

ISO 23828:2022-06 (E)

Fuel cell road vehicles - Energy consumption measurement - Vehicles fuelled with compressed hydrogen

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Symbols and abbreviated terms	3
5	Hydrogen measurement accuracy	4
6	Hydrogen consumption measurement	4
6.1	General	4
6.2	Pressure method	4
6.3	Gravimetric method	4
6.4	Flow method	5
7	Fuel consumption test	5
7.1	Test conditions	5
7.1.1	General	5
7.1.2	Ambient temperature	5
7.1.3	Vehicle conditions	5
7.1.4	Chassis dynamometer conditions	6
7.2	Test instrumentation	6
7.3	Charging of the RESS of externally chargeable FCHEV	7
7.3.1	Application of a normal charge	7
7.3.2	Charging the RESS and measuring energy	8
7.4	Hydrogen consumption tests	8
7.4.1	General	8
7.4.2	Vehicle preconditioning	8
7.4.3	Vehicle soak	8
7.4.4	Vehicle movement to the test room	8
7.5	Measurement and calculation over applicable driving test (ADT)	8
7.5.1	CD state	8
7.5.2	CS state	8
7.6	Correction of the test results for FCHEV	9
7.6.1	General	9
7.6.2	Allowable range of RESS energy balance	9
7.6.3	Correction procedure by correction coefficient	9
8	Calculation of driving range	10
8.1	Non-externally chargeable FCHEV	10
8.2	Externally chargeable FCHEV	10
9	Calculation of contribution of electricity and hydrogen for the driving range	10
10	Presentation of results	11
Annex A (normative)	Pressure method	12

Annex B (normative) Gravimetric method	14
Annex C (normative) Flow method	16
Annex D (informative) Current method	18
Annex E (informative) Determination of tank surface temperature measuring points	20
Annex F (informative) Test results of hydrogen and electric energy consumption and driving range of test vehicle	24
Annex G (normative) Calculation of allowable range of RESS energy change	26
Annex H (normative) Linear correction method using a correction coefficient	27
Annex I (normative) Usable amount of hydrogen of FCV and FCHEV	29
Annex J (normative) Test conditions and instrumentation for CD state	31
Annex K (informative) Calculation of electricity and hydrogen contribution	32
Annex L (informative) Fuel consumption measurement by vehicle refuelling	35
Bibliography	37