Specification / Datasheet

PRE QUALIFICATION CRITERIA :

Vendor / Bidder of the Rim-seal Fire Protection system shall be manufacturer or manufacturer's authorised supplier/representative for the specified automatic heat detection and extinguishing system and shall meet the following pre-qualification criteria:

a. The Vendor/Bidder must have experience of design, supply, installation and commissioning of offered rim seal fire protection system in EFRT tanks of minimum 30 metre diameter in hot & humid conditions like India within the last 5 years, to be counted prior to the bid due date.

b. Further, the installed Rim-seal Fire Protection System (Hollow Metallic tube type Linear heat detection system with foam suppression system) installed by the vendor/bidder must be working satisfactorily for a period of minimum 12 months in any large petroleum / petrochemical or fertilizer installation.

c. If the Vendor/Bidder is not the manufacturer, then the following documents to be submitted from the manufacturer of the Detection and Suppression system:

   i. Authorisation letter from the manufacturer mentioning clearly the specific tender as well as Name of the Bidder / Vendor as authorised supplier/representative for Indian territory. This letter shall include a declaration that manufacturer shall provide all necessary logistic support, technical support and after sales service.

   ii. Certificate from the manufacturer to certify that authorised supplier/representative has adequate technical expertise and service support from the manufacturer for Indian territory.

d. The vendor/bidder shall have to submit an undertaking from the manufacturer of the detection system for support & supply of software & hardware required for operation and maintenance/ repair of detection system for all locations covered under the tender for a period of minimum 10 years from the date of installation of the system.

e. The vendor/bidder shall have to submit copy of the PESO approval for the offered heat detection system along with the technical bid.

The Vendor/Bidder to submit copies of purchase/work order/experience certificate containing the item description, ordered quantity, proof of supply/commissioning/satisfactory performance of the system in support of the above vendor pre-qualification criteria.

Specification / Datasheet

ITEM : **Rimseal Fire Protection System for External Floating Roof Storage Tank(EFRT).**

Type : **Linear Hollow metallic Tube type detection & foam based suppression system.**

1.0 Scope

This specification covers design, engineering, supply, installation and commissioning of automatic Rimseal fire detection and suppression system of external floating roof tanks (EFRT). The automatic Rim seal fire protection system shall consist of:

a) Hollow Metallic tube type Linear Heat Detection system

b) Foam based Fire suppression system and

c) Site specific Graphic display panel for monitoring of the system.

2.0 Objective

The overall purpose of the system is to detect and extinguish the Rim seal fire at the incipient stage and simultaneously alert the personnel at the facility so that they can respond to the incident.

3.0 Basic Principle of Operation

The system shall consist of a microprocessor based, site configurable Hollow Metallic Tube type Linear Heat Detection (LHD) system monitoring the rimseal area over the whole tank circumference. This shall rapidly detect the fire at its incipient stage, raise an alarm at manned location/s and automatically discharge firefighting foam over the rimseal area around the entire tank circumference. It shall also minimise the probability of post discharge re-ignition by establishing a vapour suppressing blanket of foam in the rimseal area. The detection system shall be capable for working on max temperature and rate of rise in temperature as basic parameters.

The system shall be modular type with each module protecting a defined length of rimseal area and all modules shall discharge simultaneously on detection of fire at any location on the rim seal area. The detection system shall have inbuilt

programmable self checking facility with annunciation of status displayed at manned location/s. The said self checking facility shall be part of UL / FM / VdS approval.

The system shall be such that after any Rim-seal fire event it can be quickly reinstated by trained site personnel without the need for specialist engineers.

Site specific Graphic display panel shall be provided at manned locations for monitoring of the system. Repeater Panel for indications/alarm of FIRE and FAULT shall be provided at the other manned location depending upon the site requirement. The number & locations of such repeater panel shall be decided based on the specific site conditions.

