

Service delivery standard for providers of remedial cleaning to operating closed cooling and heating systems

1.0 Introduction

This standard sets out minimum service requirements for CSCA members (subsequently referred to as “Service Providers”) offering remedial cleaning of operating closed heating and cooling water.

This standard does not apply to pre-commission cleaning of newly installed systems. A separate standard exists for CSCA member engaged in pre-commission cleaning of newly installed systems.

A separate service delivery standard also exists for CSCA members offering routine monitoring of water quality.

2.0 Management overview

The Service Provider should provide a management overview for each project covering the following issues:

- 2.1 Scope of works – the range of activities to be undertaken.
- 2.2 Communication and management – the management, contractual and communication routes between parties involved in the clean.
- 2.3 Allocation of responsibilities – the responsibilities of the various parties involved in the clean e.g. main contractor, installer, commissioning specialist etc.
- 2.4 Training and competence of all personnel involved – the required and anticipated training/experience levels of the individuals involved in the cleaning process (both in-house staff and sub-contracted staff).
- 2.5 Control measures - for the supervision, implementation and monitoring of the cleaning process.
- 2.6 Health and Safety risk assessments – Covering safe handling of chemicals, delivery, storage, and application methods.
- 2.7 Control of sub-contractors – the procedures in place for managing and controlling the work of sub-contractors, where applicable.
- 2.8 Internal auditing – the internal checks and reviews within the Service Provider’s organisation for checking and confirming that works are being undertaken in compliance with specified requirements and industry good practice.
- 2.9 Record keeping – the logging of cleaning activities and results obtained.

3.0 Scope of work

The scope of work for remedial cleaning of existing systems should be compliant with the client's specification, industry guidance (e.g. the relevant sections of BSRIA guide BG 29/2021 where applicable) unless an alternative is agreed, and any additional manufacturers' requirements.

The main scope of work for a typical remedial cleaning project should include:

- 3.1 Specifications – the project specification and/or industry guides which must be complied with under the contract terms.
- 3.2 Design/installation review – a review of the project information to enable the Service Provider to prepare a quote and once the contract has been agreed to identify in advance, any modifications required to facilitate the cleaning process (see section 4.0 below).
- 3.3 Cleaning stages - the cleaning stages and activities to be undertaken as part of the Service Provider's contract e.g. debris removal, bacteria/biofilm removal, pipework surface cleaning, system passivation, water quality monitoring, etc (see section 6.0 below).
- 3.4 Chemical data sheets - details of the chemical products to be used, their constituents, control parameters and test frequencies.
- 3.5 Cleaning method statement – system specific written procedures describing the operational approach to achieving compliant water conditions within new systems (see section 5.0 below).
- 3.6 Programme – an agreed programme and resource allocation chart for the works agreed with the main contractor.
- 3.7 Reporting - a clear set of pre-identified deliverables should be provided detailing the checks and procedures undertaken and their outcomes (see section 7.0 below).

4.0 Design/installation review

Client information

The client will need to provide drawings for the systems, if possible, to allow the Service Provider to accurately quote for the cleaning works. The same information should form the basis of a design review whereby the Service Provider highlights any aspects of the pipe system design and operation that may influence the cleaning method and maintenance of water quality thereafter. If drawings are not available, it will be necessary to rely on a site survey but in any event an installation review will be essential prior to the works.

Information required as part of the review may include (but is not limited to):

- 4.1 confirming system age and water treatment history;
- 4.2 checks on system condition e.g. by endoscope or sample pipe removal;
- 4.3 checks on current water conditions by means of sampling or reviewing records.
- 4.4 confirming any relevant operating details, such as the system daily and seasonal operating hours;

- 4.5 checking flushing facilities e.g. fill points and drain points, bypass arrangements etc;
- 4.6 checking provisions for protection of sensitive plant items, terminal devices and valves;
- 4.7 consideration of the materials of construction (e.g. thin walled carbon steel or aluminium);
- 4.8 plans for allowing the system to remain pressurised and circulating if necessary for system operation (in circumstances where the clean is sectional).
- 4.9 the target water quality parameters that are to be achieved (these being appropriate to the age and condition of the system and the works proposed);
- 4.10 any limitations or risks associated with alternative cleaning options;
- 4.11 the implications of adjusting all regulation valves to their fully open position to facilitate the cleaning;
- 4.12 plans for re-balancing system flow rates after completion of the clean or resetting valves to previous positions;
- 4.13 the client's required outcomes (with regard to programme, levels of disruption, financial constraints etc).

