What is a battery maintenance system?

A battery maintenance system is a program designed to properly service and track your fleet of batteries so you can achieve longer battery life, reduce battery related costs, and most importantly ensure your equipment will perform as expected.

What equipment will I need?

You may have hundreds or even thousands of batteries in use every day. Cadex offers a number of product packages to get your new battery maintenance system up and running with ease. Each system is constructed according to your own requirements but will typically consist of: a **battery analyzer**, **custom adapters** for your battery models, **computer software**, **label printer**, **barcode scanner**, and a **battery charger**.

Battery Analyzer

First you will need to decide on the battery analyzer that is best suited for you. A battery analyzer performs a variety of tests on a battery which will enable you to tell whether the battery meets performance expectations or needs to be rejuvenated or replaced.

Cadex offers three different models, the **C7200-C** 2-bay analyzer, the **C7000-C** 4-bay analyzer, and the higher power **C7400ER-C** 4-bay analyzer. Special package bundles are listed on page 4.

Custom Adapters

Cadex SnapLock™ Battery Adapters are placed inside the analyzer bays allowing you to insert and interface to all of your various battery types. It is a good idea to write down the battery models you require adapters for. Cadex offers support for thousands of popular batteries along with 3 types of "Universal Adapters" which will connect to almost any type of battery when a customer adapter is not available.
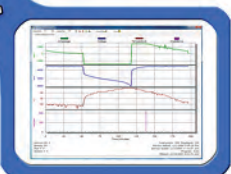
Computer Software

Cadex offers **BatteryShop™** PC software which provides a simple, yet powerful interface to control and monitor our series of battery analyzers. The software can generate a variety of reports and records the battery test data so you can track when batteries should be serviced through labeling.

Label Printer

A label printer is used by our BatteryShop™ PC software to generate labels which are placed on batteries identifying their last service date, test results, and when they should be serviced next. These labels allow you to easily identify the status of any battery in your inventory.

How does the system work?

2. Prepare batteries for their intial testing

Every battery has a limited life span and will only provide a specific number of cycles before needing to be retired or reconditioned. Nickel-based batteries typically last for 500-1,000 cycles whereas Lithium-based batteries typically last for 300-500 cycles. Depending on usage, the average battery should last approximately 18 months.

Incoming new batteries should be placed first into the analyzer:

- **Nickel-based batteries** should be run through the **"PRIME"** program to prepare them for use. Sometimes running this test multiple times is necessary to fully "form" the battery

- **Lithium-ion batteries** should be run through the **"AUTO"** program to exercise them to ensure they meet minimum performance standards. It is not uncommon for some new batteries to not meet published specifications

Existing batteries from your fleet should also be tested to enter them into the system and determine their health:
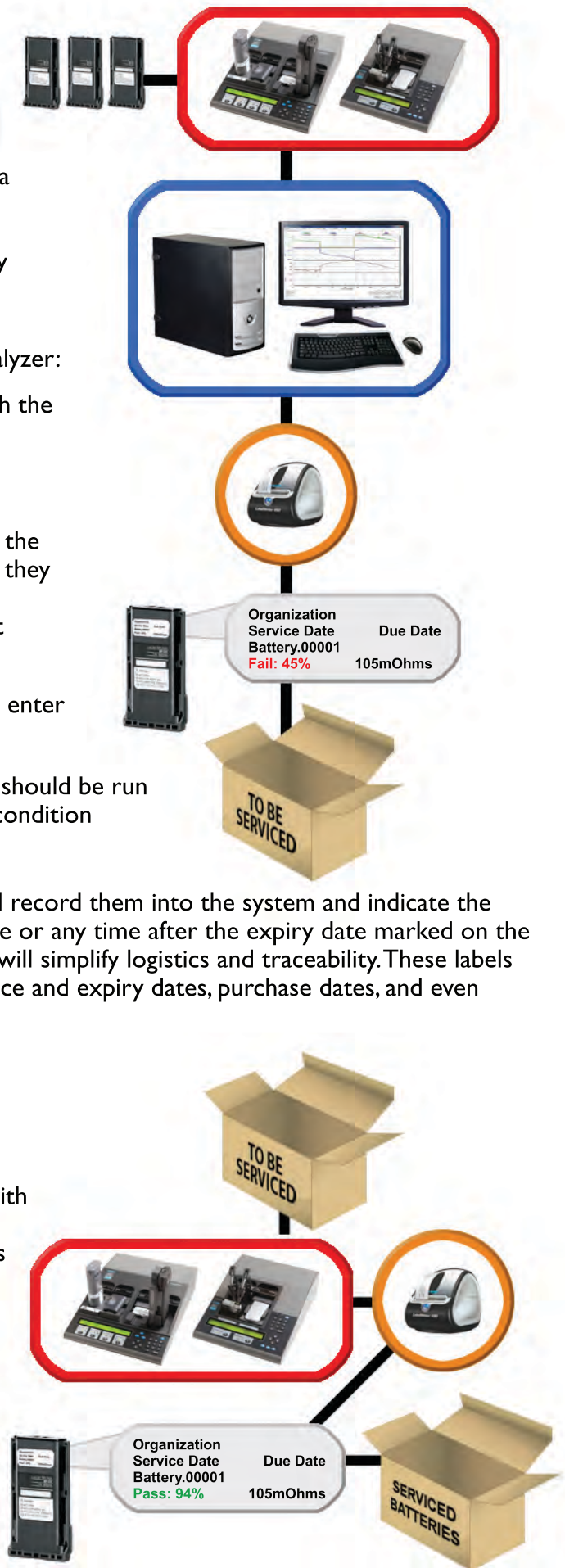
- **Nickel-based** and **Lithium-based batteries** should be run through the **"AUTO"** program to properly recondition them to ensure maximum performance

