

Choosing the Right Signal

Most industrial plants today utilize a number of signaling alarm devices, both audible and visual. These alarms are used to alert employees to emergency conditions, such as a fire, noxious gas release, or chemical spills. They are also used to warn workers of moving objects, such as overhead cranes or forklift trucks, or to alert of automated machine or industrial robot start-up. Signaling devices are also used to notify of non-emergency conditions, such as sounding an alarm when goods get caught on a conveyor, or an automated process malfunctions. In all cases, and in order to ensure a quick response, the alarm signal should be simple and clearly understood.

When choosing an audible signal, there are three main points to consider:

- 1) What is its function? For example, will the alarm be used to provide a general emergency warning sound, or will it be used for non-emergency notification?
- 2) How large is the area which needs to be covered?
- 3) Ambient noise level: The alarm signal should be 6 db higher than the ambient noise level.

As a rule of thumb, consider that sound output drops by 6 decibels each time the distance between the human ear and the sound source is doubled. For example:

<u>Source in dB</u>	<u>Feet from Source</u>
114 dB	10
108 dB	20
102 dB	40
96 dB	80
90 dB	160

Assuming that the ambient noise level is 90 dB, then the alarm device in the above example will cover a distance of approximately 80'. Consider also that a 3 dB increase in sound output doubles the loudness. For example, if a signal is rated at 100 dB at 10', than a signal twice as loud would be rated at 113 dB at 10'.