possibly sparks associated with load and impedance testing.
- **Repeatable:** cells can be tested at any time without waiting for a recharge. This can be done to verify test results.
- **Simple:** because our conductance testers are menu driven, it requires only

pin-point connection to two battery posts, which provides absolute measurements without any further mathematical calculations.

In short, conductance measurements can prevent catastrophic system failures. By testing an entire string of batteries in a stand by power system, gross deviations among batteries are easily spotted. Thus, changes in particular cells can be identified prior to failure, eliminating the need for service discharge or removing equipment from service. Corrective actions can be taken under non-emergency conditions and battery life can be extended, significantly reducing your costs.

battery replacement

There is a wide assortment of batteries in the field, requiring inventory and replacement. We have the knowledge, expertise and industry links to supply you with 'like for like' batteries or replacements of similar capacity. Saving you time having to source this yourself.

safe disposal

The last thing you need is a call from the Environment and Heritage Service informing you that you are in breach of the Special Waste Regulations (NI 1998). **source engineering** has a license to dispose of your batteries safely and will provide you with the necessary legal paperwork to safeguard your organisation from possible breach of the law. A cost effective method of managing the entire disposal process is to outsource this to us.

5. your systems

UPS



Your UPS system is powered by batteries in the event of a power failure. Without reliable, effective batteries the UPS will fail to support your critical loads. Some of your UPS systems may include maintenance contracts with the UPS supplier. However it is still imperative that you maintain the batteries on an ongoing regular basis.

emergency lighting



In your organisation you may have battery systems to support your emergency lighting. Some lighting-systems will have self-contained batteries. However for larger systems you will have separate battery systems and it is imperative that the battery health is maintained.

emergency stand-by generators



Your generator is one of your most important pieces of equipment. The generator needs to be 100% reliable and that requires batteries that are in top condition, at all times. Your generator will be useless without reliable effective batteries. It is important to regularly check the batteries to ensure continued peace of mind in the event of a mains power failure.

sprinkler pumps



Sprinkler systems rely on a dual pump arrangement using both electric motor and diesel engine. In the event of electric power failure your diesel engine will drive your sprinkler pump system, which is started by your batteries. It is therefore necessary to ensure you have safe, reliable and effective batteries in place at all times to maintain this system.

telecommunications



Telecommunications rely on batteries for continual supply and require ongoing maintenance and testing as they are crucial to the system.

6. faqs

why source engineering?

We are a new company with a wealth of experience and knowledge in battery and UPS engineering. We provide a full service, from battery builds to safe disposal, saving you time to run your business. We started the company to meet the demand from our existing business as UPS engineers. Our engineers have worked as service partners to some of the leading, blue chip companies in Ireland. They have also worked in organisations where they have been responsible for back up power and understand the enormity of not having reliable back up systems and of the difficulties in finding the right suppliers to replace, test, install and maintain industrial batteries.

We are an honest and straightforward company with customer focused standards and procedures. Our solutions will provide your organisation with an inexpensive, safe and intelligent approach to power provision. We make it as easy as possible to do business with us and we work hard at building sustainable partnerships with our clients.

what type of batteries do we test?

There are two main types of SLA (Stationery Lead Acid) industrial batteries that our clients use:

Flooded (wet) cells

Flooded cells are traditionally tested by hydrometer to indicate the state of charge of a battery by sampling the electrolyte. Now conductive testing is more recognised but complimented by digital SG meter (which electronically compensates temperature) to determine true state of health of battery.

VRLA (Valve Regulated Lead Acid)

VRLA' s are maintenance free therefore only Ohmic testing is possible.

why conductance testing?

In the simplest technical terms, Ohmic technology is based on Ohm' s law, which expresses the relationship between volts, amperes and ohms in an electrical circuit. Ohmic technology attempts to use voltage and current to determine the resistive characteristic of a battery. Higher resistance equates to a reduced ability to produce current. This characteristic is translated into a measurement of resistance or impedance (Ohms) in some Ohmic technologies; more recent technology uses a converse measurement called conductance.

what is conductance technology?

Conductance is a measurement of a batteries ability to produce current or of its electrical efficiency. It is calculated in a value called Siemens.

Evidence of a battery' s state of health can be identified when comparing conductance measurement from similar cells in a battery system. The higher the conductance value (or lower internal resistance), the better the expected performance potential from the cell.

To measure a battery' s conductance, a signal is sent through the battery and a portion of the AC current response is calculated. Conductance is the equivalent measurement of the plate surface available in the battery for chemical energy exchange, which determines how much power the battery can supply. As a battery ages, the plate surface can sulphate, shed active material and change chemically, adversely affecting the battery' s ability to perform. This normal aging process will cause conductance to decrease gradually as the cell service life is consumed. For power provision, this means that conductance can be used to detect cell defects, shorts and open circuits which reduce the ability of the battery to deliver current.

Conductance test measurements become the equivalent of a battery' s true state of health diagnosis.

why use conductance to identify failures?

Failure of VRLA batteries is accompanied by a decrease in the cell' s conductance Post seal, jar-cover leakage, positive grid corrosion and valve malfunction result in cell dry-out, thereby decreasing capacity and conductance. The loss of grid contact, loss of separator compression, electrolyte stratification, grid corrosion and loss of contact in the top lead work all result in loss of capacity as well as conductance. Thus when applied to SLA batteries, battery conductance monitoring will provide us with a clear indication of the batteries state of health.

what is battery health?

Another benefit of Ohmic monitoring and testing is the ability to predict end of life for battery cells and strings. Rather than just identifying ' bad' cells, Ohmic testing can measure battery health over time. By regularly measuring conductance from time of installation, changes in measured conductance and the corresponding expected loss of capacity can be observed and trends identified.

what is best practice?

Current IEEE battery maintenance standards advise Ohmic testing of all batteries at least once a quarter. Additional independent research carried out by the Electric Power Research Institute (EPRI) states that ***'utilities can implement more cost-effective battery test methods and realise a more stationery battery installation using Ohmic measurements'***.

The idea is based on understanding the capacity, or conductance for a new healthy battery. By using the measured conductance value of an ' optimised' cell, technician can develop a replacement strategy as conductance degrades over time.

7. contact us

Tom Hall
Source engineering

2 Bellahill Road
Ballycarry
Co. Antrim
BT38 9LF
T: 02893 373000
M: 07703 519096
E: info@source-eng.com
www.source-eng.com