4.0 Vendor's Scope of Supply/work:

The provision and installation of the Rimseal Fire Protection by the Vendor shall be based on site specific requirements & shall consist of:

a) Design, Engineering, Fabrication and Supply of all the components of Rimseal Fire Protection system as per the specification.

b) Installation of the Rimseal fire protection system on the tank roof deck.

c) Supply & Installation of Local Junction Box with audio/visual indication & manual actuation point outside each tank dyke.

d) Supply and installation of all required signal cables, power cables, interface cables & junction boxes from tank top up-to Local Indication Panel.

e) Supply & installation of Customized site specific Main Fire Alarm Panel dedicated to the Rimseal system in the relevant Control Room/operator cabin.

f) Supply & Installation of Repeater Panel for indications/alarm of FIRE and FAULT at the other manned location depending upon the site requirement where applicable.(Owner to specify)

g) Provision of potential-free contacts at Rimseal Main Fire Alarm Panel for Fire and Fault Signals for each tank for necessary hook up with main fire alarm system at the location.

h) Provision of RS485 or equivalent communication links up-to Rim Seal Main Fire Alarm Panel at control room/operator cabin for connection with laptop computer.

i) Provision of Uninterrupted power supply at the Rimseal main Fire Alarm panel control room/operator room & repeater panel room for operation of

Entire rimseal fire protection system, if not available at site (Owner to specify).

k) Power distribution from main fire alarm panel to, Local panel outside the dyke, rim seal fire protection system at tank & repeater panel shall be designed, supplied & installed by the vendor.

l) One Laptop (HP/Dell/Sony/Lenovo/Toshiba make Standard laptop with 160 GB HDD, 2GB RAM, 2.4 GHz Intel processor & 14 inch screen) per each location/terminal/refinery with unique software along with hardware/software lock from the manufacturer of detection system to be provided for system configuration & diagnosis of detection system supplied by the Vendor.

m) Supply & Installation of One Graphic Console (LG/Samsung/Sony/Panasonic make 21 inch size touch-screen LCD) with software for graphical representation of unique site based layout of tank farm to be protected for each site/terminal/refinery at the control room where rimseal main fire alarm panel is located. The software shall have features of tank number with active pop-up, event logging, history and prints.

n) Provision of manual simulation from rimseal main fire alarm panel at the control room.

o) Common audible/visual alarm for fire at Local junction box outside the dyke audible upto 200 m radial distance.

p) Portable equipment including Nitrogen filling cylinder, trolley & hose reel to facilitate re-filling the foam modules.(owner to specify the no. of equipments depending on the no. of tanks protected by Rimseal fire protection system).

q) The Vendor shall provide details of the equipment to be mounted on the tank roof and the total weight with foam solution charge.

r) Supply of Manuals containing Operating and Maintenance procedures, as built drawings, technical documents & approvals in Hard copies & CD form.

s) Supply of all software on CD alongwith required software licenses.

t) Factory acceptance test as per clause 14.0 of the specification.

u) Site acceptance test as per clause 15.0 of the specification.

v) Commissioning of the system.

w) Training of the buyer's personnel on functional, operational & routine maintenance aspects of the system.

x) All civil, mechanical, electrical & instrumentation work required for completion of the job Any other component and software required for completion and commissioning of Rimseal Fire Protection system shall be supplied & installed by the vendor except the items mentioned under the Owner's scope under clause 5.0

5.0 Owner's Scope

230 V/110V(+ 10%),50 Hz(+ 3%) AC Power shall be made available at main fire alarm panel control room & repeater panel control room as a single point source by the owner. Further power distribution to Local panel outside the dyke & rim seal fire protection system at tank shall be designed, supplied & installed by the vendor. Vendor shall indicate the maximum and normal operating power loads along with the bid.

6.0 Operating Conditions

The system shall be suitable for operating satisfactorily in humid and corrosive atmospheres found in oil terminals, refineries & petrochemical plants in India. The system shall be suitable for working in relative humidity up to 95% (non condensing) & temperature range of +1 deg C to +65 deg C. The system shall be tolerant to environmental influences such as high ambient temperatures, change in humidity, electromagnetic interference, Radio Frequency Interference (RFI), aggressive or corrosive vapour, UV radiation, and heavy rainfall. The system should be certified for response behavior on Class – 1 as per EN 54/5 standard by UL / FM / Vds /LPC. The system should be site configurable type.

All enclosures for electrical equipment shall be suitable for use in hazardous area as per facility hazardous area classification & vendor shall submit valid approval issued by PESO along with the technical bid. Flameproof enclosure which are manufactured outside India & certified by accredited international authorities shall also have approval of PESO, India. As a minimum all enclosures and instruments in the field shall be dust proof & weather proof to IP55.

