
MEDICAL GASES PIPELINE SYSTEM DESIGN

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MEDICAL GASES PIPELINE SYSTEM DESIGN

❑ DESIGN STEPS

❖ Step 1

- Preliminary Information – Adequate Drawings
Identifying room types and designations , i.e. Operating Theatre, Wards, ICU, Procedure and Treatment Rooms

Minimum workable scale usually 1:200, 1:100 or 1:50

An overall site plan beneficial to assist with plant location

MEDICAL GASES PIPELINE SYSTEM DESIGN

❑ DESIGN STEPS

❖ STEP 2

➤ Establish the Specification Level

Determine if the specification is required to be

i. HTM22

ii. HTM 2022

iii. C11

iv. NFPA 99 (American equivalent to HTMs)

MEDICAL GASES PIPELINE SYSTEM DESIGN

❑ DESIGN STEPS

❖ STEP 3

➤ Position the TERMINAL UNITS

Use HTM 2022, Table 2 (Scale of Provision of Terminal units).

Consider position of the TUs in the rooms, the mounting method, wall mounted, trunking, or ceiling theatre pendants.

TUs mounting height recommends between 0.9 to 1.4 metres

MEDICAL GASES PIPELINE SYSTEM DESIGN

□ DESIGN STEPS

❖ STEP 4

➤ Position the Area Valve Service Units(AVSU)

Decide AVSU location using the recommendations in HTM 2022 (refer to 13.75 – 13.78: provision of AVSU)

AVSU general located at entrance of each department, each OTs and ITU's should be split between two sets of AVSU

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□ DESIGN STEPS

❖ STEP 5

➤ Identify Plant Locations

Establish location of the plant and resource equipment .

Verify suitability for equipment needs, plant rooms and manifold rooms should be separate.

Total size of the rooms shall be enough c/w clearance , maintenance , accessibilities, height clearance for tall receivers

If VIE is proposed, suitable for tankers manoeuvres

Any fire risk areas.

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□ DESIGN STEPS

❖ STEP 6

➤ Identify the Mains and Riser Locations

The installation for more than one floor the location of riser required

Provision of suitable duct or mechanical service riser c/w good access

Avoid high fire risk areas such as kitchen, boiler house, lift and generator room.

Ventilated, avoid the danger of gas build up from event of leakage.

MEDICAL GASES PIPELINE SYSTEM DESIGN

□ DESIGN STEPS

❖ STEP 7

➤ Decide on the Minor Pipeline Routes

The remainder of the pipeline

Method of installation may be exposed, hidden in ceiling

Shall cater future expansion

MEDICAL GASES PIPELINE SYSTEM DESIGN

□ DESIGN STEPS

❖ STEP 8

- Draw a scaled Isometric Drawing

Complete network of pipes, risers, down droppers, AVSUs and TUs

❖ STEP 9

- Produce Individual Gas Drawings
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MEDICAL GASES PIPELINE SYSTEM DESIGN

□ DESIGN STEPS

❖ STEP 10

➤ Determine the Gas Flow Rates

Refer to HTM 2022 Section 4 – Gas Flow

Start at the most remote TU in each area run back to plant or manifold. Only TU downstream shall be consider.

MEDICAL GASES PIPELINE SYSTEM DESIGN

□ DESIGN STEPS

❖ STEP 11

➤ Selecting The Pipeline Sizes

Refers to HTM 22 Table 5 , Table 6 , Table 7

❖ STEP 12

➤ Plant Selection

Using Total Design Flow Rates

MEDICAL GASES PIPELINE SYSTEM DESIGN

□ DESIGN STEPS

❖ STEP 13

➤ Alarm System

Positioned in each plant rooms
Permanent Staffed Areas
Engineer Room

❖ STEP 14

➤ AGSS System

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QUESTIONS & ANSWERS
