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Comparing OE with Non-OE Specification Products

Introduction

This training course deals with the issue of non Original Equipment specification products in the battery market.

It will provide you with information on battery specification legislation, battery labelling and evidence to support OE specification fitment.

The course consists of the following modules:

End user perceptions & the truth
Testing legislation, labelling & equipment
Testing standards
GS Yuasa competitor benchmarking
Benchmarking results summary

Each module has its own training video, downloadable 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.

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Module 1 - End User Perception & the Truth

Amongst end users, misconceptions that all batteries are the same regardless of price or manufacturer are common.

Many believe there is no benefit to paying a higher price for a battery.

They may also think that labelling accurately indicates specification, battery weight has no effect on performance and private brands are as good as OE manufacturers products.

In truth, none of these statements are correct.

It is not unusual for some battery brands to over specify label ratings, reduce lead content and change acid strength to reduce costs, maintain short term performance and increase the appeal of their products.

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Module 2 - Testing Legislation, Labelling & Equipment

EU battery labelling legislation is designed to combat the misrepresentation of battery performance by dishonest importers or manufacturers.

It dictates that battery capacity labels must accurately reflect actual performance.

This means that ALL batteries must achieve at least 100% of the stated label rating for cold cranking amps and 95% ampere hour capacity performance.

Recently introduced legislation also stipulates labels must display the following performance specification markings:

Water loss is the battery's ability to retain water. The better a battery performs, the less water it will lose in service.

Rated W1 to W5 traditional lead-acid would be W1 and a premium next generation battery W5

Charge Retention is the battery's ability to retain charge when not in use.

Rated C1 or C2 where
C1 is a traditional lead-acid and C2 a modern calcium battery.

Vibration level is the battery's physical ability to resist the potentially damaging effects of vibration.

Rated V1 to V4 where V1 is for a traditional car and light van and V4 extreme heavy-duty plant and commercial vehicles.

Endurance rating applies to conventional types only and is the battery's ability to withstand repeated charge and discharge cycles to 50% depth of discharge without failure.

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Rated E1 to E4 where E1 is for conventional car and light van and E4 extreme heavy-duty plant and commercial vehicles.

Micro cycle rating applies to EFB and AGM types only and is the battery's ability to provide power to restart the engine after frequent stop phases, recover state of charge afterwards and cope with the aging effects caused by rapid discharge and recharge cycles.

Rated M1 to M3 where M1 is for basic start stop requirements and M3 high end vehicles with extensive emission reduction technology.

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Module 3 - Testing Standards

Battery capacity checks are conducted using BS EN 50342 testing standards.

Testing is carried out under laboratory condi-tions using specialised testing equipment.
Cold cranking amperage is a measurement of the maximum current a fully charged battery can deliver at -18°C.

It is used to determine a battery's ability to sup-ply high cranking current to start the vehicle's engine and maintain sufficient voltage to power the ignition requirements under severe cold starting conditions.

To test this, the battery is placed in a forced air circulation cooling chamber for 24 hours to achieve a temperature of -18°C in the battery's core.

A specified discharge current indicated by the battery's specification label is then applied to the battery for the various stages of the test.
Ampere hour refers to the battery's storage ca-pacity.

At 25°C, the battery must achieve greater than
20 hours of discharge time at a given load, down to a cut-off voltage of 10.5V.

For example, a 60Ah battery will deliver a current of 3A for 20 hours.

To test this, the battery is placed in a water bath and is maintained at a temperature of 25°C for a minimum soak time of four hours.
A specified discharge current indicated by the battery manufacturers specification label is then applied.

The test result is then calculated from the time taken to reach 10.50 volts.

These tests can be carried out a maximum of three times to establish the battery can achieve the required standard.

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Module 4 - GS Yuasa Competitor Benchmarking

To benchmark our products, GS Yuasa pur-chased a wide range of the most popular references from various non-OE manufacturers.

These included 063, 075, 027, 096 and 100 types.

The batteries were then fully tested to EN 50342 standards under laboratory conditions at the GS Yuasa test laboratory in Ebbw Vale UK.

A visual inspection of the non-OE brand batteries revealed some serious design and manufacturing concerns.

Some of the batteries did not feature a flame arrestor even though the lid has provision for fitment.

This poses a serious risk of acid leakage during battery installation.

There is also the potential for explosion as there is no protection from external ignition sources entering the battery.

Comparative GS Yuasa references feature a flame arrestor as standard.
Battery weight is an indicator of quality.

Poor quality, low cost batteries will contain less plates and therefore will be considerably lighter.

The non-OE batteries were weighed and their average weight compared to that of the equiva-lent GS Yuasa product.

The results indicated that the average weight of each non-OE reference was always less than the equivalent GS Yuasa product.

The number of plates in each battery cell dictates its performance.

Using more plates increases cold cranking and amp hour specification and prolongs service life.

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The plates in the non-OE batteries were counted and the number compared to that of the equivalent GS Yuasa product.

The results indicated that for all references GS Yuasa products contained more plates per cell.

GS Yuasa also performed BS EN 50342 cold cranking performance tests on each battery.

The results showed that for all references GS Yuasa products exceeded the label rating in all cases.

Worryingly most of the non-OE products tested fell short of the claimed label rating. BS EN 50342 ampere hour performance tests were also carried out.

Once again, the non-OE products fell short of the claimed rating.

Whereas GS Yuasa products exceeded the label rating in all cases.

To see the results of these tests in more detail download the resource sheet for this module.

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Module 5 - Benchmarking Results Summary

In summary, we have determined the following about most of the non-OE products tested:

Standard OE safety features have not been fitted.

Less plates have been used in construction resulting in lower weights.

Labelled cold cranking and ampere hour capacity ratings have been exaggerated.

Most of the products tested at best will not deliver the performance they claim and at worst could pose a safety risk in service.

Sellers of these batteries are exposed to the risk of Trading Standards investigation or customer legal action under EU regulations for the miss selling of products.