7.0 Basic components

The system shall consist of following basic critical components:

a) Linear Heat Detection (LHD) System

b) Foam Fire Suppression System.

c) Site specific Graphic console.

d) Main Rim seal Fire Alarm panel & repeater panel.

e) Local junction box with indication of fire outside the tank dyke.

f) Fail Safe Arrangement as per Annexure-1.

8.0 Approvals

Following approvals shall be required to be submitted along with the technical bid:

a) The Linear Heat Detector shall have UL listing or VdS/FM/LPC approved.

b) All junction box, cable glands, electrical equipments, instruments & its accessories shall have PESO approval or housed in flame proof enclosure approved by PESO as per hazardous area classification.

c) UL listing for 3% type AFFF/FFFP or 3%/3% type AR-AFFF foam to be used.

d) The Foam spray Nozzles shall be UL listed or FM approved.

Failure in submitting above approval would mean rejection of the offer at technical bid stage itself.

9.0 Linear Heat Detection

9.1 Principle of Operation

The Principle of the system shall be based on a rapid rate of rise in temperature which results in corresponding rise in pressure of gas (air) in a pneumatically sealed metallic sensor tube which is normally non-pressurized. The sensor tube is connected to a microprocessor based evaluation unit. The microprocessor based LHD evaluation unit evaluates this change in pressure inside the sensor tube installed in the rim seal area to:

a) Generate Fire Signal at pre-set levels for actuation of foam based suppression system.

b) Generate alarm at the Rimseal fire alarm panels.

9.2 LHD Mounting

LHD tube shall be securely fixed as close as possible to the highest point of the seal assembly. The maximum distance from the sensor to the top of the seal shall be 150mm. The sensor shall be located on the external face of the primary/secondary seal so that it can be inspected without the need for removal of any seal components.

LHD tube mounts shall be such that they can accommodate tank flexing and movement without causing chafing or other damage to the tube. The Vendor shall supply all necessary fixing brackets, sleeves, clamps or other devices required to install the sensor tube on the tank roof.

9.3 General requirements

a) The sensor (metallic tube) element shall be reusable after exposure to and rapid extinguishment of associated hydrocarbon fires and shall be resettable after actuation. The detection system shall be restored for service after event occurrence from the Control Room without the need for access to the protected area.

b) The Sensor tube shall be hollow metallic tube, free from glass, fiber, and rubber & plastic for its long and dependable service.

c) The LHD evaluation panel shall be installed on the tank pontoon.

d) The detection system shall be self testing by means of inbuilt automatic pressurization by pump at preset regular intervals

e) The detection system shall provide alarm/fault signals separately for each tank at the rim seal main fire alarm panel at Control Room.

f) The system shall have the capability of storing system specific parameters and event logging for each tank.

g) The Detection system shall be site configurable for rate of rise and maximum temperature as two different alarm thresholds.

h) The Detection system shall be of decentralized type that is individual detection system (sensor tube with evaluation unit) for individual tank shall be independent & shall be mounted on the tank roof itself.

i) The system shall have the facility for interface to the supplied Laptop for

configuration and setting the parameters of the system. Suitable port connectivity with Laptop at Control Room shall be provided for each tank.

j) All field junction boxes/instruments/electrical equipment shall be provided with prefabricated canopy.

k) Software for the detection system shall be site specific with authorisation for use of the software for life at a particular facility.The documented authorisation shall accompany the software at the time of supply.

l) The system shall be fail safe as per the criteria given in Annexure-1.

9.4 Installation requirements:

No modification or alterations will be allowed on the main tank shell. Rim seal fire protection system design shall be suitable in accordance with the individual tank design.

It is recognised that installation may be required whilst the tank is in service. In this case the complete system shall be designed such that it can be installed without the need for welding or any kind of hot work on the tank. In case, the installation is required at the tank in service, the following condition shall apply:

a) Vendor shall comply fully with all safe working practices and Permit to Work system of the owner.

b) No hot work shall be allowed on the tank.

c) No work shall be allowed to be performed during receipt and dispatch of material from the tank.

d) Continuous monitoring of vapour levels shall be done on the tank roof when personnel are present on the roof.

e) All persons working on the roof shall use required personal protective equipment & retractable type fall arrestor system.

