

Business Case

BCS Unit 12 Inlet Filter Upgrade

Business Case Number 267

1 Project Approvals

TABLE 1: BUSINESS CASE – PROJECT APPROVALS

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Approved By	Craig Bonar, <i>Manager East Coast Grid Engineering, APA Group</i>

2 Background

The Brooklyn Compressor Station Unit 12 (BCS12) has a single process gas inlet filter. This filter was procured from another APA VTS compressor station (Bulla Park) to reduce cost of BCS12 installation in 2007.

The filter has consumable elements that require cleaning/replacement when they become fouled. In order to perform this maintenance activity, the vessel must be isolated from gas, depressurized, purged of hydrocarbons and then the confined space must be entered by a technician.

There are 5 main problems with the existing BCS 12 inlet filter:

- Availability of BC12 is lost whenever this filter requires cleaning as there is only one filter for the unit
- Maintainability of the filter is restricted by the performance of the isolation valves, should they pass gas the confined space atmosphere fit for human occupation cannot be maintained and thus the maintenance cannot be performed.
- Maintainability of the filter. To date, the filter has not been cleaned as not a single APA technician will enter the confined space due to safety concerns. The means of confined space rescue is severely inhibited by design of entry and elevated platform.
- Performance of the filter is limited to 10 μm whereas the standard APA design for inlet filters for process gas for Solar Turbine packages are 3 μm and 99% efficiency for all solid and liquid particles greater than 1 μm . This is the specification set by *Solar Turbines International*.
- Reliability of the compressor seal is heavily influenced by the cleanliness of the process gas. An inferior performing filter on the inlet side will result in 'dirty gas' being compressed. 'Dirty gas' has been responsible for many dry seal failures for gas compressors nationally. The result is an immediate shutdown with a loss of plant for at least six weeks.

The end result of above main problems not being addressed is that the output power (from BCS12) will be reduced and resulting gas flow reduced and impacting on security of supply. This will become worse over time with increased blockage and further reduced flow.

3 Risk Assessment

TABLE 2: RISK RATING

Risk Area	Risk Level
Health and Safety	Moderate
Environment	Negligible
Operational	Moderate
Customers	Moderate
Reputation	Moderate
Compliance	Moderate
Financial	Low
Final Untreated Risk Rating	Moderate

4 Options

4.1 Option 1 – Do Nothing

The Do Nothing option is to continue operating a filter-coalescer without safe means of cleaning. The reasonably clean gas that is being delivered to the BCS12 and that the filter elements are incorrectly sized is the only reason why this filter remains in operation. To simply replace the elements with elements that would collect 3 µm particles will result in the filter requiring frequent cleaning/replacement.

The Do Nothing option risks damage to the compressor. Currently we are relying on reasonably clean gas to prevent the immediate need for replacement. The Do Nothing option is no longer technically acceptable.

BCS12 is not operating within OEM specifications.

4.2 Proposed Solution

4.2.1 Replacement of the BCS12 Filter

The replacement of the filter vessel with an APA standard design, consistent with compressor manufacturer requirements, is the most appropriate solution to the current maintainability, safety and performance problems.

4.2.2 Why are we proposing this solution?

The existing arrangement of poor filtration performance is masking the maintainability problem. In order to achieve full service life from the turbine driven compressor, adequate filtration must occur. A known problem with ‘dirty gas’ destroys dry seal compressors. A full overhaul of a compressor due to seal failure will cost at least \$100,000 and take a unit offline for at least six weeks. The result would be the primary compressor at Brooklyn being out of service for an unacceptable period of time.

The pressure vessel has been assessed as a confined space. Some of the major hazards to a confined space are the atmospheric conditions and means of escape. Both of these hazards are not mitigated effectively to enable maintainability.

4.2.3 Consistency with the National Gas Rules

Consistent with the requirements of Rule 79 of the National Gas Rules, APA considers that the capital expenditure is:

BCS UNIT 12 INLET FILTER UPGRADE

- Prudent – The expenditure is necessary in order to maintain the integrity of services to customers and safety to personnel and is of a nature that a prudent service provider would incur.
- Efficient – The field work will be carried out by a suitably qualified external contractor. The procurement will be undertaken consistent with the APA procurement policy. The design of the new vessel will be in accordance with the APA standard design. The expenditure can therefore be considered consistent with the expenditure that a prudent service provider acting efficiently would incur.
- Consistent with accepted and good industry practice – Addressing the risks associated process performance and dry seal failure is accepted as good industry practice. The replacement of assets that do not comply with confined space entry and exit procedures to lower the risk to as low as reasonably practicable in a manner that balances cost and risk is consistent with Australian Standard AS2885.
- To achieve the lowest sustainable cost of delivering pipeline services – The sustainable delivery of services includes reducing risks to as low as reasonably practicable and maintaining reliability of supply.

4.2.4 Forecast Cost Breakdown

TABLE 3: PROJECT COST ESTIMATE,

	Total
Internal Labour	\$150,437
Materials	\$218,494,
Contracted Labour	\$266788
Other Costs	\$0
Total	\$635,719