



مجلس أبوظبي للجودة والمطابقة
ABU DHABI QUALITY & CONFORMITY COUNCIL

ABU DHABI OCCUPATIONAL TERMS

Technical Supervisor – Level 4



22 NOVEMBER 2018
FIRST EDITION



Table of contents

Amendment Page	2
Abu Dhabi Quality & Conformity Council.....	3
Foreword.....	3
Acknowledgments.....	4
Introduction.....	5
Occupational Terms.....	6
Key terms.....	8
Performance Criteria.....	10
Technical Knowledge	13
Knowledge and Understanding.....	14
Soft skills	14
References.....	16



Amendment Page

This Amendment Page is updated and issued with each set of revised and/or new pages of the document to help ensure that each copy of this Abu Dhabi Occupation Term (ADOT) contains a complete record of amendments.

This Occupational Term is a live document which can be amended when necessary. QCC can review stakeholder comments in order to review and amend this document; ultimately resulting in an issuance of an updated version, if necessary.

Log of Amendments						
Amendment			Discard		Insert	
No.	Date	*Sections Changed	Page(s)	Issue No.	Page(s)	Issue No.



About the Abu Dhabi Quality & Conformity Council

The Abu Dhabi Quality and Conformity Council (QCC) were established by law No. 3 of 2009, issued by His Highness Sheikh Khalifa Bin Zayed Al Nahyan, President of the UAE. QCC is responsible for the development of Abu Dhabi Emirate's Quality Infrastructure, which enables industry and regulators to ensure that products, systems and personnel can be tested and certified to UAE and International Standards.

Products and services certified by QCC receive the Abu Dhabi Trustmark. The Trustmark is designed to communicate that a product or system conforms to various safety and performance standards that are set by Abu Dhabi regulators.

Foreword

The QCC, along with relative stakeholders, had developed occupational terms for 21 unique occupations in the construction sector. This was required because of a high dependence on migrant labor to fill key technical roles in the skilled trades and concerns about the productivity of the industry where skills investment is inconsistent.

The occupational terms are professional standards that personnel must meet in order to perform the jobs they are assigned to produce quality outcomes. The Government of Abu Dhabi, under the leadership of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE and Ruler of Abu Dhabi, and His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi, Deputy Supreme Commander of the UAE Armed Forces and Chairman of the Abu Dhabi Executive Council, has invested heavily, and at high levels of professionalism and safety, in the Infrastructure of Abu Dhabi. Therefore, it is crucial and obligatory to encourage the presence of skilled workmanship to maintain the quality infrastructure value in the Emirate of Abu Dhabi in particular and the United Arab Emirates in general.



Acknowledgments

The QCC would like to thank the members of the working group listed below:

Sr.	Name	Entity
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		



Introduction

- **Qualification Pack - Technical Supervisor**
- **Brief description of Job** –A Technical Supervisor is an important job role in Construction and building management works that cater as a mentor for the MEP technicians and workers and a resource person to implement the work strategy under MEP Engineers and managers.
- **Personal attributes** – A Technical Supervisor should be a good team player who has thorough knowledge in installation and maintenance of HVACR equipment and fittings, Plumbing equipment and fittings

Duties and responsibilities	To lead a team of level 3 and level 2 MEP technicians to install and maintain the HVAC and plumbing equipment and systems and supervise installation activities on construction, renovation and maintenance sites, read and implement the approved shop drawings, and required maintenance works under Engineers and Managers.
Min. qualification	Technical diploma of refrigeration & air-conditioning/Mechanical after High School Diploma/ An industrial training institute certification (ITI) or with 3 years of work experience as level 3 HVAC Technician or Plumbing Technician. (ASHRAE certification an added benefit)
Training (Suggested but not mandatory)	On the job training for 6 months.
Work Experience	In line with min qualification he should have a total of 5 years of MEP (HVAC or Plumbing) work experience among 3 years should be as level 3 MEP Technician.
Performance criteria	As described in relevant chapters