10.0 Foam Fire Suppression System

10.1 Design

The Rimseal fire suppression system shall include the appropriate number of equally spaced identical modular foam units mounted adjacent to but outside the containment

area of the foam dam so as to protect the entire rim seal area. The foam units shall be charged with pre-mixed foam solution pressurised with nitrogen as an expellant gas. All modules on a tank shall be actuated simultaneously in the event of automatic detection of fire from any detector(in case of more than one linear detector) on the tank roof or by actuation of a manual release station outside the bund. The system shall be designed for a minimum foam application rate of 18 lpm /m2 of rim seal area. An application period of 40 seconds (+10% variation is acceptable) shall be considered.

The system shall be modular in design with each section of foam distribution manifold protecting the equal length of Rimseal area. In order to ensure full foam coverage in the entire rimseal area, the placement of the nozzle shall be such that foam application shall be uniform including the area at the ends of the manifold.

Foam concentrate to be used in the rimseal fire protection system shall be UL listed 3% concentrate Aqueous film forming foam (AFFF) or 3% type Film Forming Flouro Protein (FFFP) or 3%/3% Alcohol Resistant-Aqueous Film Forming Foam (AR-AFFF).

10.2 Foam solution modules

a) Stainless Steel (SS316) Foam solution storage tank (foam module) shall be designed to meet foam application rate of minimum 18 lpm/m^2 of protected rim seal area for an application period of maximum 40 seconds. However, the maximum capacity of each foam solution storage tank shall not exceed 250 litres.

b) Foam solution storage tank shall be manufactured to ASME-VIII, Div-1 requirements.

c) Foam Discharge Manifold and distribution pipe work with semi aspirating foam spray nozzles (expansion ratio 1:3 to 1:6) shall be made of SS-31 6 and evenly spaced to cover one segment of rim seal up-to maximum length 50 meters.

d) Automatic Foam Discharge actuation valve shall be provided at discharge outlet.

e) Instrumentation Panel containing nitrogen charging port, Distribution Manifold, pressure switch to monitor foam module pressure, etc.shall be installed on each foam module.

f) Canopy shall be provided on each foam module for protection from direct impingement by sunlight & rain water.

g) Clearly legible schematic and operating instruction plate shall be permanently fixed on each foam module.

h) Suitable sized filling and draining facilities shall be provided for operation and maintenance of modules.

i) Each foam module shall be fitted with a pressure gauge to manually identify module pressure. Additionally, the signal from the pressure switch shall terminated into the Local junction box and a common signal for "Module pressure low" shall be transmitted for each tank to the R imseal fire alarm panel at the control room.

j) One Test discharge connection with nozzle shall be provided to allow testing of system without discharging foam into Rimseal area.

10.3 Foam system general requirements

a) The discharge nozzles shall be mounted above the Primary seal and aligned such that the discharge pattern shall be directed at the tank shell above the primary seal around the complete circumference of the tank.

b) The suppression system shall be capable of actuation without any signal from the Fire Alarm Panels outside the tank dyke.

c) The foam discharge nozzles shall be UL listed / FM Approved.

d) All the piping coming in contact with foam solution shall be of SS 316.

e) Pipe supports shall be designed and located to effectively sustain the weight and thermal effects of piping system and to prevent its vibration.

f) The piping shall be provided with the required number of valves, bends, and fittings for the efficient functioning of the system.

g) Module Pressure Low signal shall be available from the unit.

11.0 Alarm & Control Panel

11.1 Local Panel/Junction box:

Explosion proof local panel / Junction Box common per bund shall be provided outside the bund with system status annunciation lights and sounder (Fire, Fault, common Foam Module Pressure Low per tank) to alert the field personal of any alarm or fault condition of the Rimseal protection system . The panel shal be provided with a rust proof canopy. The cabinet for the panels shall be painted with powder coated paint There shall be no junction box within tank dyke area outside thetank.

11.2 Emergency Actuation point:

Manual Actuation point shall be provided on the Local panel/junction box outside the tankdyke for manual action of foam suppression system.

Manual Actuation Point (MAP) shall be painted & labeled with fluorescent paint clearly indicating the relevant tank numbers. It should require two operations for actuation – e.g. Pull down flap & Push Button.

