

Engineering Standard

SAES-K-100

31 May, 2004

Saudi Aramco Mechanical (HVAC) Code

HVAC Standards Committee Members

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Saudi Aramco DeskTop Standards

Table of Contents

1	Adoption.....	2
2	Conflicts and Deviations.....	2
3	References.....	2
4	General Requirements.....	3
5	Summary of Modifications.....	4
6	Modifications to Uniform Mechanical Code (UMC).....	5

Previous Issue: 31 July, 2000 Next Planned Update: 1 June, 2007

Revised paragraphs are indicated in the right margin

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Page 1 of 8

1 Adoption

The Uniform Mechanical Code in its entirety, published by the International Conference of Building Officials, 1997 edition, with amendments and supplements thereto is hereby adopted as the Saudi Aramco Mechanical Code.

2 Conflicts and Deviations

- 2.1 Any conflicts between this Standard and other applicable Saudi Aramco Engineering Standards (SAESs), Materials System Specifications (SAMSSs), Industry Standards, Codes, Forms and Saudi Aramco Mandatory Drawings (SAMDs) shall be resolved in writing by the Company or Buyer Representative through the Manager, Consulting Services Department, Dhahran.
- 2.2 All requests to deviate from this standard shall be directed to the Company or Buyer Representative, who shall follow internal company procedure [SAEP-302](#) and forward such requests to the Manager, Consulting Services Department, Dhahran.

3 References

All referenced specifications, standards, codes, forms, drawings and similar material shall be of the latest issue (including all revisions, addenda and supplements) unless stated otherwise.

3.1 Saudi Aramco References

Saudi Aramco Engineering Procedures

SAEP-103	<i>Metric Units of Weights and Measure</i>
SAEP-301	<i>Instructions for Establishing and Maintaining Saudi Aramco Engineering Requirements</i>
SAEP-302	<i>Instructions for Obtaining a Waiver of a Mandatory Saudi Aramco Engineering Requirement</i>

Saudi Aramco Engineering Standards

SAES-K-001	<i>Heating, Ventilation and Air Conditioning (HVAC)</i>
SAES-K-002	<i>Air Conditioning Systems for Essential Operating Facilities</i>
SAES-K-003	<i>Air Conditioning Systems for Communications Buildings</i>

[SAES-M-100](#)

Saudi Aramco Building Code

[SAES-S-060](#)

Saudi Aramco Plumbing Code

Saudi Aramco General Instructions

GI-0425.000

Refrigerant Management

3.2 Industry Codes and Standards

American Society of Heating, Refrigerating & Air-Conditioning Engineers, Inc.

ASHRAE STD 62

Ventilation for Acceptable Indoor Air Quality

Underwriters Laboratories

UL-181

*UL Standard for Safety Factory-Made Air Duct
and Connectors*

Uniform Mechanical Code

4 General Requirements

- 4.1 All provisions of the Uniform Mechanical Code (UMC) apply, except as modified in Section 5 below. The UMC, modified by this Saudi Aramco Engineering Standard (SAES), and all other Documents listed in paragraph 4.4 shall constitute the Saudi Aramco Mechanical Code (SAMC) and is hereafter referred to as "this Code".
- 4.2 The provisions of this Code shall apply to the construction, modification, repair and use of heating, ventilating and air-conditioning systems within Saudi Aramco operated camps and plant areas except where more stringent requirements are specified in other applicable Saudi Aramco Standards with regard to fire, life and property safety.
- 4.3 All references to specifications, standards, codes, etc. herein are to be interpreted as applying to the latest editions of the date of design or major alteration of the mechanical system in question.
- 4.4 The Saudi Aramco Standards and Specifications listed below are to be considered a part of this code, and in case of any conflict, supersede the requirements of this code. Questions, regarding the clarification or interpretation of this Code shall be directed to the Chairman of HVAC Standards Committee. Design approval for fire and life safety provisions rests with the Chief Fire Prevention Engineer.

[SAES-K-001](#)

*Heating, Ventilation and Air Conditioning
(HVAC)*

<u>SAES-K-002</u>	<i>Air Conditioning Systems for Essential Operating Facilities</i>
<u>SAES-K-003</u>	<i>Air Conditioning Systems for Communications Buildings</i>
<u>SAES-S-060</u>	<i>Saudi Aramco Plumbing Code</i>
<u>SAES-M-100</u>	<i>Saudi Aramco Building Code</i>
<u>SAEP-103</u>	<i>Metric Units of Weights and Measure</i>
<u>SAEP-301</u>	<i>Instructions for Establishing and Maintaining Saudi Aramco Engineering Requirements</i>
<u>SAEP-302</u>	<i>Instructions for Obtaining a Waiver of a Mandatory Saudi Aramco Engineering Requirement</i>
ASHRAE STD 62	<i>Ventilation for Acceptable Indoor Air Quality</i>
UMC 1997 Edition	<i>Uniform Mechanical Code</i>

4.5 The UMC is written using the English system of units. For Saudi Aramco applications, conversion to the Metric system shall be in accordance with [SAEP-103](#), Metric Units of Weights and Measures.

5 Summary of Modifications

Individual Sections of the UMC apply unless modified as indicated below. The Chapter number and section number shown are those listed in the 1997 Edition of the UMC.