Occupational Terms

No.	Field	Details												
1.	Occupation (Standard Unit)	Technical Supervisor – Level 4												
2.	Description	This occupational terms specifies the outcome required to perform as a Technical Supervisor for install, maintain and dismantle all equipment/accessories related HVAC and plumbing works												
3.	Unit type	<input type="checkbox"/> Knowledge and Skills OR <input checked="" type="checkbox"/> Application												
4.	Elements	<table border="1" style="width: 100%;"> <thead> <tr> <th>No.</th> <th>Element</th> </tr> </thead> <tbody> <tr> <td>E1</td> <td>Manage services and their quality at sites</td> </tr> <tr> <td>E2</td> <td>Manage resources</td> </tr> <tr> <td>E3</td> <td>Documentation for maintenance activities</td> </tr> <tr> <td>E4</td> <td>Identify and resolve any issues related to installation, operation and maintenance of HVAC/plumbing systems</td> </tr> <tr> <td>E5</td> <td>Implement and monitor procedure for maintain a healthy, safe and secure working environment</td> </tr> </tbody> </table>	No.	Element	E1	Manage services and their quality at sites	E2	Manage resources	E3	Documentation for maintenance activities	E4	Identify and resolve any issues related to installation, operation and maintenance of HVAC/plumbing systems	E5	Implement and monitor procedure for maintain a healthy, safe and secure working environment
		No.	Element											
		E1	Manage services and their quality at sites											
		E2	Manage resources											
		E3	Documentation for maintenance activities											
		E4	Identify and resolve any issues related to installation, operation and maintenance of HVAC/plumbing systems											
E5	Implement and monitor procedure for maintain a healthy, safe and secure working environment													
5.	QF <i>Emirates</i> level	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10												
6.	Function	<input type="checkbox"/> Policy and strategy QF 9-10 <input type="checkbox"/> Managing QF 7-8 <input type="checkbox"/> Specifying QF 6-7 <input type="checkbox"/> Controlling QF 6 <input checked="" type="checkbox"/> Maintaining capability QF 4-6 <input type="checkbox"/> Performing/carry out QF 1-4												
7.	Entry information and prerequisites	Technical diploma of refrigeration & air-conditioning/Mechanical after high School Diploma/Industrial Institute certification, Training Diploma Trade as Assistant- HVAC/Mechanical, Refrigeration and Air Conditioning, Sheet Metal Works, Construction and Manufacturing-Mechanical. (ASHRAE certification an added benefit)												



No.	Field	Details		
8.	Grading	Application unit: <i>Competent/Not Yet Competent</i>		
9.	Industry sector	Construction & Maintenance		
10.	Developed by	Know How	Government Entities	Abu Dhabi Quality & Conformity Council
11.	Endorsement date	TBD		
12.	Frequency of review	2 Years		
13.	Version No.	0		
14.	ISCO-08	7124 Insulation Workers, 7126 Plumber and pipe fitters, 7127 Air Conditioning & Refrigeration Mechanics, 7213 Sheet Metal Workers,		



