Resources Safety & Health
Queensland

Guideline for Gas Safety and Compliance Information required for gas device (type B) approval

Petroleum and Gas Inspectorate

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Contents

Summary

This guideline outlines the technical content and format of information required for assessment and approval of a gas device (type B) in Queensland.

The document or file that provides this information is commonly referred to as a 'technical submission'.

The Petroleum and Gas Inspectorate regulates the gas industry by applying the *Petroleum and Gas (Production and Safety) Act 2004* (the Act).

The purpose of the Act is to facilitate, regulate and develop a safe, efficient and viable fuel gas industry.

This includes ensuring minimum standards for the design, construction and safe operation of gas devices (type B).

For the purpose of this guide, the term gas device (type B) means an 'industrial appliance' or 'system of industrial appliances' (other than a type A) used or designed or intended to:

- produce heat, light or power through the use of fuel gas; or
- be used in a manufacturing process, which uses fuel gas.

There are other devices defined as 'type B' under the Act, but the technical content and format required for the process of approval differ from that for an 'industrial appliance'. Further information is available on the Inspectorates website.

Examples of 'industrial appliance' designs where the information within this guide would apply include:

- water heaters, immersion tube fluid heaters and steam boilers
- specialist ovens, kilns, furnaces and cremators
- stationary reciprocating and turbine engines
- space and product heaters
- ignition or pre-heat systems for a device where fuel gas is not the main fuel
- theatrical / special effects and fire training equipment

The process of 'industrial appliance' design approval is based on a peer review framework, including;

1. the development of a document, or file depending on the device complexity, that provides appropriate and adequate information to demonstrate compliance with the legislative requirements;
2. submission of the information (technical submission) to an appropriate Gas Device Approval Authority for assessment and approval for installation and use; and
3. installation and commissioning of the 'industrial appliance' in compliance with the approved technical submission and any other legislative requirements (standards and/or code of practice).

Technical Content

The information required for the purpose of assessment and approval of a gas device (type B) will depend on the design and complexity of the device. However, as a minimum, the following should be provided:

- Device type, manufacturer, model and serial number
- Address and location where device is to be installed
- Customer contact
- Name and authority of installer (and commissioning person if different)
- Name and contact for risk assessment author
- Instructions for installation, operation and maintenance
- Device markings, including details of data plate
- Description of device operation and process
- Type and number of burners
- Gas type, consumption rate and operating pressure
- Air flow rates during purge and operation
- Purge methodology, volume, medium and rate
- Schematic drawing of the combustion air control system and fuel valve train
- Schematic electrical wiring diagram
- Compliance documentation for any Programmable Electrical Systems (PES) or Programmable Logic Controls (PLC)
- Ventilation requirements and methods of provision
- Fluing requirements and methods of provision

This information is also outlined in appendix A of *AS3814 industrial and commercial gas-fired appliances* and further clarification on the level of detail expected is provided in Appendix 1 of this guide.

Appendix 1 can also be used as a self-check tool for persons preparing a technical submission or as a method providing feedback where a submission does not demonstrate compliance, and further evidence is required for particular item(s).

When preparing the technical submission content, the following should be noted:

- methodology and calculations must be included to support outcomes
- email trails and letters from component and equipment manufacturers are not considered evidence of compliance
- schematic drawings must be accurate, legible and relevant

A risk assessment is required for the design and installation of the device in its installed location.

Format

The information should be provided in a logical format that is easily followed and interpreted by the Gas Device Approval Authority. Where supporting evidence is of significant size, complexity or is under commercial in confidence arrangements, it should be provided as a referenced attachment.

Dependent on the nature and complexity of the device the submission may be presented in a report style format, or for more complex designs, or summary document that references the particular attachments for methodology and calculations.

When considering the format of the technical submission, the following should be noted:

- Gas Device Approval Authorities are being encouraged to reject technical submissions that are not presented in an acceptable format
- Gas Device Approval Authorities are being encouraged not to provide advice or guidance in relation to submission content – advice and guidance may breach the conditions of their authority and be considered a design service
- technical submissions that have to be submitted multiple times will increase the cost of final approval
- at the conclusion of the approval and installation process, the installer is to provide the technical submission (with sensitive or commercial in confidence material removed) to the gas device owner as part of the commissioning process.

