Meters, Water Flow and Energy (BTU) 22.09.00

Description:

The purpose of the section is to highlight the current applicable UMCP Design Standards for the selection of equipment and installation of water flow and energy (BTU) meters.

Related Sections:

- TBD

Effective Date:

December 2, 2002

Applicable Standards:

- TBD

General Requirements:

Submittal Requirement

- Product Data: Include detailed manufacturer's specifications for each component specified. Include data sheets reflecting the model numbers, features, ratings, performance, power requirements, and dimensions.
- The information provided shall be in sufficient detail to confirm compliance with the requirements outlined in this guideline.

Products

- Meter
  - Furnish and install a Thermal Energy Metering System or flow meter for each of the locations specified.
  - The meter shall be a clamp-on design employing non-intrusive ultrasonic flow metering.
  - The meter shall be digital microprocessor based utilizing both "Transit-Time" flow measuring technique and "Doppler Fourier".
  - The meter shall have an accuracy of 0.02 degrees F.
  - The flow meter shall have the ability to calculate and display the following values
    - volumetric flowrate
    - flow velocity ccccccvv
    - total flow
    - liquid sonic velocity
    - liquid aeration/cavitation
    - Reynolds Number
  - The energy (BTU) meter shall have the ability to calculate and display the following values
    - volumetric flowrate
    - flow velocity
    - total flow
    - liquid sonic velocity
    - liquid aeration/cavitation
    - Reynolds Number
    - energy/BTU rate
    - total energy
    - supply temperature
    - return temperature
    - differential temperature

  - The flow and energy (BTU) meter shall have internal memory of at least 1 megabyte for storage of data on a continuous basis and the ability to store application data for a minimum of 1000 points as a "Datalogger".
  - Downloading of the "Datalogger" information to personal computers (PCs) shall not require proprietary software to be installed on the PC, but will utilize standard "Off-the-shelf" "Windows" software.
  - The energy (BTU) meter shall provide self and application diagnostics to isolate any fault conditions due to either equipment failure of abnormal process conditions.
  - The flow and energy (BTU) meter electronics shall be powered by 110/120 VAC 60Hz.
- The flow and energy (BTU) meter shall have an accuracy of ± 1% of flow over a ± 40 fps flow range.
- Repeatability shall be 0.1% of flow with a flow sensitivity of .01 fps (minimum) at any flowrate, including no flow conditions.
- The flow and energy meter shall also possess the following capabilities:
  - Cavitation and Aeration Detection1
  - Internal Pipe wall Build-up Detection
  - Security password protection for individual sites.
  - Reverse Flow and Empty Pipe Detection
  - Direct Digital Temperature measurement via precision matched 1000ohm Platinum RTD pair and four-wire cable connection
  - Certified for CE Mark (EMI immunity and compatibility standards).
- Flow meter shall be a Controlotron Model 1010N (or latest model) or approved equal.
- Energy (BTU) meter shall be a Controlotron Model 1010EDN (or latest model) or approved equal.

Communications

- The meter system shall communicate with and be compatible with the University's Central Control and Monitoring System (CCMS) using Lonworks LAN (FTT10ALAN) as well as 4-20 MADCV (isolated) output.