Key terms

Term	Description
Personal Protective Equipment (PPE)	Items that construction workers can use to protect themselves against hazards. PPE includes but not limited to gloves, safety helmet, eye protection, face protection, foot protection and appropriate clothing.
Risk	Risk is the product of the measure of the likelihood of occurrence of an undesired event and the potential adverse consequences which this event may have upon: <ul style="list-style-type: none"> · People – injury or harm to physical or psychological health · Environment – water, air, soil, animals, plants and social Risk = frequency x consequences
Hazard	Any substance, physical effect, or condition with potential to harm people, property or the environment.
OSHA	Occupational Safety & Health Administration
Building diagram	A technical drawing of a structure or building that is drawn in a scale that is proportionate to its real-world dimensions. Building drawings include site plans, floor plans, elevations and sections. Drawings that provide additional specific/specialist details are known as Coordination Drawings.
Cross Section	A section is a type of building drawing. It represents a vertical plane cut through the structure.
Elevation	An elevation is a type of building drawing. It is a drawing of the exterior or interior of a building or structure as seen from a horizontal position - without dimensional perspective.
Floor plan	A floor plan is a building drawing. It is a drawing to scale showing a view from above, of the relationships between rooms, spaces and other physical features at one level of a structure.
Layout drawing	An approved design or plans to show the way things are arranged
Site Plan	A site plan is a type of building drawing that shows a new or existing building's position in relation to the boundaries of the block of land.
Work instructions	Written or verbal description of the work to be undertaken by an individual or work team.
HVAC	Heating, Ventilation, & Air Conditioning here refers to "Self-Contained Equipment" i.e. Complete, factory-assembled and tested, heating, air-conditioning equipment installed as a single unit, and having all working parts, complete with motive power, in an enclosed unit of said machinery and/or Split System/DX Split System consisting of indoor unit housing evaporator & fan and outdoor unit housing compressor, condenser and heat rejection fan.
Air Handling Unit	A series of components joined in section that provide cool air and/or treated ventilation air to space directly or indirectly.
Ceiling Suspended Ducted Unit	HVAC equipment hung or installed above false ceiling suspended from slab of floor above.



Duct	A tube or conduit utilized for conveying air. The air passages of self-contained systems are not to be construed as air ducts
Duct Accessories	Fire Dampers, Motorized Fire Dampers, Motorized Smoke Dampers, Motorized Combined Fire & Smoke Dampers, Volume Control Dampers, & Air terminals installed in duct system to serve designed purpose
Duct Fittings	A piece of duct in a standard form or shape to connect two pieces of ducts
Plumbing Fixture	A receptacle or device that is connected to a water system or discharges to a drainage system or both. Such receptacle or devices require a supply of water; or require a supply of water and discharge waste to a drainage system. Plumbing Fixture for this standard refers to wash basin, kitchen sink, bathtubs, showerheads, urinals, & water closet
Plumbing System	Refers to potable water system, potable water distribution pipes, plumbing fixtures, sanitary waste water system, sanitary wastewater pipes and fitting, water heaters, & pumps
Piping Specialties (Potable)	Common devices installed in potable water system other than pipes and fittings that serve a specific purpose such as water hammer arrestor, backflow preventers, and pressure reducing valves.
Piping Specialties (Sanitary Wastewater)	Common devices installed in potable water system other than pipes and fittings that serve a specific purpose such as water hammer arrestor, backflow preventers, and pressure reducing valves.
Pressure Test	A test following the installation of new equipment/piping system or modification of existing equipment/piping system where the equipment/piping system is place under pressure to ensure that it will not leak.
Refrigerant	A substance or mixture, usually a fluid used for cooling & heating application.
SOP	Standard operating Procedure
GMP	Good Manufacturing Practices



Performance Criteria

Element1: Manage services and their quality at sites

Scope	<ul style="list-style-type: none"> Estimate and procure required resources for operations and maintenance Achieve productivity and quality standards
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Estimating and procuring required resources for operations and maintenance	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. plan & identify resource requirements accurately to complete maintenance works and take inputs from team leaders on their requirements</p> <p>PC2. assist engineers to give inputs for preparing work method statements</p> <p>PC3. Should be able to estimate the quantity of the resources identified to complete each maintenance activity</p> <p>PC4. should assist in procuring the resources as per company's SOP</p>
Achieving productivity and quality standards	<p>PC5. conduct monitoring of resources and services at regular intervals and in accordance with company's SOP</p> <p>PC6. ensure activity schedules has clear and accurate mention of resource requirements and ensure activity schedules meet objectives set out in the contract</p> <p>PC7. ensure that quality of MEP works meet required maintenance standards and organizational standards</p> <p>PC8. promptly report any problems to concern engineers that are likely to affect the service delivery</p> <p>PC9. identify opportunities for improvements to services and promptly implement it or pass these to upstream officials for approval</p>

