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LAKSHMI ENGINEERING WORKS

Mfg & Supp of: Soil, Cement and Concrete Testing Equipment, Survey, Drawing, Hydrological, Metrological, Geological, Scientific Instruments (**All type of Water Current Meters**)
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Subject : Quotation for Open Pan Evaporimeter



Description

The evaporation pan of this standard set is made of stainless steel and has the dimensions of a “class A“ evaporation pan, namely 54 mm (10 inches) in height and 1206 mm (47.5 inches) in diameter. The evaporation pan is installed on the wooden support, which is set and levelled on the ground in a grassy location, away from bushes, trees and other obstacles which obstruct a natural air flow around the pan, thus representing open water in an open area.



*Stilling well with micrometer
Reading the micrometer*

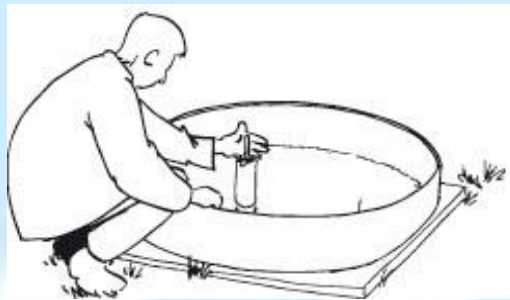
Daily the result of evaporation and precipitation is measured within the still well, by means of a high quality evaporation micrometer with a measuring range of 100 mm and an accuracy of 0.02 mm. This accuracy can be obtained because the still well prevents rippling of the water surface.

The amount of evaporation is a function of temperature, humidity, wind and other ambient conditions. In order to relate the evaporation to wind current or expected conditions, the maximum and minimum temperature as well as the amount of air passed are recorded with the evaporation. For a more exact use of the evaporation pan it is recommended to use an additional wind path meter.

For automatic measurement of the evaporation use can be made of a level sensor. The level sensor consists of a sensitive pressure transducer built in a stainless steel housing. The sensor has a pressure range of 0-20 mbar, accuracy 0,25%. Output signal 0-20 mA, power supply voltage 8-28 V. The sensor is supplied with 5 m cable.



Level sensor for automatic measurement

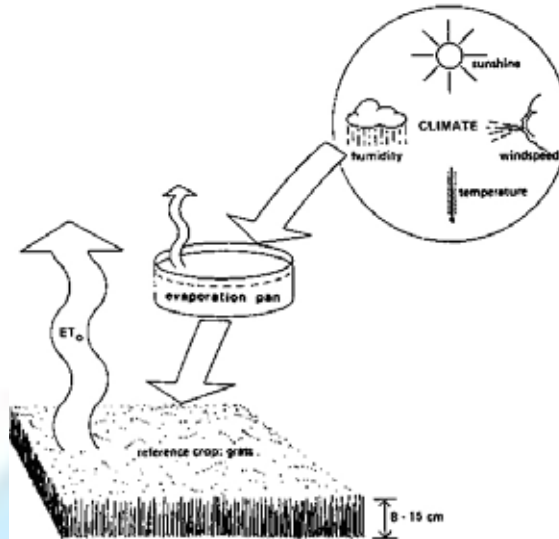


Reading the micrometer

The sensor is read-out with a data logger. To configure and read-out the data-logger and to process the measuring data, use is made of the evaporation pan software.

Measuring principle

An evaporation pan provides a measurement of the combined effect of temperature, humidity, windspeed and sunshine on the reference crop evapotranspiration ET_o .



The principle of the evaporation pan is the following:

- the pan is installed in the field
- the pan is filled with a known quantity of water (the surface area of the pan is known and the water depth is measured)
- the water is allowed to evaporate during a certain period of time (usually 24 hours). For example, each morning at 7 o'clock a measurement is taken. The rainfall, if any, is measured simultaneously
- after 24 hours, the remaining quantity of water (i.e. water depth) is measured
- the amount of evaporation per time unit (the difference between the two measured water depths) is calculated; this is the pan evaporation: E_{pan} (in mm/24 hours)
- the E_{pan} is multiplied by a pan coefficient, K_{pan} , to obtain the ET_o .

Formula: $ET_o = K_{pan} \times E_{pan}$

pan with:

ET_o : reference crop

evapotranspiration K_{pan} : pan
coefficient

E_{pan} : pan evaporation

If the water depth in the pan drops too much (due to lack of rain), water is added and the water depth is measured before and after the water is added. If the water level rises too much (due to rain) water is taken out of the pan and the water depths before and after are measured.

Determination of K_{pan}

When using the evaporation pan to estimate the ET_o , in fact, a comparison is made between the evaporation from the water surface in the pan and the evapotranspiration of the standard grass. Of course the water in the pan and the grass do not react in exactly the same way to the climate. Therefore a special coefficient is used (K_{pan}) to relate one to the other.

