

REQUIREMENTS

FOR

CERTIFICATION SCHEME

FOR

SERVICING QUALITY FOR CHILLERS

IN

AIR-CONDITIONING INSTALLATIONS

IN

GOVERNMENT BUILDINGS

OF

THE HONG KONG SPECIAL ADMINISTRATIVE REGION

BUILDING SERVICES BRANCH
ARCHITECTURAL SERVICES DEPARTMENT

November 2007

Requirements for Certification Scheme for
Servicing Quality for Chillers in
Air-conditioning Installations in Government Buildings of
The Hong Kong Special Administrative Region

1. Objective of the Certification Scheme for Servicing Quality for Chillers

In order to uphold the standard and level of local support services and to improve the servicing quality of chillers used in the air-conditioning installations in Government buildings, the Architectural Services Department (ArchSD) has decided to implement the “Certification Scheme for Servicing Quality for Chillers” (the Scheme) for chillers used in new construction projects undertaken by ArchSD.

2. Implementation of the Scheme

The Scheme will be implemented in new construction projects undertaken by ArchSD on an individual project basis according to the project needs. Whenever it is specified in the Particular Specification of Air-conditioning Installation of a Contract/Sub-contract of a project that the Scheme is to be adopted for the chillers used in this project, the chillers proposed for use in that project will be required to comply with the Scheme. Under the Scheme, the supplier(s) /manufacturer(s) of the proposed chiller(s) are required to obtain certification certifying that the standard and level of local support services of their chillers complies with the minimum technical and managerial requirements for the Scheme.

3. Requirements for Certification under the Scheme

The “chiller” to be covered in the Scheme means liquid chillers used in air-conditioning system. A liquid chiller is a machine that removes heat from a liquid via vapour compression or absorption refrigeration cycle. A liquid chiller comprises evaporator(s), refrigerant compressor(s), integral or remote condenser(s) and appropriate controls and metering devices designed to chill liquid. The types of chillers include air-cooled or water-cooled which can be driven by electric motor or other means. Similarly, heat pumps (including total energy heat pumps) that employ reverse refrigeration cycle for heating are also included in the Scheme.

In order to obtain certification under the Scheme, chiller suppliers /manufacturers are required to fulfill the “Minimum Technical and Managerial Requirements for Certification Scheme for Servicing Quality for Chiller” attached in Appendix A. The chiller suppliers /manufacturers can obtain the certification by either one of the following three independent assessment schemes:-

- (i) Accreditation of the Servicing Quality of Chiller under the ISO9000 certification
- (ii) Accreditation of the Servicing Quality of Chiller under the Hong Kong Q-Mark Quality Services Scheme
- (iii) Other certification scheme proposed by the chiller suppliers/manufacturers that is certified by recognized accreditation bodies

The chiller suppliers/manufacturers shall immediately inform the certification body of any material changes in the Company which may affect their certification status under the Certification Scheme for Servicing Quality for Chillers and shall arrange re-certification if deemed necessary by the certification body.

Building Services Branch
Architectural Services Department
November 2007

Minimum Technical and Managerial Requirements for Certification Scheme for Servicing Quality for Chillers
Architectural Services Department

Ref.	Aspects	Objectives	Manufacturer’s Local Office /Authorized Agent with in-house service team	Manufacturer’s Local Office /Authorized Agent with maintenance services outsourced / Specialist Contractor
1.	Scope	To identify the chillers to be included for certification under the quality services scheme for chiller.	The make, type and model of chillers manufactured by the chiller supplier that the manufacturer’s local office/authorized agent with in-house service team is capable of providing and managing repairing services.	The make, type and model of chillers authorized by the chiller supplier that the outsourced specialist contractor is capable of providing and managing repairing services.
2.	Job Experience	a) To have adequate experience in providing and managing repairing services for chiller, solely and fully, including project coordination with the client, manufacturer of the chiller, user/maintenance agent and other BS/E&M/maintenance contractors.	Min. 1 year experience in providing and managing repairing services for chillers in local market.	Min. 1 year experience in providing and managing repairing services for chillers in relation to the chiller supplier.
3.	Registration with relevant authorities in Hong Kong	To comply with statutory/regulatory requirements in carrying out chiller repairing	A Registered Electrical Contractor registered under Electricity Ordinance, Cap. 406	A Specialist Contractor to be at least Group I under the category of Air-conditioning of the List of Approved Suppliers of Materials and Specialist Contractors for Public Works
4.	Top Management	To assure the resident management having the minimum experience in managing the maintenance work	Min. 5 years experience in managing the repairing and maintenance works.	Min. 5 years experience in managing the repairing and maintenance works.
5.	Technical Staff	To employ minimum no(s). of resident technical staff with suitable qualification, experience and training from chiller suppliers	Refer to Annex I – R	Refer to Annex I - R