Appendix 1

Item	Information / details required	Advisory note	Information submitted	Compliance demonstrated	Comment
Owner and location information					
1	Name and address of device (appliance) original equipment manufacturer (OEM)				
2	Name and address of the authorised installer (include GWA number)				
3	Name and address of commissioning person (include GWA number)				
4	Name and authorisation number of person responsible for the risk assessment				
5	Name and address of organization where device (appliance) is or is to be installed				
6	Customer contact and telephone number				
Instructions - *Installation instructions should contain all information required for the purpose of installation in particular*					
7	Type of gas				
8	Gas supply pressure				

9	Gas operating pressure at a specified point	*Refer to AS3814 Section 4 for more information*			
10	Ventilation requirements				
11	Conditions for disposal of combustion products				
12	Information required for safe use and maintenance				
Markings - *Each gas device shall include a data plate that is legibly, clearly and permanently marked and warning markings shall be provided where required*					
13	Manufacturer (make / importer / supplier)	*Refer to AS3814 Section 4 for more information – Statement by installer or photographic evidence of plate will support compliance for design approval*			
14	Model identification				
15	Serial number				
16	Date of manufacture				
17	GDAA and the approval number	*Refer to AS3814 Section 4 for more information*			
18	Type of gas to be used				
19	Burner operating pressure(s)				
20	Gas consumption rate (input rating)				
21	Gas supply pressure	*Refer to AS3814 Section 4 for more information –*			

22	Purge time	*Statement by installer or photographic evidence of plate will support compliance for design approval*			
23	Combustion chamber volume				
24	Swept volume – *see item 33, provided by appliance manufacturer or calculation onsite*				
25	Warning notices for any restrictions on installation and use – examples 'ONLY USE OUTDOORS' 'HOT SURFACE'	*– Statement by installer or photographic evidence will support compliance for design approval*			
26	Controlling devices marked shall be clearly and permanently marked and have appropriate signs to indicate correct operation	*– Statement by installer or photographic evidence will support compliance for design approval*			
Design and construction					
27	Description of device operation and process	*The description of the device operation and process should form a narrative of normal start up, operation and shutdown. But include how safety interlocks and protocols ensure the device fails safe. This description should form part of the risk assessment.* *Refer to AS3814 Section 2 for more information*			
28	Number of gas burners and type of burners				
29	Nominal gas consumption for total appliance and for each main burner				
30	Gas consumption at ignition for each burner				
31	Air flow rate at ignition for each burner				
32	Volume of each combustion chamber				

Operational performance					
33	Total volume swept by the combustion products from the burner(s) to each flue connection				
34	Air flow rate during purge periods				
35	Details and method of operation of any combustion air or flue dampers	*Refer to AS3814 clause 2.19*			
36	Details of any explosion reliefs including location, cross-sectional area and weight together with calculations	*Refer to AS1375 for more information*			
37	Process and instrumentation diagrams for the appliance	*Refer to AS3814 figure A3 for an example*			
38	Schematic drawing of the combustion air control system and fuel valve train specifying all valve train components, including brand, model number, size and rated working pressure and the proposed setting of all adjustable devices	*Refer to AS3814 figure A1 for an example*			
39	Schematic electrical wiring diagram showing the safety and control circuits, including brand, model number and method of operation of each major component, and the proposed setting of any adjustable device				
40	Purge time calculations	*Refer to AS3814 clause 2.20 for more information*			
41	Calculations of start gas rate conditions	*Refer AS3814 clause 3.2.3*			

		Include calculations and justification			
41	Air dilution rate calculations for processes involving solvents or dusts	*Refer to AS1375*			
	Documentation and certification to demonstrate compliance of any Programmable Electrical Systems (PES) or Programmable Logic Controls (PLC) for safety instrumented systems	*Refer to AS3814 clause 2.27 for more information*			
Device location					
42	Details of ventilation requirements and method of provision	*Refer to AS/NZS5601.1 clause 6.4 calculations, location and method (mechanical or natural)*			
43	Details of flueing, including method, material and location of flue termination	*Refer to AS/NZS5601.1 section 4 and clause 6.7 or device manufacturer specifications for materials, method of jointing, support, termination and clearances*			