

Introduction

This training course deals with the configuration of replacement batteries to new technology vehicles.

It will provide you with information on battery management systems and the GS and Yuasa YU-FIT battery configuration tool.

The course consists of the following modules:

- Battery management systems
- Battery configuration
- YU-FIT configuration tool
- YU-FIT operation walkthrough

Each module has its own training video, down-loadable resources and some will be followed by a short multiple-choice test.

Once you have completed all modules there will be a final test to check your understanding and knowledge.

Once passed you will earn a certificate for the completion of this course.

Module 1 - Battery Management Systems

On a standard ignition vehicle the alternator charges the battery. Once the battery is fully charged the alternator handles all the vehicle's electrical requirements providing the engine speed is high enough.

New technology vehicles equipped with emission reduction systems such as start-stop usually feature a battery management system or BMS.

The BMS monitors battery conditions and adapts the charging system output to ensure best possible battery performance.

This ensures optimum operation of the start-stop system and on-board comfort and convenience functions.

The BMS uses a battery monitoring sensor and control module to precisely measure battery charging current and voltage as well as the temperature around it.

It processes this data and adapts the charging system output to suit the battery's operating state.

The sensor and control module are usually combined within the negative terminal clamp.

Vehicles with a BMS have intelligent alternators that communicate with the control module.

Based on data received from the sensor and control module the BMS issues an output request to the alternator. The alternator then adapts its output to this requested voltage.

It then sends a feedback signal back to the control module indicating the actual charge voltage. This feature is called the request and feedback principle.

This adaption of charge output to meet vehicle and battery operating conditions is continuous.

The presence of a BMS and intelligent alternator prevents traditional charging system fault diagnosis.

Module 2 - Battery Configuration

A new replacement battery has very different charging requirements when compared to one that has reached the end of its service life.

The battery management system or BMS must therefore be reset using a configuration tool or diagnostic platform to prevent the use of an incorrect charging strategy.

Configuration of a new battery to the BMS is therefore required as part of the replacement process.

Failure to configure a replacement battery will result in:

- Loss of start-stop functionality
- Increased emissions
- Higher fuel consumption
- Power management activation and the shut-down of non-critical vehicle systems

Premature battery failure will also be caused by incorrect charging. Which is not covered by GS Yuasa's warranty.

The configuration process instructs the BMS that a new battery has been fitted.

The BMS then adapts the charging system output to meet the operating characteristics of the new battery.

Module 3 - GS Yuasa Yu-Fit Configuration Tool

Configuration of the BMS can only be carried out using a suitable diagnostic platform or configuration tool.

To reduce battery replacement costs and make this process as quick and easy as possible both GS and Yuasa offer a simple to use hand-held configuration tool called the YU-FIT.

With a robust and simple operation, the YU-FIT is one of the most user friendly diagnostic tools on the market.

Although many workshops may already own capable diagnostic tools it is not ideal to have these tied up on battery replacement.

The YU-FIT is powered and communicates via a physical connection to the vehicle's 16 pin EOBD plug.

It has a clear display and six button multi-function key pad.

It also features a mini USB port connection for registration, software updates and the latest vehicle parc data.

Once registered, YU-FIT users can purchase additional applications such as electronic park brake reset, diesel particulate filter regeneration and service light reset.

It is supplied with a case, user guide and USB connection cable.

Module 4 - Yu-Fit Operation Walk Through

Battery configuration is carried out by following a simple guided diagnostic process.

Once connected to the vehicle's EOBD port a main menu screen is displayed.

Navigate to the diagnostics icon and press OK.

Select the battery management icon.

Navigate to vehicle selection and confirm.

Now select the vehicle manufacturer and. wait for the vehicle selection to be accepted, switch on the ignition when prompted and press OK.

Select the replace battery function and confirm with OK.

Choose the validate battery option, press OK and wait for the function to initialise.

You will now be asked if you have fitted a replacement battery of the correct technology and performance.

As we have learned it is critical that an AGM must be replaced with an AGM and the same applies to EFB.

If you have done this select OK.

Wait for any fault codes to be cleared.

The YU-FIT will then ask the battery manufacturer, which must be correctly selected before proceeding.

Await confirmation that the process has been successfully concluded before turning off the ignition and disconnecting the YU-FIT from the vehicle.