Unit code	AURETH018
Unit title	Inspect and service hydrogen fuel cell components
Application	This unit describes the skills and knowledge required to inspect and service hydrogen fuel cell components in fuel cell electric vehicles (FCEVs). It involves preparing for the task, inspecting and servicing hydrogen fuel cell components, servicing hydrogen fuel cell components and completing workplace processes and documentation. The servicing will vary according to the work context.
	The unit applies to individuals working in the automotive service and repair industry.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
Pre-requisite unit	AURETH101 Depower and reinitialise battery electric vehicles
	AURETH017 Work safely with hydrogen in automotive workplaces
Unit sector	Electrical Technical – Hybrid Vehicle and Battery Vehicle
Elements	Performance criteria
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	2.3 Visually inspect vehicle and perform zero voltage test to confirm it is	
	safely depowered and made safe for inspection and servicing	
3. Inspect and service	3.1 Carry out inspection according to manufacturer specifications,	
hydrogen fuel cell	workplace procedures, workplace health and safety and environmental	
components	requirements	
	3.2 Use diagnostic tools and test equipment to assess performance and	
	identify faults	
	3.3 Compare inspection results with manufacturer specifications	
	3.4 Report inspection findings and recommendations for necessary repairs	
	according to workplace procedures	
4. Service hydrogen fuel cell	4.1 Carry out service and adjustments according to manufacturer	
components	specifications, workplace procedures, workplace health and safety and	
	environmental requirements	
	4.2 Carry out removal and replacement of serviceable hydrogen fuel cell	
	components according to workplace procedures, workplace health and	
	safety and environmental requirements	
	4.3 Repower vehicle according to manufacturer specifications	
	4.4 Carry out post-service testing according to workplace procedures	
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures	
	5.2 Clear work area and dispose of or recycle materials according to	
	workplace procedures	
	5.3 Check tools and equipment are stored, and faulty equipment is	
	identified, tagged and isolated according to workplace procedures	
	5.4 Complete documentation according to workplace procedures	
Foundation skills		
This section describes those la	anguage, literacy, numeracy and employment skills that are essential to	
performance		
Learning	 locate required sources of information 	
	maintain knowledge of hydrogen fuel cell technology	
Reading	 Interpret text, symbols and diagrams in inspection and servicing information from manufacturer energifications and workplace 	
	procedures	
	Interpret fuel quality reports.	
Writing	 legibly and accurately fill out workplace documentation. 	

Oral communication	 listen to workplace instructions and ask questions to clarify job requirements
	 participate in verbal discussions on workplace safety, report faults and make servicing recommendations
	 communicate with suppliers and manufacturers for replacement parts and advanced troubleshooting
	 discuss features and maintenance needs of FCEVs with customers, including:
	 refuelling procedures
	 performance expectations
	 regular servicing to ensure safety and longevity.
Numeracy	 match hydrogen fuel cell components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications
	 take, interpret and record measurements on digital and analogue gauges, including:
	o conductivity
	o current
	o force
	 leak detection
	o pressure
	o resistance
	o temperature
	o torque
	 voltage
	 interpret and analyse diagnostic data
	 convert metric and imperial measurement units
	 calculate capacity and state of change
	 calculate deviations from manufacturer specifications.
Planning and organising	 plan own work requirements
	 prioritise actions to achieve required outcomes
	 confirm tasks are completed within workplace timeframes.
Technology	 use specialised diagnostic tools and software
	 use specialised testing equipment and software.

Unit mapping information	No equivalent unit.	
Links	Link to Companion Volume Implementation Guide.	
Title	Assessment Requirements for AURETH018 Inspect and service hydrogen fuel cell components	
Performance evidence	 The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to: inspect and service the hydrogen fuel cell components of at least two different FCEVs. 	
Knowledge evidence	The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:	
	 methods to locate and interpret information required to inspect and service hydrogen fuel cell components, including information from: 	
	 customers and supervisors 	
	 manufacturer specifications and procedures 	
	 workplace procedures required to inspect and service hydrogen fuel cell components, including: 	
	 documentation procedures 	
	 housekeeping procedures, including those for: 	
	 examining and storing tools and equipment 	
	 identifying, tagging and isolating faulty FCEVs and equipment 	
	 disposing and recycling of excess materials 	
	 workplace health and safety (WHS) requirements relating to inspecting and servicing hydrogen fuel cell components, including procedures for: 	
	 identifying hazards and controlling risks associated with: 	
	 working with high voltages 	
	 working with hydrogen gas 	
	 working with high hydrogen gas pressures 	
	 wearing jewellery while working around high electrical currents 	

	 working with damaged hydrogen fuel cell components
0	minimising risk associated with hazards, including applying safety precautions when:
	 identifying hydrogen gas leaks
	 purging gas lines
	 using personal protective equipment (PPE), including electrical safety gloves with class 0 1000 volt rating and Australian standards rated high voltage insulating mat
	 identifying and using firefighting equipment
	 using the one hand rule
	 following live system warning tags and signs
	 depowering vehicle
	 isolating electrical supply
	 isolating hydrogen fuel sources
	 stabilising vehicle electrical system
 enviro hydrog dispos 	nmental requirements relating to inspecting and servicing gen fuel cell components, including trapping, storing and ing of waste produced during activity
■ safe op	perating procedures for tools and equipment, including:
0	ventilation systems
0	high pressure cylinders and tanks
0	testing equipment
■ charac	teristics of FCEV, including:
0	types of FCEVs
0	types of hydrogen
0	fundamental operating principles
0	fuel cell design
0	FCEV efficiency and range
0	fuel storage capacity and level
0	battery management
0	electric and thermal management
0	communication protocols, including CAN bus

	 environmental benefits and challenges
■ id sy in	entification, function and basic operation of hydrogen fuel cell stems and components in manufactured and retrofitted FCEV, cluding:
	 hydrogen storage system
	 high-pressure hydrogen circuit
	 hydrogen refuelling interface
	 fuel cell stack and associated systems
	 hydrogen fuel quality monitoring
	 hydrogen system safety equipment
■ in in	spection procedures for hydrogen fuel cell components, cluding:
	 leak detection
	 analysing thermal and electrical performance
	 differentiating between hydrogen and electric power system faults
	 analysing component operation
	 using diagnostic tools and software
	 using testing equipment and software
	• predictive maintenance tools
	 identifying faults
• se in	rvicing procedures for hydrogen fuel cell components, cluding:
	 when and how to purge hydrogen
	 identifying hydrogen-related faults, including software faults
	 removal, replacement and adjustment of components that require periodic replacement as part of the maintenance schedule
	 post-service testing procedures for hydrogen fuel cell components
● hc	ow to access and interpret fuel quality reports
te ce	rminology relevant to inspecting and servicing hydrogen fuel Il components.

Assessment conditions	Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.
	Assessment must include direct observation of tasks.
	Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to FCEV that they have worked on, e.g. repair orders.
	Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.
	The following resources must be made available:
	 automotive repair workplace or simulated workplace suitable for FCEVs
	 PPE and safety equipment, including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating
	 manufacturer specifications for hydrogen fuel cell components
	 two different FCEVs for inspection and servicing activities
	 handheld hydrogen gas detector
	 fuel cell diagnostic tools and software
	 pressure testing equipment, including gas detectors, flow meters and pressure gauges
	 tools, equipment and materials appropriate for inspecting and servicing hydrogen fuel cell components.
	Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.
Links	Link to Companion Volume Implementation Guide.