Using BatteryShop, print labels for each battery which will record them into the system and indicate the next service date (usually 60-90 days after the service date or any time after the expiry date marked on the label. Labeling each battery with a permanent ID number will simplify logistics and traceability. These labels can contain information such as capacity percentage, service and expiry dates, purchase dates, and even additional vendor information.

3. Identify the batteries that need to be further serviced or retired

The typical pass/fail capacity of a battery is set at 80% but is dependent on the level of use and the risk associated with equipment failure. (eg. portable medical equipment or emergency service radios may have different requirements than other applications) Any batteries that test below the required performance level should be set aside and marked "To Be Serviced". These batteries will need to be reconditioned and restored (See Step 2). Using BatteryShop, batteries that **pass** should be labeled showing the capacity and next service date. Batteries that **fail** should be retired and replaced with new ones.

Once your battery maintenance system is set up, use BatteryShop to simply scan the battery label with your portable scanner and the historical battery information will be loaded and configure the analyzer for proper service of that battery.

Organization
Service Date   Due Date
Battery.00001
Fail: 45%   105mOhms

TO BE SERVICED

Organization
Service Date   Due Date
Battery.00001
Pass: 94%   105mOhms

SERVICED BATTERIES

E

Barcode Scanner

A barcode scanner allows you to scan battery labels to retrieve key information which is imported into our BatteryShop™ PC software. This information reports the historical battery service data and will configure the analyzer with the correct test and maintenance settings.

F

Battery Charger

Our battery chargers offer a convenient way to charge and condition multiple batteries of the same or different type simultaneously. We offer multi-bay models which offer custom adapters to support various different battery types.

Which type of system should I use?

You need to determine what type of system will work best for you. "Will one location manage the entire company fleet of batteries?" or "Will each location be responsible for their own fleet of batteries?"

Depending on your answer, you may choose to setup a **centralized** or **decentralized** system. A decentralized system will need multiple battery maintenance stations for each location whereas a centralized system needs only one station which will receive batteries requiring service and ship out batteries that have been verified as "good".

In a **centralized** system there is a specified person responsible to ensure batteries are tested and distribute them to users. This type of system is ideal for organizations that have a large fleet of batteries such as hospitals warehouses, and police/fire communications centers. In a **decentralized** system, multiple users may be responsible for managing battery inventories in multiple loations. This type of system is common with police and fire stations, and mobile military units.

How does the system work?

1. Setting up the equipment

Locate an office or warehouse area which has a computer and plenty of free desk space. Install the BatteryShop software and place the analyzer near the computer, connect the computer to the analyzer using the supplied cable. Finally, place your charger(s) on the desk and connect their power cables.

> **Tip:** Within a warehouse environment, we recommend you strategically place your charger stations so that employees have easy and convenient access to exchange their batteries if needed.

How does the system work?

Figure 1. Battery Charging System

4. Replace retired batteries with new ones

Defective batteries should be removed from the inventory and replaced with new ones or serviced batteries. This will ensure equipment availability and that the batteries can fulfill their assigned duty (i.e. last an entire work shift).

