



شرکت ملی گاز ایران

مدیریت پژوهش و فناوری

امور تدوین استانداردها

IGS

Iranian Gas Standards

مشخصات فنی خرید

دستگاه بودار کننده گاز، نوع تزریقی

Odorizer , Injection Type

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1. SCOPE

- 1.1 THIS SPECIFICATION COVERS THE MIN. REQUIREMENTS FOR DESIGN , MATERIAL , FABRICATION , INSPECTION , MARKING , PACKING AND SHIPPING OF PACKAGED ELECTRONIC INJECTION TYPE GAS ODORIZER AND THE REQUIRED INSTRUMENTATION TO BE USED IN NATURAL GAS PRESSURE REDUCING STATIONS . IN CASE OF ANY DEVIATION FROM THIS SPECIFICATION IT SHALL BE CLEARLY STATED ON TECHNICAL QUOTATION .
- 1.2 WHENEVER NECESSARY ADDITIONAL PROVISIONS TO THE FOLLOWING STANDARDS AND CODES ARE STATED WHICH SHALL BE CONSIDERED AS INTEGRAL PARTS OF THIS SPECIFICATION .
- 1.3 ODORIZERS SHALL BE DESIGNED TO BE OPERATED UNATTENDEDLY FOR THE FULL RANGE OF GAS FLOW AS STIPULATED IN DATA SHEET .

2. CODES & STANDARDS

WHERE THE FOLLOWING STANDARDS ARE REFERRED TO ONLY THE LATEST EDITION OF EACH STANDARD STANDS VALID FOR APPLICATION .

1. PIPE FLANGES & FLANGED FITTINGS : ANSI B 16.5
2. FORGED STEEL FITTINGS , THREADED ANSI B 16.11
3. FORGED STEEL FITTINGS , SOCKET WELDING ANSI B 16.9
4. GASKETS : ANSI B 16.20
5. BOLTING : ANSI B 18.2 AND B 2.2
6. GAS TRANSMISSION AND DISTRIBUTION PIPING SYSTEM ASME / ANSI B 31.8
7. PRESSURE PIPING : ANSI B 31.3
8. PRESSURE VESSEL : ASME SECTION VIII DIV . I
9. ELECTRICAL APPARATUS FOR POTENTIALLY EXPLOSIVE ATMOSPHERES : BS 5501 PART 6

3. GENERAL REQUIREMENTS

- 3.1 THE ODORIZER SHALL BE DESIGNED AND FABRICATED TO BE SUITABLE FOR OUT DOOR INSTALLATION AND FOR THE MOST ADVERSE ENVIROMENTAL CONDITION OF OPERATION THROUGH OUT THE YEAR .
- 3.2 ODORANT TANK SHALL BE MADE OF CARBON STEEL ASTM A 516 , GR. 70 INTERNALLY COATED WITH MIN 300 MICRONS OF EPOXY (PRIMER + UNDERCOAT + 2 FINISH COATS) ACCORDING TO N.I.O.C STANDARDS : IPS - M – TP – 215 , 220 & 225 (1993) .
- 3.3 ALL ODORIZER UNITS SHALL BE ACCOMODATED WITH LIFTING FACILITIES FOR HANDLING AND TRANSPORTATION PURPOSES .
- 3.4 FABRICATION OF ODORIZER SHALL NOT BE COMMENCED PRIOR TO RECEIPT OF DRAWING AND DESIGN CALCULATIONS APPROVAL FROM THE PURCHASER .
- 3.5 ALL PRESSURE PARTS AND NON – REMOVABLE AND EXPOSED TO THE CONTAINED MEDIA SHALL HAVE THE CORROSION ALLOWANCE OF 3/16 IN . ADDED .
- 3.6 STORAGE TANK WILL BE FABRICATED & SUPPLIED LOCALLY AS PER PARA 2.
- 3.7 SUPPLIER OF ODORIZER SHALL PROVIDE THE CLIENT WITH ALL DRAWINGS AND TECH . INFORMATION REQUIRED FOR FABRICATION OF ODORANT STORAGE TANK , ATTACHMENTS , FITTINGS ETC . PRIOR TO START OF MANUFACTURING THE ODORIZER UNIT .
- 3.8 ODORANT TANK SHALL HAVE A DEPRESSURIZING VALVE AND AN APPROPRIATE CHARCOAL FILTER .
- 3.9 THE LOCATION AND MINIMUM SIZE OF ATTACHMENT WELD FROM NOZZELS AND OTHER CONNECTIONS SHALL CONFORM TO REQUIREMENTS DEFINED IN THE APPLICABLE SPECIFIED CODES IN THIS STANDARD AND ANY NECESSARY CORROSION ALLOWANCE FOR THE ABOVE ATTACHMENTS SHALL GENERALLY CONFORM TO THE APPLICABLE PARTS OF THE SAME CODES .
- 3.10 OPENINGS IN SHELL AND HEAD SHALL BE CONSIDERED IN ACCORDANCE WITH THE APPLICABLE CODES AND SHALL BE ADEQUATE FOR PRESSURE AND TEMPERATURE

AND BE STAMPED ON THE VESSEL . VESSELS CORRODING THICKNESS IN EXCESS OF THE REQUIRED DESIGN OR MINIMUM CODE THICKNESS SHALL NOT BE CONSIDERED IN THE DESIGN OF OPENING REINFORCEMENT UNDER OPERATING CONDITIONS . TELL TALE HOLES SHALL BE PROVIDED IN ACCORDANCE WITH ASME SECTION VIII DIVISION IUG 25 (e) .