Element2: Manage resources

Scope	<ul style="list-style-type: none"> Arrange adequate resources Allocate work to workers Direct, prepare and monitor workers
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Arranging adequate resources	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. list the required resources for service provision and raise the demand invoice to Procurement executive and / or storekeeper as per company's SOP</p> <p>PC2. collect / receive all the resources as per company's SOP</p> <p>PC3. store them safely and appropriately as per company's SOP</p> <p>PC4. ensure availability of adequate resources and appropriate tools at site all the time to provide uninterrupted quality of work and distribute the materials to team leaders as per the work schedule and should have the knowledge of tracking inventory at all stages of maintenance works</p>



Allocating work to workers	<p>PC5. distribute the work among groups in such a way that it gets completed on time</p> <p>PC6. ensure all the group members have clear understanding of their duties and job responsibilities</p> <p>PC7. Should have the knowledge of conducting tool box meetings</p>
Directing, preparing and monitoring workers	<p>PC8. welcome all subordinates to the workplace with open mind and encourage them with motivation</p> <p>PC9. prepare and train subordinates for new job responsibilities and provide them help when required</p> <p>PC10. help the new and existing workers in acclimatizing to new work area and maintenance activities</p> <p>PC11. explain the work requirements to workers and clear their technical doubts without hesitation</p> <p>PC12. Explain the effective ways to workers for completing their respective work</p> <p>PC13. Monitor workers performing their duties and point out if any discrepancy is observed and train workers on how to operate and use equipment needed to complete their work</p> <p>PC14. train subordinates on using the newly supplied tools and machines with adequate safety</p>

Element3: Documentation for maintenance activities

Scope	<ul style="list-style-type: none"> • Reporting • Recording and Documentation • Information Security
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Reporting	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. collect report data/problems/incidents from subordinates and could interpret it.</p> <p>PC2. able to report the collected data to the appropriate authority as per company's SOP</p> <p>PC3. instruct to follow reporting procedures in the team as prescribed by the company</p> <p>PC4. update engineers about completed and outstanding work orders</p> <p>PC5. carries out site inspection on a random basis to monitor the benchmark of work and schedule.</p>
Recording and Documentation	<p>PC6. Instruct about the documentation to be completed relating to one's role</p> <p>PC7. Collect the recorded details accurately in the appropriate format</p> <p>PC8. Collect and consolidate the prepared & completed job documentation from subordinates</p> <p>PC8. Instruct to maintain time, materials and equipment use reports</p> <p>PC10. maintain records of all data attendance and provide effective training to immediate subordinates</p> <p>PC11. Complete and monitor the completion of all documentation within stipulated time according to company procedure</p>



	<p>PC12. ensure the quality standards are met while preparing the documents and will serve the document preparation cause</p> <p>PC13. make sure documents are available to all appropriate authorities</p>
Information Security	<p>PC14. respond to requests for information in an appropriate manner while following organizational procedures</p> <p>PC15. inform the appropriate authority of requests for information received</p>

Element4: Identify and resolve any issues related to installation, operation and maintenance of HVAC/plumbing systems

Scope	<ul style="list-style-type: none"> • Inspection • Analysis
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Inspection	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. inspect maintenance works to ensure compliance with standard procedures like ASHRAE, SMACNA, Universal Plumbing code...</p> <p>PC2. implement emergency action plans</p> <p>PC3. identify non-conformities to the company maintenance SOP</p> <p>PC4. should have basic knowledge of QA/QC procedures for inspection</p>
Analysis	<p>PC5. analyze potential causes of non-conformities to standards and its remedies</p> <p>PC6. evaluate the need for action to ensure that technical failure related to HVAC and plumbing do not recur</p> <p>PC7. suggest, collect, consolidate and implement corrective action to address maintenance problems</p> <p>PC8. periodically review effectiveness of corrective actions and suggest modifications if require to appropriate authorities</p> <p>PC9. interpret the results of the inspection correctly</p>

Element5: Implement and monitor procedure for maintain a healthy, safe and secure working environment

