



**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
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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
- IGEM/UP/11 Edition 3 amended version 2018

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			I	R
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			I	R
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/CO ₂ ratios exceed those given in MIs or BS 7967-5		✓	✓
(iii)	actions when domestic appliances exceed CO/CO ₂ 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
2.	mechanical ventilation installations for appliances/plant of net heat input not exceeding 1.8 MW		✓	✓
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 intumescent air vents		✓	✓
10.	Ventilation for combustion for Science Laboratories in educational establishments		✓	✓

14. Installation of chimneys

KNOWLEDGE & UNDERSTANDING		REF	I	R
1.	effect of chimney heights on dilution of combustion products		✓	✓
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		✓	✓
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.	flues passing through teaching/occupied areas in educational establishments		✓	✓
11a	New or upgraded plant /boiler room installations in educational establishments		✓	✓
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		✓	✓
22.	Addition advice for flue systems when installed in Education Establishments (reference to IGEM/UP/11 section 5: 5.3)		✓	✓
22a	Suitability of heating appliance type in teaching areas in Education Establishments		✓	✓
23.	Requirements for flue Installation data plates		✓	✓
24.	Identify acceptable and unacceptable materials used in flue types		✓	✓

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	*	*		*

(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 CO₂ 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 CO₂ 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: <ul style="list-style-type: none"> • risk assessment • turning off appliances and isolation • evacuation of occupants • opening windows etc. • advising responsible person • GIUSP 					✓
(vii)	re-entry to area under test					✓
2. Ambient CO readings:						
Differences compared to CO ₂ sampling; <ul style="list-style-type: none"> - toxicity - excessive CO levels 						✓