MALAYSIAN STANDARD

MS 2776-2:2025

Light electric vehicle battery swapping - Part 2: Safety requirements

ICS: 43.140

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Committee representation

The National Standards Committee on Transport (NSC 12) under whose authority this Malaysian Standard was developed, comprises representatives from the following organisations:

Agensi Pengangkutan Awam Darat
Department of Environment
Department of Standards Malaysia (Secretariat)
Jabatan Laut Malaysia
Jabatan Pengangkutan Jalan Malaysia
Malaysia Automotive, Robotics and IoT Institute
Malaysian Automotive Association
Malaysian Automotive Component Parts Manufacturers Association
Malaysian Institute of Road Safety Research
Malaysian Investment Development Authority
Ministry of Domestic Trade and Cost of Living
Ministry of Investment, Trade and Industry
Ministry of Transport
Motorcycle and Scooter Assemblers and Distributors Association of Malaysia
Perodua Manufacturing Sdn Bhd
Perusahaan Otomobil Nasional Sdn Bhd
Pertubuhan Keselamatan Sosial
Polis Diraja Malaysia
Puspakom Sdn Bhd
SIRIM QAS International Sdn Bhd
The Chartered Institute of Logistics and Transport
Universiti Putra Malaysia
Universiti Teknologi Malaysia

The Technical Committee on Motorcycles and Mopeds (NSC 12/TC 8) which supervised the development of this Malaysian Standard consists of representatives from the following organisations:

Department of Environment
Department of Standards Malaysia (Secretariat)
Jabatan Pengangkutan Jalan Malaysia
Malaysia Automotive, Robotics and IoT Institute
Malaysia Motorcycle and Scooter Dealers Association
Malaysian Green Technology and Climate Change Corporation
Malaysian Institute of Road Safety Research
Ministry of Domestic Trade and Cost of Living
Motorcycle and Scooter Assemblers and Distributor Association of Malaysia
Motosikal dan Enjin Nasional Sdn Bhd
Polis Diraja Malaysia
PUSPAKOM Sdn Bhd
SIRIM QAS International Sdn Bhd

Co-opted members:

Armstrong Auto Parts Sdn Bhd
Applus+ IDIADA
RK South Asia Sdn Bhd
TUV Rheinland Malaysia Sdn Bhd

Committee representation *(continued)*

The Working Group on Electric Battery Swapping (NSC 12/TC 8/WG 6) which developed this Malaysian Standard consists of representatives from the following organisations:

Blueshark Ecosystem Sdn Bhd
Department of Environment
Department of Standards Malaysia (Secretariat)
Electric Vehicle Association of Malaysia
Energy Commission
Fire and Rescue Department of Malaysia
Jabatan Pengangkutan Jalan Malaysia
Malaysia Automotive, Robotics and IoT Institute
Malaysian Communications and Multimedia Commission
Malaysian Green Technology and Climate Change Corporation
Malaysian Institute of Road Safety Research
Motorcycle and Scooter Assemblers and Distributors Association of Malaysia
Motosikal dan Enjin Nasional Sdn Bhd
NanoMalaysia Berhad
National Nanotechnology Centre, Ministry of Science, Technology and Innovation
Oyika Green Technologies
SIRIM QAS International Sdn Bhd
Universiti Kuala Lumpur
Universiti Teknologi Malaysia
Universiti Tun Hussein Onn Malaysia

Foreword

This Malaysian Standard was developed by the Working Group on Electric Battery Swapping (NSC 12/TC 8/WG 6) under authority of the National Standards Committee on Transport (NSC 12).

MS 2776 consists of the following parts, under the general title *Light electric vehicle battery swapping*:

Part 1: General and guidelines

Part 2: Safety requirements

Part 3: Masses and dimensions

Compliance with a Malaysian Standard does not by itself confer immunity from legal obligations.

Introduction

The purpose of the battery swapping system (BSSys) is to provide energy, partly or in total, to electric vehicles (EVs) through the replacement of their swappable battery system (SBS). EVs typically takes a relatively long time to charge, while the battery swapping process takes only a few minutes to complete.

As there is a possibility to charge the batteries after their removal from the vehicle in various ways, the impact of this process on the critical infrastructure of the electrical grid is minimised.

Battery swapping station (BSS) mainly include one or more of the following functions:

a) storage of EVs SBS;

b) charging and cooling of EVs SBS;

c) testing, maintenance, and safety management of SBS.

