	DOCUMENT TITLE:	Doc No: QP08
	TEST PROCEDURE – TEMPERATURE MAPPING (LARGE AREAS)	Rev :2
		Date of this Issue: 01-05-2013

TITLE : Test Procedure – Temperature Mapping of warehouse/cold room/enclosed area
PURPOSE : Procedure to carry out Temperature mapping of Warehouse, Cold rooms or similar enclosed areas other than server racks or similar panels

SCOPE

The scope defined in this document is limited to conducting temperature mapping study to measure the temperature variance across various points of an enclosed area over a period of time. The study is conducted by recording temperature data across various points of the area as per the procedure defined hereunder.

METHODOLOGY:

Preparation


- a. The drawing has to be obtained indicating the HVAC layout and the door openings of the warehouse
- b. At least 10 data loggers should be available and should be with valid calibration. For bigger warehouses sufficient additional number of data loggers should be utilised as explained elsewhere in this document.
- c. The warehouse should be complete in all respects and be occupied with at least 50% of intended occupancy. Dummy loads also can be utilised if required. The occupancy of stored items should remain constant throughout the study period

Determining the position of Data loggers

- 1) Various points across the area is measured using an infrared thermometer. The measurement should cover across the whole area including various levels of the warehouse and should be recorded
- 2) Based on this measurement, the data loggers should be equally distributed in hottest points, coldest points and average points.
- 3) The points adjacent to the doors and interior side of walls exposed to sun should be definitely recorded.
- 4) Based on the sun direction, the walls will be at different temperature throughout the day. Hence if all exteriors of side walls & ceiling are exposed to sun, at least one logger should be placed on all these walls & ceiling to understand the variations throughout the day
- 5) At least one sensor should be placed on the outside to record ambient temperature so that the variations inside can be compared to the external data.
- 6) For warehouses higher than 2.5 meter, measurement has to be taken at two vertical levels
- 7) All the data loggers have to be numbered and the corresponding has to be indicated in the drawing.

Measurement Procedure

- 1) After placing all the data loggers, the recording has to start at the same time of the day, preferably in the morning or evening.
- 2) The data has to be continuously recorded and each monitor has to be checked frequently to ensure that proper recording is taking place
- 3) The measurement interval should be kept at 60 seconds for all data loggers.
- 4) During the measurement, physical activities which will take place under normal circumstances like door opening, loading/unloading, operation of hydraulic lifts etc. can take place but the time and details of such activities should be recorded to the extent possible so that temperature variations at these points can be analysed.

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- 5) The data should be recorded for a minimum period of 24 hours and is recommended for 48 hours.
- 6) Upon completion of the recording, the data is downloaded into the software and a chart is compiled. At this point the data loggers need not be removed.
- 7) All physical activities which took place during this period should be indicated in the chart to the extent possible.
- 8) Upon analysing the chart if any anomaly is noticed, the study is to be repeated in whole or part at the discretion of the testing engineer. (In general if an instrument is found not correct and if the location is not in a critical position, only data for these logger need to be regenerated)
- 9) All the data is compiled into a single chart and variations across the area is summarised
- 10) The data tabulation, the chart and the summary as per the relevant test formats form part of the report.

Reports

- 1) Layout drawing indicating position of data loggers
- 2) Data tabulation of all the readings
- 3) Compiled Chart indicating the entire chart
- 4) Report indicating any abnormality in temperature distribution, recommended position of permanent data loggers and any other operating recommendations to avoid huge variations.

LINKED DOCUMENTS

Test Report format VAC-QC-09 – Temperature Mapping Report



Approved by:
General Manager

Date: 01-May-2013