- 3.11 INSPECTION DOOR TO BE PROVIDED FOR ODORANT TANK .
- 3.12 THE ODORIZER SHALL BE SELF SUPPORTING BY MEANS OF EITHER SKID MOUNTED OR LEGS SUPPORTED PROVISIONS WHICHEVER MOST APPROPRIATE .
- 3.13 A 316 STAINLESS STEEL SEAMLESS TUBING SHALL BE USED THROUGHOUT THE UNIT
- 3.14 ODORANT TANK SHALL BE SIZED BIG ENOUGH TO HOLD THE FULL QUANTITY OF ODORANT REQUIRED FOR ONE MONTH CONTINUOUS OPERATION OF CITY GATE STATION AT MAX. FLOW RATE AS STATED IN THE DATA SHEET . (MIN. TANK CAPACITY = 300 LITERS)
- 3.15 THE ODORIZER SHALL BE DESIGNED TO INJECT THE SPECIFIED DOZE OF ODORANT INTO GAS LINE PROPORTIONAL TO THE FLOW RATE FOR FULL RANGE OF OPERATION .
- 3.16 MAXIMUM WORKING PRESSURE OF ODORANT TANK SHALL BE 30 PSI .
- 3.17 ALL ODORIZERS SHALL BE SUPPLIED COMPLETE WITH VALVES , FITTINGS ODORANT LOADING FACILITIES AS SCHEMATICALLY SHOWN IN APPENDIX “ B “ .
- 3.18 ALL CONTROLS COMPONENTS OF ODORIZERS SHALL BE FITTED IN AN EXPLOSION PROOF CONTROL BOX.
- 3.19 FOR INSTALLATION AND OPERATION PURPOSES UP TO 7 METERS FROM THE MANI LINE , APPROPRIATE ST.STL.TUBES AND FITTINGS SHOULD BE SUPPLIED .
- 3.20 FIVE MICRON FILTER SHALL BE PROVIDED UPSTREAM THE INJECTION PUMP .
- 3.21 EACH ODORIZER SHALL BE ACCOMODATED WITH A MEASURING BURRETTE SUITABLE FOR PUMP CALIBRATION AND ALSO TANK LEVEL INDICATION . IT SHALL

- STAND CLEAR AGAINST ODORANT EFFECTS AND SUN RAY AND BE PROTECTED BY A PROPER GUARD .
- 3.22 ALL ASSOCIATED COMPONENTS IN CONTACT WITH ODORANT SHALL BE RESISTANT TO ODORANT .
- 3.23 THE PUMP SHALL BE SO SIZED AS TO MEET THE MAX. INJECTION RATE OF 25 MG. OF ODORANT PER STANDARD CUBIC METER OF GAS FLOW .
- 3.24 CONTROL SHALL BE MADE BY USING SIGNALS , RECEIVED FROM THE METER (TURBINE OR ORIFICE AS SPECIFIED IN DATA SHEET) TO CONTROL THE PUMP . EACH ODORIZER SHALL BE ACCOMODATED WITH AN EMERGENCY PULSE GENERATING UNIT IN CASE OF ANY FAILURE DEVELOPED IN THE MAIN PULSE GENERATION SYSTEM THE EMERGENCY PULSE GENERATING UNIT WILL UNDERTAKE THE DUTY BY MANUAL STARTING OF THE UNIT .
- 3.25 THE PUMP SHALL BE SOLENOID DRIVEN GLANDLESS HYDRAULIC DIAPHRAGM TYPE .
- 3.26 AN INJECTION NOZZLE , TO BE FITTED TO THE MAIN LINE , MADE FROM ST.STL. SHALL BE PROVIDED FOR EACH UNIT .
- 3.27 THE NOZZLE SHALL BE SUPPLIED TOGETHER WITH A $\frac{3}{4}$ " (FOR FLOW RATE OF 50000 SCMH PLUS) OR $\frac{1}{2}$ " (FOR FLOW RATE OF 50000 SCMH MINUS) BALL TYPE NONRETURN VALVE AND A SUITABLE STOP VALVE AND AN INJECTION PERFORATED TUBE FILLED WITH FELT OR ST.STL. GAUZE TO ALLOW A UNIFORM DISPERSION OF ODORANT INTO GAS FLOW .
- 3.28 PUMP , CONTROL CABINET AND AUTOMATIC / MANUAL CHANGE OVER SWITCH SHALL BE SUPPLIED EXPLOSION PROOF IN ACC. WITH CLASS EEX e II T4 .
- 3.29 THE CONTROL SYSTEM SHALL INCORPORATE BUT NOT LIMITED TO , THE FOLLOWING ITEMS .
- PULSE DIVIDER (IF NECESSARY) .
 - CHANGE OVER SWITCH FOR SWITCHING OVER SIGNALS FROM FLOW METER TO THE EMERGENCY PULSE GENERATOR .
 - EMERGENCY PULSE GENERATOR .