Site Survey

The Service Provider should visit site prior to proposing a cleaning method statement to ensure that all necessary flushing provisions are included and the installation complies with the principles laid out in good practice guidance (e.g. BSRIA guide BG 29/2021) as far as is practicable and relevant.

The Service Provider should fully document their findings in relation to sections **4.1 - 4.10** above and issue to the client. The Service Provider should document any concerns that they have which may impact on the outcome of the clean. They should also list any outstanding information that is required before works can commence.

5.0 Cleaning method statement

The Service Provider should provide a detailed system/site specific method statement explaining procedures for draining, cleaning and re-filling of the system and any temporary measures to mitigate disruption to the building. The method statement should address (but not be limited to):

- 5.1 an assessment of the optimal cleaning process e.g. whether the system can be cleaned as one or in sections;
- 5.2 whether the works need to be undertaken outside of normal occupancy hours;
- 5.3 procedures for the removal of particulate matter (by means of elevated flow rates) i.e. achieving the necessary flushing flow rate in every section of pipework;
- 5.4 plans for controlling and minimising the risk of microbial contamination during the clean and up to project handover;
- 5.5 procedures for the chemical cleaning and passivation of steel pipework surfaces;

- 5.6** maintenance procedures for the control of water quality after completion of the clean;
- 5.7** procedures for monitoring of water conditions (by means of regular sampling) after completion of the clean and thereafter;

The method statement should outline the overall cleaning strategy and then detail each individual stage. The cleaning method should make reference to and, where relevant, require compliance with those sections of BSRIA guide BG 29/2021 that are applicable to operating closed pipework systems.

The method statement should:

- Clearly state the water/ pipework conditions that are present and the required strategy to improve conditions. Any limitations in the process should be stated.
- reflect the size of the pipework being cleaned;
- be tailored to address the particular components in the system;
- indicate chemical selections that take into account cleaning objectives, system components and materials (note: approval of the chemicals selected should be sought from manufacturers of pipework and plant and copies of the approval retained and available for inspection);
- detail the samples that are to be taken on completion of the cleaning and thereafter;
- detail the sampling procedure and method (e.g. by specifying compliance with BS8552);
- set out the chemical and microbiological acceptance criteria to be achieved on completion of the clean. (This is likely to be different from that proposed in BG 29/2021 which is intended for newly installed systems.)
- state whether system or temporary pumps are to be used and explain how flushing velocities will be maximised, measured and recorded.

6.0 The cleaning process

The Service Provider should not commence work until the system has been prepared i.e. additional flushing provisions have been provided, where requested. The Service Provider is to inform the client, in writing, of any implications if this is not the case.

The Service Provider must comply with all health and safety aspects of the work on site, and any documents in relation to health and safety (such as chemical product safety data sheets) are to be made available for inspection.

Prior to works commencing it is essential that an effluent permit is available. This would normally be obtained by the water treatment contractor. A copy is to be retained with the documentation.

The method statement is to be adhered to and any deviations / alterations that become necessary are to be agreed in writing with the client. If necessary, a new method statement is to be written.

Full records are to be kept of each stage of the clean and monitoring period.

7.0 Records/deliverables

The final pack of information provided by the Service Provider to their client on completion of the clean should include (but not be limited to):

- 7.1** records of water conditions in the operating system prior to commencement of the clean;
- 7.2** the pre-clean design review;
- 7.3** the cleaning method statement;
- 7.4** flow record sheets for recording flushing flow rates achieved during dynamic flushing (and these should relate to specific pipework sections);
- 7.5** product safety data sheets for chemicals used;
- 7.6** chemical test sheets recording the progress of the cleaning stages;
- 7.7** chemical dosage record sheets recording times and quantities of each chemical dosed;
- 7.8** strainer records recording time and content of strainer inspections;
- 7.9** backflush records recording visual condition of water flushed through terminal devices;
- 7.10** chemical and microbiological results for samples taken after the clean to show compliance with the stated acceptance criteria set out in the agreed method statement;
- 7.11** trend information for water analysis results.

The Service Provider is to keep copies of all documents for a minimum of 3 years (or longer if required by their contract).

These documents should be available for external audit.

8.0 System Handover to Client

The Service Provider is to provide ongoing maintenance recommendations for inclusion in the hand over documentation, together with any necessary recommendations for on-site training or minimum competency.

The names and providers of all water treatment chemicals used for ongoing protection of the systems are to be supplied.