



AIM

To find out dryness fraction of steam by combined separating and throttling calorimeter.

PRODUCT DETAILS

The steam passing out from separating calorimeter may still contain some water vapour, in it. In other words it may not be absolutely dry. Again, in a throttling calorimeter steam after passing through the throttle valve must be superheated or at least dry saturated. This limits the extent of dryness fraction that can be reliably measured, depend up on the pressure of steam in the main steam pipe. If a sample of steam, which may be still wet after passing through the throttle valve i.e it will not be superheated. Thus under this condition the throttling calorimeter fails to enable us in determining the value of dryness fraction of steam. To overcome this difficulties we make use of separating and throttling calorimeter. First the steam is passed through separating calorimeter where it loses most of its moisture and becomes comparatively drier, it is then passed through the throttling calorimeter where superheating takes place without change of total heat. The temperature and pressure of steam after throttling are measured by using a thermometer and manometer respectively.

DESCRIPTION

The set up consist of a separating and throttling calorimeter. A steam generator is provided at the base of the apparatus. A thermostat knob is provided at the front of apparatus to control the temperature inside the steam generator. Steam from steam generator is passed from separating calorimeter where most of the water particles get separated from steam and then passed to throttling calorimeter where steam get superheated. After that superheated steam passed through heat exchanger to condense the steam.

SAPARATING CALORIMETER

It consist of two concentric chamber, the inner chamber, and the outer chamber. Which communicates with each other through an opening at the top. As the steam discharge through the metal baskets, which has a large number of holes, the water particles due to their heavier momentum get separated from the steam and collected in the chamber. The comparatively dry steam in the inner chamber moves up and then down aging through the annular space between the two chambers and enters the throttling calorimeter.

THROTTLING CALORIMETER

It consist a narrow throat. Pressure and temperature are measured by manometer and thermometer. The steam after throttling process passed through the heat exchanger and condensate is collected.

UTILITIES REQUIRED

1. WATER SUPPLY 3 lit/min (approx)
2. Drain
3. Electric supply : 1phase, 220 V A.C, 2Amp.
4. Steam table for calculation
5. Space required : 1.0 m X 1.0 m

Note: Specifications are subject to change.

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