Scope	<ul style="list-style-type: none"> • Preparation of Safety procedures and its implementation • Managing emergency procedures
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Preparation of Safety procedures and its implementation	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Should assist HSE personals for preparing job hazard analysis.</p> <p>PC2. Should have thorough knowledge of hazards related to each installation and maintenance activity and its remedy</p> <p>PC3. basic knowledge of safety standards</p> <p>PC4. Could monitor proper use of PPE’s by workers</p> <p>PC5. take appropriate action for identified breaches in health, safety, and security</p>



	<p>policies</p> <p>PC6. responsible for monitor and take disciplinary action at the work area</p> <p>PC7. adhere and comply to storage and handling guidelines for hazardous material</p> <p>PC8. identify and recommend opportunities for improving health, safety, and security to the designated person</p> <p>PC9. implement and monitor electrical safety all times while doing maintenance.</p> <p>PC10. Monitoring and take appropriate actions to violators of procedures like electrical LOTO, installing warning signs etc... in the work site</p> <p>PC11. knowledge of chemical substances, their characteristics and required precaution and safety measures</p> <p>PC12. the importance of maintaining high standards of health, safety and security</p> <p>PC13. implications that any non-compliance with health, safety and security may have on individuals, in the maintenance process and in the organization</p>
Managing emergency procedures	<p>PC14. Convey emergency procedures to the subordinates</p> <p>PC15. follow the company’s emergency procedures promptly, calmly, and efficiently</p> <p>PC16. should have knowledge of evacuation procedures for workers and visitors</p> <p>PC17. should know how to summon medical assistance and the emergency services, where necessary</p> <p>PC18. should know how to use the health, safety and accident reporting procedures and the importance of these procedures</p>

Technical Knowledge

Relevant work Context	<p>The user/individual on the job needs to know and exhibit:</p> <p>TK1. About Coordinating work with other contractors and subcontractors during maintenance period</p> <p>TK2. About potential causes of deterioration of quality before , during and after maintenance</p> <p>TK3. how to plan, schedule and estimate the resources required to complete the job</p> <p>TK4. how to monitor and conduct a review of service provision</p> <p>TK5. how to regularly check the quality of work and services against the agreed quality standards</p> <p>TK6. what corrective actions to be implemented if the work provision is not in accordance with the required quality standards and outside operating parameters</p> <p>TK7. typical equipment faults and related causes</p> <p>TK8. methods, materials and equipment used in installing, repairing and maintaining heating, refrigeration and air conditioning equipment</p> <p>TK9. environmental issues and controls relevant to the process, including waste/rework collection and handling procedures related to the process</p> <p>TK10. how to perform statistical analysis of test data</p> <p>TK11. Capability of understanding the technical drawing and catalogues.</p>
-----------------------	---

Knowledge and Understanding

General & organizational Context	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. legislation, standards, policies, and procedures followed in the company relevant to own employment and performance criteria</p> <p>KA2. what are the scope of works provided by the company to clients and its quality standards</p> <p>KA3. organization culture and typical customer profile, service level agreements and policies, code of conduct , organization pricing policy</p> <p>KA4. sources for information pertaining to employment terms, entitlements, job role and responsibilities</p> <p>KA5. reporting structure, inter-dependent functions, lines and procedures in the work area</p> <p>KA6. material and equipment used in the maintenance works and their function</p> <p>KA7. impact of various practices on cost, quality, productivity, delivery and safety</p> <p>KA8. use of monitoring and measuring devices</p> <p>KA9. measures, steps and possible solutions that have been taken/identified to address the previous problems</p> <p>KA10. escalation matrix for reporting identified issues, hazards and breakdown</p> <p>KA11. potential hazards, actions to minimize the same and basic disaster management</p> <p>KA12. characteristics of the material and equipment required in setting up HVAC & plumbing and its maintenance</p> <p>KA13 company manual and SOP</p>
----------------------------------	---

Soft Skills

A. Core Skills/ Generic Skills	Reading Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. read and understand manuals, SOPs, health and safety instructions, memos, Reports, job cards etc.</p> <p>SA2. read and interpret images, graphs, diagrams for typical product specifications, job sheets, procedures, basic machine control panels, material labels and safety information as provided</p> <p>SA3. read various coding systems as per company norms</p> <p>SA4. read and interpret instructions, procedures, information and signs in the workplace</p>
	Writing skills
	SA5. complete appropriate documentation



