Strategic Management Board

ACS.COCN1
SAFETY ASSESSMENT CRITERIA
INITIAL. NON-DOMESTIC
NATURAL GAS
CORE HEATING APPLIANCES

ACS. COCN1
SAFETY ASSESSMENT CRITERIA
RE-ASSESSMENT (OF COCN1)
NON-DOMESTIC. NATURAL GAS
+ CORT1; CIGA1; CDGA1; CGFE1

COCN1 INITIAL & RE-ASSESSMENT

Introduction

Tests the gas safety competencies in core areas of gas work common to non - domestic heating appliances.

CBs may adopt Competence and Criteria numbering different to that used in this document.

CB documentation may adopt wording for criteria different to that used in this document, provided the meaning is unaffected.

Comprises

3. Products and characteristics of combustion
4. Ventilation
14. Installation of chimneys
16. Re-assessment of appliances/equipment

Pre-requisites

Initial

ND Generic Core Parts A and B.

Re-assessment

ND Core Generic Parts A & B + COCN1 with, as appropriate, CORT1/CIGA1/CDGA1/CGFE1.

References and normative documents

MIs.

All relevant documents as listed in the Legislative, Normative & Informative Document List (LINDL), inc.:
- HSL56
- GIUSP
- BS 7967-5
- BS6644:2011 (CIGA1 Reassessment)
- IGEM/UP/10 Edition 4 amended version 2017

ACS.SMB.003.ACRND identifies Normative Documents that should be held by ACs.

Abbreviations

AC. Assessment Centre
CB. Certification Body
I. Initial
MIs. Manufacturer's/manufacturers' instructions
ND. Non-domestic
R. Re-assessment
Ref. Reference.

3. Products and characteristics of combustion

PERFORMANCE CRITERIA			
1. **Analyse combustion performance:**			
(i) inspect appliances, chimney and ventilation for obvious signs of damage and factors that may affect combustion performance. Light each appliance		√	√
(ii) check OP and heat inputs. Leave appliance on at max. heat input		√	√
(iii) check analyser is suitable, correctly assembled and calibrated (BS EN 50379-3 analyser), then zero and purge analyser to MIs, outdoors.		√	√
(iv) assemble sample lines and probes and ensure all are free from leaks/damage		√	√
(v) correctly position probes for sampling combustion products		√	√
(vi) read and record O_2; CO; CO_2; CO/CO_2, as appropriate		√	√
(vii) compare readings to MIs and BS EN 7967-5		√	√
(viii) if readings are satisfactory, carry out final checks		√	√
KNOWLEDGE & UNDERSTANDING			
1. **types of gas analyser for measuring:**			
• combustion performance		√	√
2. **analysing combustion performance:**			
(i) identifying suspect gas-fired appliances		√	√
(ii) dealing with appliances on which a combustion performance test cannot be carried out and those where CO/CO2 ratios exceed those given in MIs or BS 7967-5		√	√
(iii) actions when domestic appliances exceed CO/CO2 given in MIs or BS 7967-5		√	√
(iv) testing when a new component has been fitted		√	√
(v) situations that require variations in test methodology		√	√
(vi) dealing with domestic appliances in non-domestic premises		√	√

4. Ventilation

PERFORMANCE CRITERIA	REF	I	R
1. calculate free area of selection of air vents and grilles		√	√
2. identify adequate and inadequate heating ventilation		√	√
3. identify suitable/unsuitable ducted ventilation - appliance in basement plant room		√	√
4. calculate natural ventilation at high and low level direct to outside air for:			
(i) Type B boilers in plant rooms		√	√
(ii) Type B boilers in enclosures		√	√
(iii) Type C boilers in enclosures		√	√
5. **calculate mechanical ventilation flow rate for:**			
(i) Type B1 boilers (inlet and extract)		√	√
(ii) Type B2 boilers (inlet and extract)		√	√
6. calculate ventilation for overhead radiant heaters Type A and Type B		√	√
7. **calculate natural ventilation for:**			
(i) Type B1 and B2 boilers in heated space with air changes below 0.5 per hour		√	√
(ii) Type B1 and B2 air heaters in plant rooms/enclosures		√	√
(iii) direct gas fired air heaters in heated spaces		√	√
(iv) Type B1 and B2 air heaters in heated spaces		√	
KNOWLEDGE & UNDERSTANDING	**REF**	**I**	**R**
1.			
2. mechanical ventilation installations for appliances/plant of net heat input not exceeding 1.8 MW	IGEM UP10 Ed4 7.3.1. Table 2	√	√
3. safety requirements for balanced compartments		√	√
4. ventilator/grille locations/positions		√	√
5. safety interlocks between ventilation fans and gas appliances		√	√
6. max. temperature levels within boiler houses (floor, mid-position, ceiling)		√	√
7. labels and advisory notices		√	√
8. providing combustion and ventilation air for appliances of net heat input not exceeding 1.8 MW		√	√
9. identification and installation of in tumescent air vents		√	√