11.3 Rimseal Main Fire Alarm Panel at control Room/Operator Cabin:

Site specific designed Rimseal main Fire Alarm Panel (FAP) shall be provided at the relevant Control Room/operator Cabin for remote indication of the signals from the detection and suppression system.

This panel should have visual and audible alarm with resetting facility. An annunciation window shall be provided on the front face of the panel. The following signals shall be available in the panel:

- Fire - flashing light and sounder
- Detector Fault – flashing light and sounder
- Cable Fault – flashing light and sounder
- Module pressure low (common per tank) – flashing light and sounder
- Total system is healthy –Constantly illuminated green light

Additional Repeater Panel for indication of fire shall be provided at other manned location(If required- Owner to specify).

12.0 Tank Alarm Automation:

One additional Graphic Console (LG/Samsung/Sony/Panasonic make 21 inch touchscreen LCD) with software and graphical representation of tanks shall be provided at each Rimseal Main Fire Alarm Panel control room/operator cabinwith unique site based layout of tank farm to be protected by the Rimseal system. The console shal have features of tank number with Pop-up, event logging, history and prints. It shall be able to maintain historical data of alarm and faultsfor minimum 30 days.

13.0 Connection Cables/Junction boxes :

13.1 General requirement:

13.1.1 The connection cable onto and from the tank roof shall

a) Consist of stranded copper conductor of minimum 1.5mm^2 or higher according to power requirements.

b) Have a working temperature range of -40^{o}C to +65^{o}C.

c) Have length and mounting suitable for tank roof movement over the entire height.

d) Cables between tank roof to Dyke wall and control room/operator cabin to Dyke wall shall be armoured FRLS.

e) Cable Joints shall not be used for signal and control cables.

f) There shall not be any cable joints for power cables inside the tank dyke.

g) All cable glands shall be provided with PVC shrouds to prevent ingress of moisture and rain water inside the enclosures.

13.1.2 All main multi-core / multi-pair cables having more than three cores shall have a minimum of 20% spare cores / pair.

13.1.3 Power distribution network shall be designed in such a way that single point failure shall not cause tripping of the total system. Each distribution point shall be provided with a separate MCB of power rating for isolation of the system.

13.2 Cable routing onto the tank

Provision shall be made to prevent snagging of the cable. It shall take account of tank roof movement and wind conditions. Routing shall be done along the rolling ladder with necessary arrangement to ensure that the cable does not snag under the ladder wheels.

13.3 Cable routing between tank dyke panel & main fire alarm panel/repeater panel:

All the above ground cables shall be laid in galvanised metallic cable trays.

Underground cables shall be laid in armored HDPE conduits as per ASTM F21 60 (Standard Specification for Solid Wall High Density Polyethylene Conduit)

14.0 Factory Acceptance Testing

Vendor shall arrange following Factory Acceptance Test in presence of owner's representative/ Third Party Inspection (TPI) agency approved by the owner. Third party Inspection Charges shall be borne by the vendor.

a) Positive Material Identification (PMI) test of 10 % material of all piping , vessel and fasteners and other pressure components and witness by TPI.

b) Review of certification for electrical enclosures to be mounted in classified hazardous areas.

c) Review of certificate of approval / listing of Linear Heat Detection.

d) 100% welding joints of pressure vessel and piping shall be radiographed and reports will be reviewed by TPI.

e) Inter granular corrosion test as per ASTM A-262 Practice-E (IGC) sampling and stamping to be done in presence of TPI.

f) Weld joint fit up to 10 % will be witnessed by TPI randomly.

g) Review of WPS (Welding Procedure Specification) WPQ (Welder's Performance Qualification) as per ASME Sec-II – Part-C & ASME-Sec-IX, QAP (Quality assurance plan) and mill test certificate of raw material and test certificate marking.

h) TPI shall witness 100% of the following manufacturing activities of pressure

vessel and piping besides other inspection as per applicable codes :

- x Weld joint hardness test after PWHT if any
- x Final Visual and dimensional inspection
- x Air testing of nozzle pads
- x Hydro testing (Water quality should be monitored and shall not contain more than 25 PPM chlorides)

Measurement of expansion ratio of the foam produced from nozzle at 7 KG/CM^2 Test for full discharge and actuation of foam module when exposed to a actual fire on Rimseal simulator. This Rimseal simulator shall consist of a tray 300 mm wide and 6 meter long. The detector tube shall be mounted 300 mm above the fire pan and run along the centre line of the pan. The test fuel shall be a liquid hydrocarbon such as motor spirit, or kerosene. The module and discharge Manifold with Nozzles for carrying out the test shall be selected by the owner/Third Party Inspection Agency. On actuation, entire Foam Module should be discharged in approximately 40 seconds and fire should be extinguished.

