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| ANNEXURE-A |
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PI Reference : 241130587

TECHNICAL REQUIREMENTS

1. Alarm system is required for detecting leak from tubes of shell and tube type cooler.
2. In case of leakage from any tube or tubes from cooler, water shall be collected between tube sheets and shall be taken out from a tapped drain point provided at the bottom of tube sheet.
3. This drain point from tube sheet shall be connected to a small reservoir (tank) of size 100 mm dia x 250-300 mm high by copper tube of size 10.2 mm OD x 2.6 mm thk x 2 m long by a union nut with ¼" BSP thread of Brass and suitable washer. This tank can be made by 100 NB pipe, blanked at both ends by flat cover. (Ref. Imp. Note 4 Below)
4. This tank shall have a drain outlet with suitable valve and a air vent connection also with a suitable valve. Since leak shall be detected from this tank, a suitable leak detector and micro switch shall be provided which in- turn shall be connected to an Alarm (audio / visual).
This alarm shall be mounted on the bracket of size 150 x 200 welded on shell of the cooler. Supplier has to accommodate alarm panel within this bracket size and also to furnish the mounting details. (Ref. Imp. Note 4 Below)
5. A response switch shall also be provided.
6. Drawing, technical Write-up & O & M Manual is required with the offer.
7. **Items to be covered by the supplier**
 - (i) Copper tube of size 10.2 mm dia x 2.6 mm thk x 2 M long, one end fixed to tank by union nut and washer, other end loose but with male adapter with ¼" BSP thread union nut and washer. (Ref. Imp. Note 4 Below)
 - (ii) Circular tank with inlet, drain and vent connection with suitable valves fitted with leak detector and response switch. Two nos. installation bracket at the back of the tank shall; also be provided by supplier to be mounted on mounting bracket provided by us. (Ref. Imp. Note 4 Below)
 - (iii) Audio / visual alarm with Bracket.
 - (iv) Electrical connections and panel.
 - (v) Above scope is also clearly shown in enclosed drawing (Refer Sheet 02 of 02) in Blue Shade. Supplier has also to refer the notes in green shade.
8. Copper tube to be connected to tank at one end by supplier, other end shall be connected by us to the leak point of tube sheet. A suitable male adapter to suit ¼" BSP thread with union nut and washer to be supplied by supplier to enable us to fix at our end.
9. A sketch is enclosed to give a general idea of the layout.

- Imp. Note :**
- (1) Coolers shall be installed in open hence all wiring shall be of high quality with heavy insulation (Class F) Panel entry & exit point shall be suitably placed and properly sealed so as not to allow rain water to Seep inside panel.
 - (2) System should be ready to install and use with electrical wiring in place.
 - (3) Supplier to furnish wiring diagram as part of O&M manual
 - (4) A more compact alarm system meeting all above requirements can also be offered.

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