The pan coefficient, K_{pan} , depends on:

- the type of pan used
- the pan environment: if the pan is placed in a fallow or cropped area
- the climate: the humidity and windspeed

Open Pan Evaporimeter (G.I.), instrument that measures the rate of evaporation of water into the atmosphere, sometimes called an atmometer. Evaporation rates are so sensitive to the water supply, and the nature of the evaporating surface, data collected by Evaporimeter often do not reflect true evaporation processes; hence, Evaporimeter have limited use. This Pan Evaporimeter is manufactured as per IS:5973 :1970
IMAGES OF OPEN PAN EVAPORIMETER ALSO ATTACHED

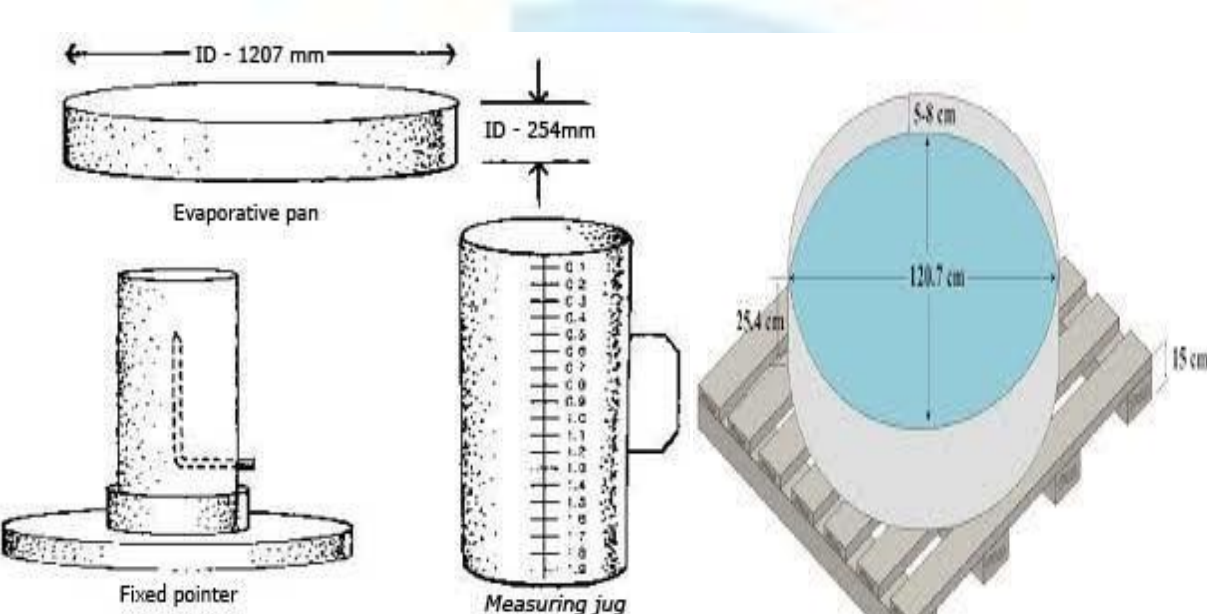
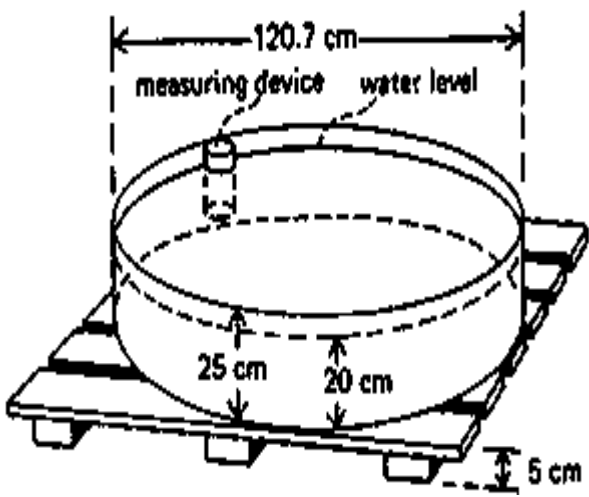


Fig. 2 Components of the Class A pan evaporimeter



Yours sincerely,
M/s Lakshmi Engineering Works
 Proprietor

LIST OF EQUIPMENTS AVAILABLE WITH US:

- Automatic Weather Station
- Digital Rainfall Recorder
- Digital Rain Gauge
- Digital Evaporation rate recorder
- Automatic Soil Erosion Monitoring System
- Digital Snow Water Equivalent recorder
- Digital Solar Radiation Recorder (Pyranometer)
- Digital Water level Recorder
- Digital Water level Recorder (Pressure type)
- Digital Water level Recorder (Ultrasonic type)
- Water velocity indicator without sensor
- Water Current Meter
- Soil moisture indicator with sensor
- Soil moisture and temperature recorder
- Leaf Wetness, Air temperature and Humidity recorder
- Plant Canopy Analyzer
- Suspended Solids Indicator
- Digital Soil Tensiometer
- Soil Infilltrometer
- Water Level Indicator
- Cup Counter Anemometer (Mechanical Type)
- Wind Vane (Mechanical Type)
- Open Pan Evaporimeter
- Ordinary Rain Gauge
- Tree Height Gauge
- Stevenson Screen (Single)
- Stevenson Screen (Double)
- Aneroid Barometers
- Sunshine Recorder
- Punjab type Silt Sampler
- Winch (80 Kg)
- Maximum - Minimum Thermometer
- Wet & Dry Thermometer
- GPS
- Temperature and humidity sensor
- Wind speed sensor
- Wind direction sensor
- Rainfall sensor
- Water temperature sensor
- Soil temperature sensor
- Solar radiation sensor (Silicon)
- Atmospheric pressure (Barometer) sensor
- Water level sensor (Shaft encoder)
- Water level sensor (pressure)
- Water level sensor (Ultrasonic)
- Evaporation sensor
- Soil moisture sensor
- Snow Water Equivalent (Snow Gauge)
- Leaf Wetness sensor
- Digital Soil Tensiometer sensor

Yours sincerely,

M/s Lakshmi Engineering Works

Proprietor