15.0 Site Acceptance Test:

Vendor shall arrange following Site Acceptance Test in presence of owner's representative at no extra cost to the owner:

a) Simulation of discharge of one Foam module on each tank shall be done from the panel at control room. In case simulation on one module fails, Vendor shall demonstrate the simulation of all Foam Modules for that particular tank. Foam required for the simulation/testing shall be supplied by the vendor.

b) Actuation of foam discharge valve by operation of manual Fire call point outside the dyke.

c) Functioning of All signals at the control panels & Junction box outside the dyke.

d) Demonstration of resetting of Detection system after simulation from control room itself.

e) Demonstration of Site specific graphic console.

f) UL listed 3% type AFFF/FFFP or 3%/3% type AR-AFFF foam suitable for foam nozzles required during testing & commissioning shall be supplied by

the owner.

Site Acceptance Test (SAT) as given above shall be conducted for each tank within maximum 15 days of completion of installation.

Based upon the above test requirement, Vendor shall develop detailed Quality Assurance plan (QAP) & submit it to the owner for approval.

16.0 Testing and maintenance during operation

Both the detection and the extinguishing system shall have a manual or automatic simulation facility to test system integrity and function during operation. A discharge test nozzle and appropriate valve shall be provided so that the system can be discharged without the need for discharging foam into the seal area.

17.0 Documentation:

The supplier shall submit the following documents alongwith the technical bid while submitting the offer:

i Detailed P&ID indicating the complete scheme of instrumentation and controls

ii Control & Interlocking Philosophy

iii Power supply requirements for field instruments along with consumption

iv List of spares during commissioning and during 2 year warranty

v Indicative Bill of Material for one no tank each of dia 16M, 32M, 48M, 64M

vi UL Listing / FM / VdS / LPC certification for detection system

vii UL listing approval for Nozzle

viii Procedure for calibration of rim seal detection system, solenoid valves, etc.

ix UL Certificate of foam manufacturer and foam container manufacturer from whom the bidder proposes to procure the foam

x Detailed procedure for calibration of detection and control system

xi Copy of PESO approval for all enclosures for electrical equipment which shall be suitable for use in hazardous area as per facility hazardous area classification

xii Proven track record of the offered system alongwith satisfactory performance proof of at least for a period of 12 months

The supplier shall provide four sets manuals containing the following documents after commissioning of the system on the tanks:

a) Complete Operating and Maintenance procedures.

b) As built drawings (tank farm) showing the location of systems and associated alarm/control equipment.

c) Data sheets providing technical details of all Major components.

d) CIMFR/ PESO Certificates for Electrical Enclosure mounted in classified hazardous areas.

e) UL listing/ FM approval document for the Nozzle.

f) UL listing or FM/VdS/LPC approval for linear heat detector.

All the manual shall be provided in hard bound A4 size folders with clear printed labels on it.

In addition to the hard copies following software shall be supplied after the commissioning

a) Soft copies of the documents/drawings placed in the manual.

b) CD for Software to be used with the rim seal fire detection system along-with the authorization.

18.0 Training:

Vendor shall impart training to site personnel for routine operation & maintenance of the rim-seal fire protection system. The training shall be imparted at owner's site for minimum two days immediately after commissioning.