5. Perform regular maintenance according to schedule

Now, your entire battery fleet has been recorded and identified. If an employee believes there is a problem with a specific battery, check the date on label and see if it needs to be serviced. If so, place the battery in the "To Be Serviced" box and provide the employee with a verified battery from your inventory. Routine maintenance for each battery will likely be needed every 30-60 days to ensure the health and reliability of your inventory.

Battery | Charger

Organization
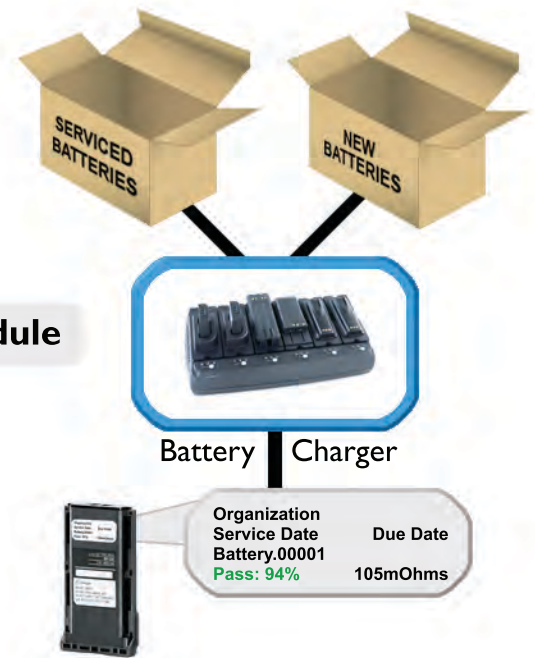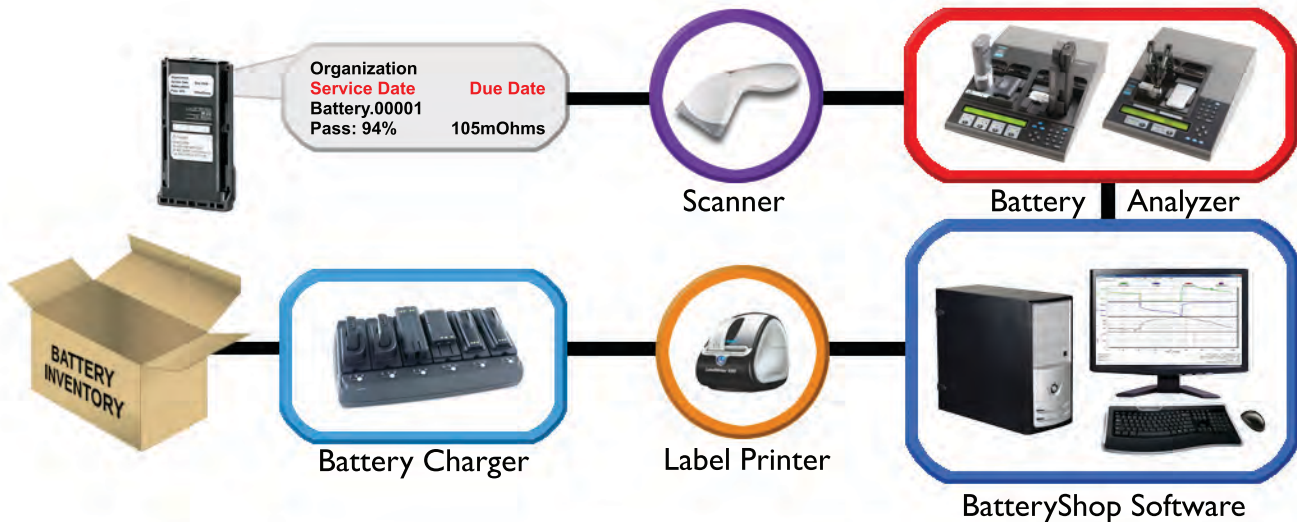Service Date   Due Date
Battery.00001
Pass: 94%   105mOhms

Figure 2. Battery Maintenance System

Organization
Service Date   Due Date
Battery.00001
Pass: 94%   105mOhms

Scanner   Battery | Analyzer

Battery Charger   Label Printer   BatteryShop Software

Public Safety Bundles

	Package 1 (20 - 75 Radios)	Package 2 (75 - 200 Radios)	Package 3 (200 - 500 Radios)
Battery Analzyer	C7200-C 2-bay	C7400-C 4-bay	2 x C7400ER-C 4-bay
Adapters	2 of your choice	4 of your choice	8 of your choice
Universal Adapter	●	●	●
Portable Scanner		●	●
Label Printer		●	●
BatteryShop Software		●	●

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