Minimum Technical and Managerial Requirements for Certification Scheme for Servicing Quality for Chillers
Architectural Services Department

Ref.	Aspects	Objectives	Manufacturer's Local Office /Authorized Agent with in-house service team	Manufacturer's Local Office /Authorized Agent with maintenance services outsourced / Specialist Contractor
6.	Plant and Equipment	To have adequate nos. of calibrated testing instruments and equipment/tools for carrying out the repairing services; valid calibration certificates for testing instruments shall be available.	Refer to Annex II – R	Refer to Annex II – R
7.	Workshop Facilities	To have reasonably sized, suitably furnished and equipped local workshop/storage area	Local office/workshop in Hong Kong. Minimum office area shall be 110 m ² and the minimum workshop + storage area shall be 50 m ² . Documentary evidence (e.g. purchase/lease agreement) to prove right of use shall be produced.	Local office/workshop in Hong Kong. Minimum office area shall be 110 m ² and the minimum workshop + storage area shall be 50 m ² . Documentary evidence (e.g. purchase/lease agreement) to prove right of use shall be produced.
8.	Training	To have technical staff properly and adequately trained by the manufacturer of the chillers	The training shall contain, but not limited to, the following: i) General description of the system and its associated equipment as a whole. ii) Operation procedures. iii) Check-list of all the periodic inspection and servicing of the chiller. iv) Trouble shooting procedures. v) Identification of all the possibilities of faults of chillers vi) Recommended maintenance procedures. vii) Practical training on dismantling of compressors.	The training shall contain, but not limited to, the following: i) General description of the system and its associated equipment as a whole. ii) Operation procedures. iii) Check-list of all the periodic inspection and servicing of the chiller. iv) Trouble shooting procedures. v) Identification of all the possibilities of faults of chillers vi) Recommended maintenance procedures. vii) Practical training on dismantling of compressors.

Minimum Technical and Managerial Requirements for Certification Scheme for Servicing Quality for Chillers
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Ref.	Aspects	Objectives	Manufacturer's Local Office /Authorized Agent with in-house service team	Manufacturer's Local Office /Authorized Agent with maintenance services outsourced / Specialist Contractor
9.	Spare Parts	To have adequate stock/guaranteed supply of consumable spare parts including proprietary parts and generic parts for the chiller(s) under repairing & maintenance	Consumables to be available within 24 hours. General major parts should be delivered to Hong Kong in 2 weeks. Other major parts such as compressors, the delivery time should be confirmed within one week.	Consumables to be available within 24 hours. General major parts should be delivered to Hong Kong in 2 weeks. Other major parts such as compressors, the delivery time should be confirmed within one week.
10.	Maintenance Programme and Schedule	To have maintenance schedule for all types of chillers under their maintenance indicating dates for routine inspection and maintenance	Manufacturer published and implemented formal Installation, Operation and Maintenance Manual to be readily available.	Manufacturer published and implemented formal Installation, Operation and Maintenance Manual to be readily available.
11.	Attendance and Response to Emergency Call	To attend emergency calls within the time as specified in the ArchSD A/C GS	a) Attend to faults and complaints arising from defective work materials and/or system operation with charge within three hours at any time and without charge within 24 hours b) To rectify or provide temporary measures to rectify the problem within 24 hours upon attendance, if practically possible.	a) Attend to faults and complaints arising from defective work materials and/or system operation with charge within three hours at any time and without charge within 24 hours b) To rectify or provide temporary measures to rectify the problem within 24 hours upon attendance, if practically possible.