19.0 Vendor Qualification Criteria:

Vendor / Bidder of the Rim-seal Fire Protection system shall be manufacturer or manufacturer's authorised supplier/representative for the specified automatic heat detection and extinguishing system and shall meet the following pre-qualification criteria:

f. The Vendor/Bidder must have experience of design, supply, installation and commissioning of offered rim seal fire protection system in EFRT tanks of minimum 30 metre diameter in hot & humid conditions like India within the last 5 years, to be counted prior to the bid due date.

g. Further, the installed Rim-seal Fire Protection System (Hollow Metallic tube type Linear heat detection system with foam suppression system) installed by the vendor/bidder must be working satisfactorily for a period of minimum 12 months in any large petroleum / petrochemical or fertilizer installation.

h. If the Vendor/Bidder is not the manufacturer, then the following documents to be submitted from the manufacturer of the Detection and Suppression system:

   i. Authorisation letter from the manufacturer mentioning clearly the specific tender as well as Name of the Bidder / Vendor as authorised supplier/representative for Indian territory. This letter shall include a declaration that manufacturer shall provide all necessary logistic support, technical support and after sales service.

   ii. Certificate from the manufacturer to certify that authorised supplier/representative has adequate technical expertise and service support from the manufacturer for Indian territory.

i. The vendor/bidder shall have to submit an undertaking from the manufacturer of the detection system for support & supply of software & hardware required for operation and maintenance/ repair of detection system for all locations covered under the tender for a period of minimum 10 years from the date of installation of the system.

j. The vendor/bidder shall have to submit copy of the PESO approval for the offered heat detection system along with the technical bid.

The Vendor/Bidder to submit copies of purchase/work order/experience certificate containing the item description, ordered quantity, proof of supply/commissioning/satisfactory performance of the system in support of the above vendor pre-qualification criteria.

20.0 Warranty

Vendor shall offer performance guarantee for satisfactory and trouble free operation of the entire Rimseal protection system for a minimum period of 1 year from the date of commissioning of the system.

The Vendor shall repair any defect or replace any defective part during the guarantee period within two weeks of receiving such information from the owner.

21.0 Post Warranty Maintenance:

The Vendor/bidder shall submit annual post-warranty maintenance proposal at the time of bid which will be as follows:

a) The proposal shall include separate price item and at the Owner's request, the vendor shall provide comprehensive maintenance including supply of spares for period of three years after the expiry of the warranty period.

b) The travel, boarding & lodging of service engineer/technician shall be borne by the vendor. The vendor shall also bring their own tools & tackles as required for maintenance of the system.

c) The bid shall be made year-wise for three years & price validity shall be available for the entire period of the contract.

d) The service under post warranty maintenance shall include :

i. Preventive maintenance

Preventive maintenance shall involve once in six month, complete checking, site acceptance test as per the specification, repair/replacement of defective part/components and detailed reporting.

ii. Emergency maintenance

In the event of any malfunction of the system, experienced service engineer shall be made available at site with-in two weeks on the receipt of such information from the owner & the system must be brought to the Normal within 24 hrs after reporting at site.

Specification / Datasheet

Annexure -I

FAIL SAFE REQUIREMENT

The system shall have features that ensure fail-safe operation of the rim seal fire protection system even under abnormal conditions.

To ensure the fail-safe operation of the rim seal fire protection system, the system shall be designed in such a way that in the event of any failure within the system due to any reason like cable damage, power failure, mechanical damage to the system parts or adverse environmental condition, the system shall alert user through alarm. Rim seal fire protection system shall have following features to ensure the failsafe operation:

CASE 1: Power failure from mains to the fire alarm panel in the control room/rim seal protection system:

Power supply to all components of the Rimseal fire protection system including panels shall be taken from Un-interrupted Power Supply (UPS) source. In case of failure of AC Power, UPS should be rated to supply continuous power for minimum 2 hours.

CASE 2: Any hardware/software problem in functioning of fire alarm panel in control room:

System should independently be able to actuate the extinguishing system locally on the tank upon detection of fire without any support from the fire alarm panel in the control room. This feature should be of de-centralized and independent for each tank.

CASE 3: Failure / cut of any or all signal cables communicating to / from tank to control room or vice versa:

The system should have the feature whereby it would still remain functional locally on the tank i.e. detect fire, give alarm (actuation signal) locally and actuate the extinguishing system. Cable fault signal should be displayed on the fire alarm panel in control room.

CASE 4: Failure of detection system installed on the tank

The system should give ¨detection fault¶ alarm signal at fire alarm panel.

CASE 5: Leakage / damage in detection Tube:

Fault indication / alarm should be displayed on the fire alarm panel

CASE 6: Pressure in the Foam module low:

Low module pressure indication & alarm should be displayed on the fire alarm panel.