



## Continuing Education from *Plumbing Systems & Design*

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Do you find it difficult to obtain continuing education units (CEUs)? Is it hard for you to attend technical seminars? ASPE has a new program to help you accumulate the CEUs required for maintaining your Certified in Plumbing Design (CPD) status.

ASPE features a technical article in every issue of *Plumbing Systems & Design (PSD)*, excerpted from its own publications. Each article is followed by a multiple-choice test and a simple reporting form.

Reading the article and completing the form will allow you to apply to ASPE for CEU credit. For most people, this process will require approximately 1 hour. A nominal processing fee is charged—\$5 for ASPE members and \$25

for nonmembers (until further notice, the member fee is waived). If you earn a grade of 90% or higher on the test, you will be notified by return mail that you have logged 0.1 CEU, which can be applied toward the CPD renewal requirement or numerous regulatory-agency CE programs. (Please note that it is your responsibility to determine the acceptance policy of a particular agency.) CEU information will be kept on file at the ASPE office for 3 years.

No certificates will be issued in addition to the notification letter. You can apply for CE credit on any technical article that has appeared in *PSD* within the past 12 months. However, CE credit only can be obtained on a total of eight *PSD* articles in a 12-month period.

### CE Questions—"Water Pumps" (PSD 112)

- The system head curve of a pump indicates the**
  - friction loss of the system.
  - liquid velocity in the system.
  - break horsepower of the motor.
  - total head required by the system.
- The output power, or the water horsepower, of a pump pumping 250 gallons per minute (gpm) at 35 ft total dynamic head (tdh) is**
  - 2.209.
  - 3.219.
  - 3.912.
  - 2.029.
- In-line pumps are commonly supported by**
  - a concrete base.
  - unistrut hangers.
  - the system piping.
  - a prefabricated steel base.
- According to Figure 10, what type of pump is best suited to deliver 800 gpm at 150 ft tdh?**
  - Multistage
  - High-speed or multistage
  - Single stage, lower-speed
  - Single stage, 3600 rpm
- What reduction of pump total head, by low suction pressure, is required to cause a pump to cavitate?**
  - 2.5%
  - 3%
  - 3.164%
  - 4.75%
- The most common type of pump found in building service today is**
  - rotary.
  - centrifugal.
  - positive displacement.
  - piston.
- A closed impeller**
  - retains its operating efficiency longer than an open-impeller pump.
  - retains its operating efficiency for a shorter time than an open-impeller pump.
  - is not found on double-suction pumps.
  - is not recommended on close-coupled pumps.
- What is the efficiency of a pump operating at 250 gpm at 35 ft with a 3-horsepower tdh open-drip-proof motor?**
  - 70.66%
  - 73.66%
  - 104%
  - 107%
- A double-suction pump is a type of \_\_\_\_\_ pump.**
  - centrifugal
  - reciprocating
  - piston
  - vertical turbine
- A pump operating at the intersection of the pump curve and the system head curve will**
  - cavitate.
  - produce full flow.
  - be operating at peak efficiency of the pump.
  - produce twice the rated flow.
- In Figure 8, what type of system does Curve 2 represent?**
  - System head curve
  - Circulating system curve
  - Typical variable-speed pump curve
  - Pump horsepower curve
- Mechanical seals are used on centrifugal pumps because they**
  - use a soft fiber packing.
  - are maintenance free.
  - are practically leak free.
  - are relatively inexpensive.