Guidance for the storage and handling of biofuels at filling stations

energy institute

GUIDANCE FOR THE STORAGE AND HANDLING OF BIOFUELS AT FILLING STATIONS

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This publication has been produced as a result of work carried out within the Technical Team of the EI, funded by the EI's Technical Partners. The EI's Technical Work Programme provides industry with cost-effective, value-adding knowledge on key current and future issues affecting those operating in the energy sector, both in the UK and internationally.

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CONTENTS

FOREWORD

This publication updates the *Guidance for the storage and dispensing of E5 petrol and B5 diesel at filling stations* published in April 2008. The update reflects experience in the UK following the initial introduction of biofuels to the market and changes to EN 228 *Automotive fuels – Unleaded petrol – Requirements and test methods*, and EN 590 *Automotive fuels – Diesel – Requirements and test methods*, with regard to the permitted composition of petrol and diesel fuels respectively allowing up to 10 % ethanol in petrol and 7 % fatty acid methylester (FAME) in diesel.

This publication provides guidance for filling station operators on the introduction of E5, E10 and B7 to meet requirements of EN 228 and EN 590 respectively. Although it is the expectation that the biofuels will be stored and dispensed using existing equipment, there are certain items that require attention particularly during the initial introduction of these blends or changing from one blend to another; this publication focuses on these issues.

Whilst written to be applicable specifically in the UK, the principles may also be applicable in other countries implementing E5, E10 and B7 blends, providing national and local statutory requirements are complied with. Where the requirements differ, the more stringent should be adopted. A similar legislative and regulatory framework generally applies elsewhere in the European Communities.

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The EI wishes to record its appreciation of the work carried out by the author and also its gratitude for the valuable contributions made by the SSP members during the course of this project.

1 INTRODUCTION

1.1 INTRODUCTION

This publication provides guidance on practical steps that filling station operators can follow when first implementing, or when introducing changes to, petrol and diesel fuels with a biofuel content. The actions identified in this publication are aimed at minimising the risk of adverse impact on existing filling station equipment/systems, operations and the environment resulting from the introduction of biofuels.

The term biofuel used throughout this publication refers to petrol blended with ethanol and diesel blended with fatty acid methylester (FAME). Biofuels are designated as:

– E*N* where *N* is the upper allowable percentage of ethanol in a petrol fuel, and
– B*N* where *N* is the upper allowable percentage of FAME in a diesel fuel.

Experience following the initial introduction of biofuels in the UK in 2005 has shown that there are certain matters that require special attention to prevent problems resulting from contamination by water, microorganisms or sediment in the supply chain. Practical problems of material incompatibility in the tank, pipework and dispenser infrastructure of filling stations are also addressed.

1.2 SCOPE

Unless specifically stated otherwise, this guidance applies to storage and dispensing equipment at filling stations, which in normal operation will be exposed to E5, E10, and B7. Elements may be applicable for fuels up to E20 or B10 subject to review with specific equipment suppliers. This guidance is not applicable for filling stations in receipt of higher blend ethanol fuels greater than E20 or to FAME blended diesel fuels beyond B10. An audit checklist is provided in Annex A to enable site operators to take steps before and after the introduction of biofuels that should reduce the risk of problems occurring.

This publication is complimentary to that provided in APEA/EI *Design, construction, modification, maintenance and decommissioning of filling stations* (known as the Blue book) and DEFRA *Groundwater protection code of practice: Prevent groundwater pollution from underground storage tanks* relating to the storage and dispensing of fuels specified in EN 228 and EN 590.