

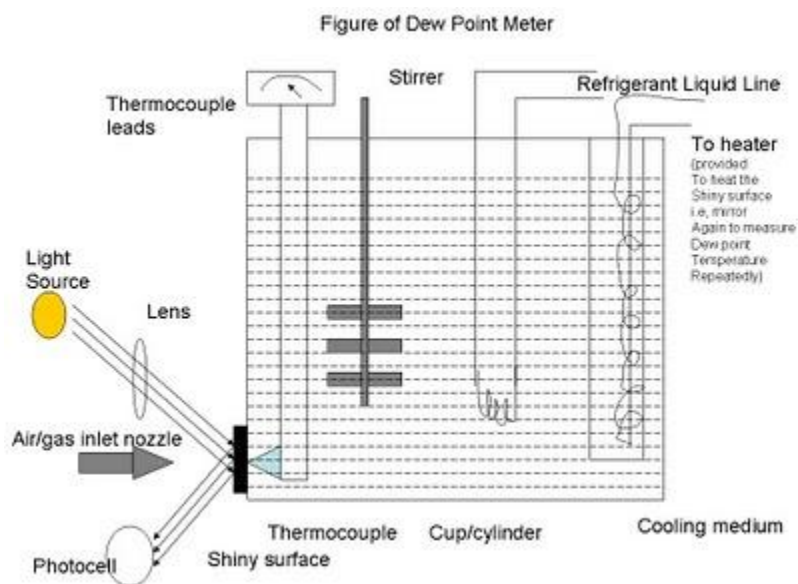
Dew Point Meter

Basic Principle of Dew Point Meter

By Cooling at constant pressure if the temperature of air is reduced, the water-vapour in the air will start to condense at a particular temperature. This temperature is called dew point temperature.

Description of Dew Point Meter

The main Parts of arrangement are



- A shiny surface (mirror) is fixed with a thermocouple.
- A nozzle is providing a jet of air on the mirror.
- A light source focused constantly on the mirror.
- A photo cell to detect the amount of light reflected from the mirror.

Operation of Dew Point Meter

- The mirror is constantly cooled by a cooling medium. The cooling medium is maintained at a constant temperature.
- To this mirror is attached a thermocouple whose leads are connected to a millivoltmeter.
- Constantly a light is made to fall in an angle on the mirror and the amount of reflected light is sensed by a photo cell.
- Now an air jet is made to fall in an angle on the mirror and the water-vapor (moisture) contained in the air starts condensing on the mirror and they appear as small drops (dew) on the mirror.
- This moisture (dews) formed on the mirror reduces the amount of light reflected from the mirror and it is detected by photocell. When for the first time, there is a change in amount of transmitted light; it becomes an indication of dew formation.
- At this instance (that is, when the dew formation is detected first), the temperature indicated by the thermocouple attached to the mirror becomes the dew point temperature.
- Thus this arrangement is used to determine the time at which the dew appears for the first time and dew point temperature.

Application of dew point meter

- This instrument is used on ships to protect cargoes from condensation damage by maintaining the dew point of air in holds lower than the cargo temperature.
- Used in industries for determining dew point.

Limitations

There are limitations in cooling fluids and light measurement.

Source:

<http://instrumentationandcontrollers.blogspot.in/2010/12/dew-point-meter.html>