Minimum Technical and Managerial Requirements for Certification Scheme for Servicing Quality for Chillers
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Ref.	Aspects	Objectives	Manufacturer’s Local Office /Authorized Agent with in-house service team	Manufacturer’s Local Office /Authorized Agent with maintenance services outsourced / Specialist Contractor
12.	Breakdown Repair Time	To carry out breakdown repair according to the time as specified in the ArchSD A/C GS	Complete permanent rectification works within 7 working days unless long component and parts delivery time is required.	Complete permanent rectification works within 7 working days unless long component and parts delivery time is required.
13.	Record System of Services and repairing	To have a proven and traceable documentation system for recording of services provided	<ul style="list-style-type: none"> i) Fault call report for repair/replacement carried out for the plant and equipment ii) Equipment Breakdown Report with full details of findings during investigation/examination on cause of breakdown, account of repair/replacement work needed, suggested precaution and/or action required to prevent the recurrence of similar incident. iii) The record shall be maintained for at least 12 months after expiry of maintenance contract 	<ul style="list-style-type: none"> i) Fault call report for repair/replacement carried out for the plant and equipment ii) Equipment Breakdown Report with full details of findings during investigation/examination on cause of breakdown, account of repair/replacement work needed, suggested precaution and/or action required to prevent the recurrence of similar incident. iii) The record shall be maintained for at least 12 months after expiry of maintenance contract
14.	Health & Safety and Environmental Control	To assure the effective management of the health & safety and environmental performance in provision the chiller repairing services	In house health & safety and environmental policy	In house health & safety and environmental policy
15.	Measures for Continuous Improvement	To have a system to review the quality of the repair services and apply corrective action.	<ul style="list-style-type: none"> i) Review frequency at least once per year ii) Identify opportunity for improvement iii) Corrective action shall be applied to those substandard service/performance identified 	<ul style="list-style-type: none"> i) Review frequency at least once per year ii) Identify opportunity for improvement iii) Corrective action shall be applied to those substandard service/performance identified

List of Minimum Nos. of Technical Staff**Technical Support Staff**

A minimum of **20 nos. technical staff** including technical manager, engineers, technicians, site supervisors, craftsmen and technical assistants with adequate and relevant academic qualifications and working experience shall be employed.

<u>Title</u>	<u>Nos.</u>	<u>Min.</u> <u>Academic Qualifications</u>	<u>Min.</u> <u>Post-qualification</u> <u>Experiences</u>
Technical Manager	1 no.	i) MHKIE in relevant engineering field (or equivalent), <i>or</i> ii) Degree in relevant engineering field, <i>or</i> iii) N.A.	2 years 8 years 20 years of relevant working experiences
Engineer	1 no.	i) Higher Diploma in relevant engineering fields, <i>or</i> ii) Higher Certificate in relevant engineering field	3 years 5 years
Site Supervisor	3 nos.	An approved apprenticeship or equivalent in the related field; and be registered as REW grade R or above	8 years
Technician (A/C)	5 nos.	An approved apprenticeship or equivalent in the related field; and be registered as REW grade R or above	5 years
Technician (Elect.)	2 nos.	An approved apprenticeship or equivalent in the related field; and be registered as REW grade B or above	5 years
Craftsman (A/C)	2 nos.	An approved apprenticeship or equivalent in the related field; and be registered as REW grade R or above	2 years
Craftsman (Elect.)	2 nos.	An approved apprenticeship or equivalent in the related field; and be registered as REW grade A or above	2 years
Technician Assistant	4 nos.	An approved apprenticeship or equivalent in the related field; and be registered as REW grade R or above	2 years

Appendix A

Annex II – R

List of Tools / Equipment and Testing Instruments

Item of Assessment	Minimum Requirements	Remarks
Welding machine	1	
Mercury manometer	1	See Note 2
Voltmeter	2	See Note 2
Ammeter	2	See Note 2
Refrigerant leakage tester	2	See Note 2
Pump out unit	1	
Vacuum pump	1	
Charging hose	2	
Refrigerant storage cylinder	1	

Note : 1. All equipment should be verified that they are all at sight or with other form of proof of ownership.
2. Record of valid calibration for testing instruments must be available.