	<p>SA6. fill in the data capturing formats as per company’s SOPs</p> <p>SA7. Document accurately all the job activities as per company’s SOP</p> <p>SA8. Keep records as per company’s formats in a way that someone else can understand</p> <p>SA9. do legible entries with permanent ink</p> <p>SA10. write detailed reports for investigation</p> <p>SA11. pay attention to detail while recording maintenance parameters</p> <p>SA12. record and communicate details of work done to appropriate people using written/typed report</p>
	<p>Oral Communication (Listening and Speaking skills)</p>
	<p>SA13. communicate with upstream and downstream teams</p> <p>SA14. communicate with people in a proper form and manner and use language that is open and respectful</p> <p>SA15. resolve any difficulties in relationships with colleagues , or get help from an appropriate person, in a way that preserves goodwill and trust</p> <p>SA16. communicate effectively with clients and respond to their queries</p> <p>SA17. provide accurate and up-to-date information in a way that is suitable for the people receiving it</p> <p>SA18. communicate confidential and sensitive information discretely to authorized person as per the SOP</p>
B. Professional Skills	<p>Plan & Organize</p> <p>SB1. plan and organize resources to ensure assembly, installation and maintenance activities adhere to schedule and production efficiency needs</p> <p>SB2. multi-task and adapt to meet work timelines</p> <p>SB3. effectively delegate and lead to plan, lay out, supervise and inspect the work of Subordinates</p> <p>SB4. study past data to identify resource needs for maintenance activities</p> <p>SB5. effectively plan and allocate ownership for documentation/information within the team</p> <p>SB6. take responsibility for completing one’s own work assignment</p> <p>SB7. plan and prioritize reporting/documentation based on criticality and urgency</p>
	<p>Decision Making</p> <p>SB8. evaluate multiple options on defined, objective parameters when taking assembly, installation and maintenance decisions</p> <p>SB9. collaborate within the team and with other production teams for identifying appropriate maintenance schedules</p> <p>SB10. apply technical know-how and commercial awareness as a scheduling decision parameter and cost control</p> <p>SB11. act objectively, rather than impulsively or emotionally when faced with difficult/stressful or emotional situations</p>
	<p>Critical Thinking</p> <p>SB12. apply balanced judgment to different situations</p> <p>SB13. apply basic mathematical and statistical knowledge</p> <p>SB14. provide sound, constructive, and objective opinions</p>



	Analytical Thinking
	SB15. analyze operations data and information to identify assembly, installation and maintenance needs
	SB16. pay attention to detail for identifying faults and anomalies for maintenance
	SB17. spot process disruptions and delays and report and communicate these to the manager with solutions
	SB18. to estimate the time taken to complete a work
	SB19. assess the resource requirement to complete the work
	SB20. suggest improvements (if any) in current ways of working
	Problem solving
	SB21. solve conflicts and negotiate on behalf of the team and within the team
	SB22. identify and objectively evaluate both temporary/short-term and permanent/long-term solutions
	SB23. how to avoid conflicts and solve them amicably
	SB24. identify, define and resolve installation, operation and maintenance problems using a structured methodology and objective parameters

References

<http://www.ukstandards.org.uk>

<http://www.nsdcindia.org/nos>

http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf

<https://www.oshad.ae/en/Pages/OSHTopicInnerViewPage.aspx?topicID=15>

<https://dmat.abudhabi.ae/ data/ADC2014/AD Property Maintenance Code/index.html#p=40>

https://www.nqa.gov.ae/en/Documents/QF_Handbook_FINAL.pdf

<https://dmat.abudhabi.ae/en/About/Pages/buildingcode.aspx>

[ASHRAE Handbook - HVAC Systems and Equipment 2016](#)

[Uniform plumbing code of Abu Dhabi Emirate](#)