Saudi Aramco Mechanical Code Table of Contents

UMC CHAPTER NO.	TITLE	REMARKS	PAGE NO.
Chapter 1	Administration	Modified	5
Chapter 2	Definitions	Modified	6
Chapter 3	General Requirements	No Change	
Chapter 4	Ventilation Air Supply	Modified	7
Chapter 5	Exhaust Systems	No Change	
Chapter 6	Duct Systems	Modified	7
Chapter 7	Combustion Air	No Change	
Chapter 8	Chimneys and Vents	No Change	
Chapter 9	Special Fuel-Burning and Energy-Utilizing Equipment	No Change	
Chapter 10	Boiler/Water Heaters	No Change	
Chapter 11	Refrigeration	Modified	7
Chapter 12	Hydronics	No Change	
Chapter 13	Fuel-Gas Piping	No Change	
Chapter 14	Special Piping and Storage Systems	No Change	
Chapter 15	Solar Systems	No Change	

Chapter 16	Uniform Building Code, Uniform Mechanical Code and Uniform Fire Code Standards	No Change
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Appendix A

Uniform Mechanical Code Standards **No Change**

No. 2-2	Galvanized Sheet Metals
No. 2-3	Flash Point Pesky-Martens Closed Tester
No. 6-1	Standard for Metal Ducts
No. 6-2	Test Method for Fire and Smoke Characteristics of Electrical Cable, Optical Fiber Raceways and Plastic Sprinkler Pipe
No. 6-3	Standard for Installation of Factory Made Air Ducts
No. 11-1	Standard Test Method of Concentration Limits of Flammability of Chemicals
No. 11-2	Methods for System Identification

Appendix B

Chapter 15	Solar Systems	No Change
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Appendix C

Chapter 8	Sizing of Venting Systems Serving Appliances Equipped with Draft Hoods and Appliances Listed for Use with Type B Vents	No Change
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Appendix D

Unit Conversion Tables
Gage Conversion Table

No Change

6 Modifications to Uniform Mechanical Code (UMC)

The following paragraph numbers refer to Uniform Mechanical Code (UMC), which is part of this standard. The text in each paragraph below is an addition, exception, modification, or deletion to UMC as noted. Paragraph numbers not appearing in UMC are new paragraphs to be inserted in numerical order.

Chapter 1 Administration

Part I - General

103.1 Applicability

Replace the second sentence with the following sentence:

"The design and construction of mechanical systems regulated by this Code shall be approved by the applicable Proponent and Project Management Organizations of Saudi Aramco."

104.1 Additions, Alterations or Repairs

Delete the following from the end of the first sentence: "when approved by the building official".

104.4 Maintenance

In the last sentence replace "building official" by "Manager of Inspection Department".

105.1 Alternates Require Approval

105.2 Equivalency of Alternates

105.3 Evidence Required

In the above sections replace "building official" by "Manager of Consulting Services Department".

The following sections of this Code:

106.0 Modifications

107.0 Tests

Part II - Organization and Enforcement

Part III - Permits and Inspections are deleted and replaced with:

- a) Any modifications to this Code shall be in accordance with the requirements of Saudi Aramco Engineering Procedure [SAEP-301](#), Instructions for Establishing and Maintaining Saudi Aramco Engineering Requirements. Waivers from this code shall be prepared, evaluated and approved in accordance with [SAEP-302](#), Instructions for Obtaining a Waiver of a Saudi Aramco Engineering Requirement.
 - b) The Administrative Authority of waiver approval is vested in the Manager of Consulting Services Department, as defined in [SAEP-302](#).
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- c) The Administrative Authority, regarding the technical aspects, applicability or clarification of this Code, rests with the Chairman of HVAC Standards Committee.
- d) The Administrative Authority, regarding the fire safety aspects of the requirements in this Code, is the Chief Fire Prevention Engineer of Loss Prevention Department.
- e) Approval of design or construction and inspection of mechanical systems, covered by this Code, shall be performed by person designated for these tasks in accordance with the current procedures of Saudi Aramco.

Chapter 2	Definitions
203.0	Administrative Authority is the person defined in the earlier sections of this Standard. Building Code shall mean the Saudi Aramco Building Code, SAES-M-100 . Plumbing Code shall mean the Saudi Aramco Plumbing Code, SAES-S-060 .
Chapter 4	Ventilation Air Supply
403.1	General Replace with the following: "Ventilation air supply requirements for specific occupancies are listed in HVAC Engineering Standards SAES-K-001 , SAES-K-002 , SAES-K-003 and ASHRAE STD 62."
Chapter 6	Duct Systems
601.1	Delete the following from the first paragraph: "with prior approval", and "asbestos cement".
604.1	Amount of Insulation Add to the end of this paragraph: "Insulation of ducts shall also comply with the requirements of SAES-K-001 ".

605.2 Fire Dampers

Replace the first sentence with:

"Fire dampers shall comply with the requirements of [SAES-K-001](#), and shall be installed in accordance with manufacturer's installation instructions".

Chapter 11 Refrigeration

1101.1 Scope.

Delete the following:

"and other applicable provisions of this code"

Replace with:

"GI-0425.000 and."

Revision Summary

31 May, 2004

Revised the "Next Planned Update". Reaffirmed the contents of the document, and reissued with no other changes.