



# Ultrasonic Flowmeters

External Ultrasonic Flow Meters for Gas and Liquid Applications

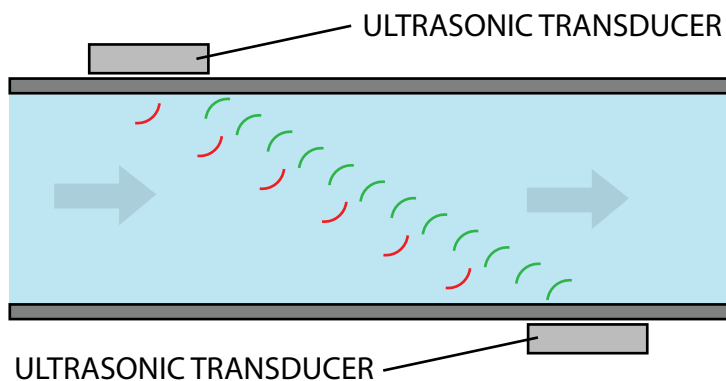
## Method

Ultrasonic flow measurement is one of the few forms of measurement that can allow you to clamp your meter to the outside of your pipework - the meter can be installed without any form of tapping point or break in the piping.

It measures your flow by timing ultrasonic pulses being sent upstream and downstream from the sensors.

Since the media through which the sound waves are travelling is moving, as your flow speed increases the time for each pulse to move downstream becomes shorter, and the time to flow upstream becomes longer. This difference in time can be measured to calculate flow rate.

Although the picture shows two ultrasonic transducers, these are usually both present in a single, clamp-on assembly.



■ DOWNSTREAM PULSES      ■ UPSTREAM PULSES

## Advantages

- Extremely simple to install
- Does not require you to compromise pipework
- Suitable for some extremely aggressive media
- Simple, non-invasive maintenance
- Uni-directional (detects both forward and reverse flow)

## Disadvantages

- High cost
- Requires other process variables (such as temperature, humidity, pressure etc.) to be constant
- Only useful within certain bands of pressure and flow for any given media

## Considerations

You should generally organise a trial for any ultrasonic flowmeter you wish to install. A number of variables, such as low pressure, particularly light gasses, low flow rates, thick or unusual piping and more can reduce the effectiveness of an ultrasonic meter.

A pre-purchase test can give you the confidence you need that the system will work as expected in your application.