Eductor Sizing

Simple example sizing an eductor for a water flow:

An eductor is required to pump 20 gpm of water from a tank 15 feet below and discharge the water 10 feet vertically (equivalent to a back pressure of 4.3 psi). The available water pressure is 60 psi. Size the eductor and determine the motive water flow required.

Referring to the Eductor Performance table:

A 1” eductor using a small nozzle (SN) will pump a 12.3 gpm flow of water using 11.3 gpm of motive flow. The required capacity ratio (CR) needed is 20 gpm/12.3 or 1.6. A 1-1/2” eductor has a CR of 2.25.

Use a 1-1/2” eductor with a small nozzle (SN) to handle 2.25 x 12.3 gpm = 27.7 gpm using 2.25 x 11.3 gpm = 25.4 gpm of motive water.

Another example

An eductor is required to pump 23 gpm of water from a tank 15 feet below and discharge the water 20 feet vertically (equivalent to a back pressure of 8.6 psi). The available water pressure is 60 psi. Size the eductor and determine the motive water flow required.

Referring to the Eductor Performance table:

A 1” eductor using a small nozzle (SN) will pump a 7.1 gpm flow of water using 11.3 gpm of motive flow. The required capacity ratio (CR) needed is 23 gpm/7.3 or 3.2.

A 2” eductor has a CR of 4.0. Using a SN version of the 2” eductor will pump 4.0 x 7.1 gpm = 28.4 gpm using 4 x 11.3 gpm = 45.2 gpm of motive flow.
A 1-1/2" eductor has a CR of 2.25. Using a LN version of the 1-1/2" eductor will pump $2.25 \times 10.6 \text{ gpm} = 23.9 \text{ gpm}$ using $2.25 \times 21.8 \text{ gpm} = 49.1 \text{ gpm}$ of motive flow.

Both the 2" eductor with small nozzle and the 1-1/2" eductor with large nozzle will handle the 23 gpm flow. The costs of the required motive flow and the cost of the eductor need to be considered in the decision.

**Tips:**

*Consider the pipe losses in the discharge piping when sizing an eductor.*

**For applications with:**

- **Specific gravity greater than “1”**
- **Viscosity greater than 100 centipoise**
- **Higher temperature applications**

*Refer to an Inyo Process application specialist for guidance.*