14. Installation of chimneys

KNOWLEDGE & UNDERSTANDING		REF	I	R
1.	effect of chimney heights on dilution of combustion products	IGEM UP10 Ed4	√	√
2.	terminal types and positions for Type B open/natural draught chimneys		√	√
3.	connecting appliance/equipment flues into main vertical chimneys		√	√
4.	common natural draught chimney connections to headers for modular boiler systems		√	√
5.	appliance open flues for gross heat input > 366.4kW (Gross)		√	√
6.	positioning of terminals for room sealed appliance of net heat input > 70 kW	IGEM UP10 Ed4 8.7.1.1	√	√
7.	flueing for balanced compartments		√	√
8.	gas safety control for mechanically assisted flues		√	√
9.	appreciation of fan sizing for mechanically assisted flues		√	√
10.	flue dampers and stabilisers		√	√
11.				
12.	**fan diluted flues:**			
(i)	discharge points		√	√
(ii)	CO_2 values for discharge points		√	√
(iii)	dilution air intakes		√	√
(iv)	dampers		√	√
(v)	gas safety controls		√	√
(vi)	sizing fan and ductwork		√	√
13.	common flue/chimney construction - suitable materials for large chimneys		√	√
14.	insulation for large chimneys		√	√
15.	condensation provisions for large chimneys		√	
16.	testing natural draught and pressurized flue systems		√	√
17.	**HSL56:**			
(i)	Reg. 27 Flues 27(1) to (5)		√	
(ii)	Reg. 32 Flue dampers 32 (1)		√	
18.	suitable materials and construction		√	√
19.	identify unsafe situation of a room sealed flue system installed within an enclosure without sufficient inspection facility		√	√
20.	enclosing flues		√	√
21.	inspection requirements for flues in voids	ISU037	√	√
22.	Addition advice for flue systems when installed in Education Establishments (reference to IGEM/UP/11)	IGEM UP10 Ed4 8.1.4	√	√
23.	Requirements for flue Installation data plates	IGEM UP10 Ed4 8.1.9	√	√
24.	Identify acceptable and unacceptable materials used in flue types	IGEM UP10 Ed4 8.2.1.1. Table 3	√	√

16. Re-assessment of appliances/equipment

PERFORMANCE CRITERIA		NON-DOMESTIC HEATING			
		CORT1	CIGA	CDGA1	CGFE1
1.	check appliance is complete, fit and suitable for use	*	*	*	*
2.	check gas supply to appliance has been installed using appropriate materials and fittings to MIs	*	*	*	*
3.	check appliance is level and stable	*	*	*	*
4.	check flue system has been installed using appropriate materials and to MIs	*	*		*
5.	check vents, grilles, and ducts supplying ventilation to appliance are installed to MIs	*	*	*	*
6.	locate and install appliance to MIs	*	*	*	*
7.	**commission appliance:**				
(i)	purge appliance of air	*	*	*	*
(ii)	light appliance to MIs	*	*	*	*
(iii)	check OP at appliance is to MIs	*	*	*	*
(iv)	check flue system is safely removing products of combustion	*	*		*
(v)	check flue gas analysis readings are to MIs 1.	*	*		*
(vi)	take atmosphere readings to MIs 1.	*		*	
(vii)	check flame picture stability and ignition are correct	*	*	*	*
(viii)	inspect and test appliance operational gas safety components for correct operation to MIs	*	*	*	*
(ix)	identify gas safety faults on components (specific to appliance)	*	*	*	*
(x)	check appliance is working correctly/safely as intended	*	*	*	*

(xi)	check user controls are operating correctly	*	*	*	*
(xii)	explain safe operation of appliance/equipment	*	*	*	*

KNOWLEDGE & UNDERSTANDING		**REF**
1.	**CORT1**	
(i)		
(ii)	termination for heaters of heat input ≤ 70 kW net	
(iii)	maintenance	
(iv)	ventilation when vapours/gases present in air degrade to potentially harmful gases	
2.	**CDGA1**	
(i)	ventilation when vapours/gases present in air degrade to potentially harmful gases	
3	CIGA1	
(i)	Ventilation	
	PERFORMANCE CRITERIA	REF
1.	**CORT1 & CDGA1**	
	Measure CO_2 in ambient air:	
(a)	check analyser is suitable, correctly assembled and calibrated (BS 8494 analyser)	
(b)	zero and purge analysers to MIs, outdoors	
(c)	assemble sample lines and probes and ensure all are free from leaks/damage	
(d)	take CO_2 reading outdoors	
(e)	with fuel burning appliances turned off, ventilate enclosed area until CO_2 levels fall to approx. those outdoors	
(f)	close external doors, windows and customer – adjustable ventilation	
(g)	inspect appliances for obvious defects. Take a CO_2 sample at centre of area	
(h)	turn on one test appliance and carry out a CO_2 build up test	
(i)	sample CO_2 readings for at least 15 minutes	
(j)	record results	
KNOWLEDGE & UNDERSTANDING		REF
1.	**Ambient CO_2 readings:**	
(i)	effect of increasing levels of CO_2 on appliance combustion	
(ii)	causes of increasing levels of CO_2	
(iii)	where to take CO_2 readings	
(iv)	evacuation of personnel from test area	
(v)	judging acceptability of ambient CO_2 readings	
(vi)	actions when ambient CO_2 levels are excessive: • risk assessment • turning off appliances and isolation • evacuation of occupants • opening windows etc. • advising responsible person • GIUSP 11	
(vii)	re-entry to area under test	
2.	**Ambient CO readings:**	
Differences compared to CO_2 sampling; - toxicity - excessive CO levels		