



## Problems caused by the presence of air in circulating heating and chilled water systems.

- Noise.
- Loss of efficiency - example; blocked radiators.
- Pump wear due to cavitation.
- Corrosion.
- High maintenance cost of remedial work.

## Why is air present in the system.

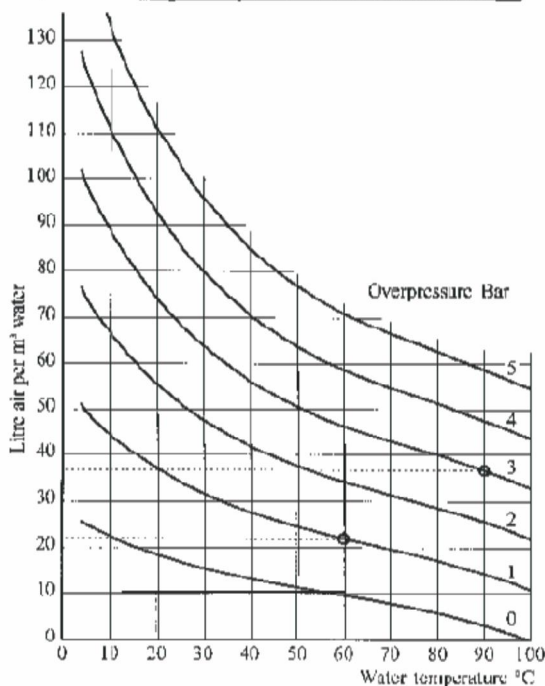
- Pockets of air become trapped when the system is filled.
- The mains water used to fill the system contains dissolved air. This dissolved air will be released from the water when the temperature rises or the pressure falls (Henry's Law).
- Other gases may also be present due to corrosion or chemical reactions within the system.

## How much air is dissolved in water.

The maximum amount of air that can be dissolved in water is defined in Henry's Law. This states that the amount of dissolved air in the water is dependent upon the temperature and pressure of the water.

Please refer to graph below.

Maximum quantity of air, dissolved in water



The graph shows the maximum amount of air that can be dissolved in water at a given temperature and pressure.

When dissolved air is released out of the solution it takes the form of micro bubbles.

The separation of micro bubbles is directly dependant on the ability of water to dissolve air.

The position of the micro bubble separators is also directly affected by temperature and pressure.

## How can we remove air from the system.

Stourflex Nonair separators are designed for use on circulating heating and chilled water systems to provide an effective method of removing micro bubbles.

When selecting the position to install the separator we should be aware of what Henry's Law states. (please refer to graph above) More air is dissolved in water at a lower temperature and at a higher pressure. As a consequence of this more air is released from water at higher temperature and lower pressure.

The separator should be positioned where the highest temperature and the lowest pressure exist. In some cases the position for the separator will be a compromise between the highest temperature and the lowest pressure ( please refer to graph above ) The examples show that more air is dissolved in water at 90°C and 3 bar than at 60°C and 1 bar. Consequently more air would be separated at 60°C and 1 bar than at 90°C and 3 bar.