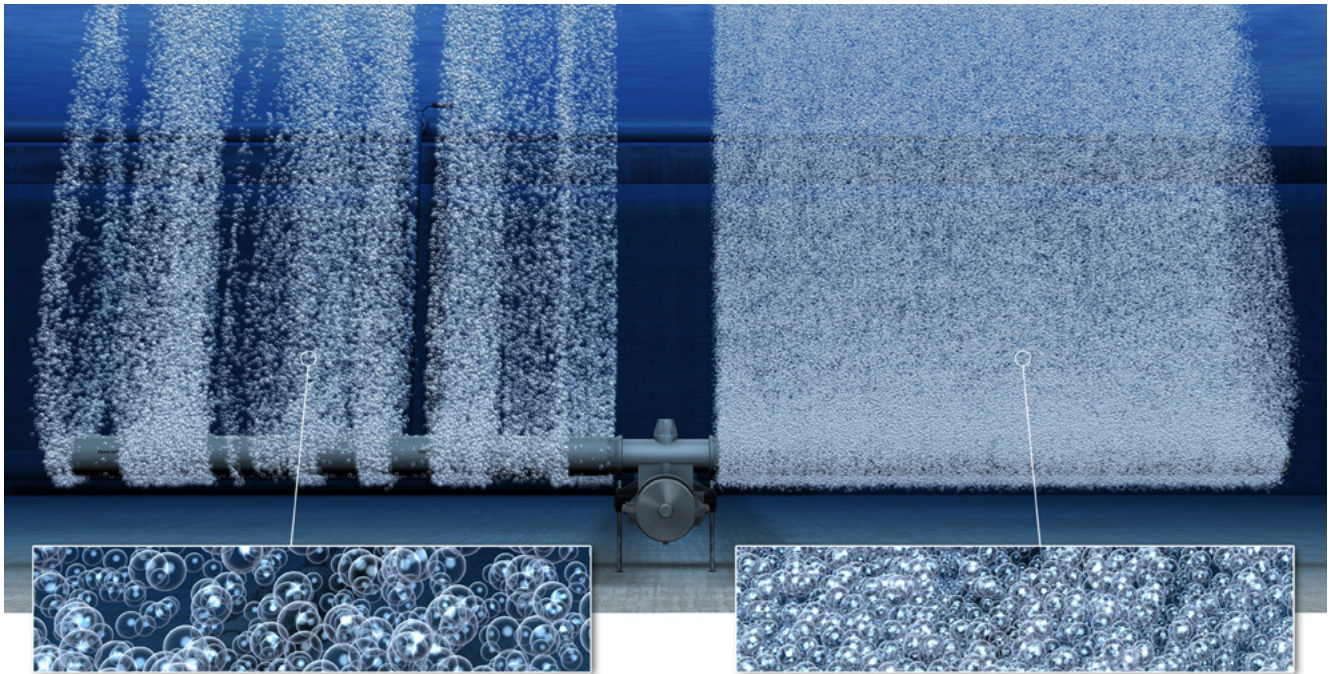


The bubbles make the difference



OTT GROUP



The performance of a diffuser is not determined by its design but by its bubble pattern

The physical relationships between oxygen transfer – air volume – efficiency apply equally to all diffuser types and membrane materials.

Science also shows that differences in diffuser design hardly influence the performance of diffusers. The bubble pattern is much more decisive.

→ Small bubbles increase efficiency

The smaller the air-bubbles are the larger their surface is the better the oxygen transfer efficiency gets. A given oxygen input can be achieved with a low air-flow rate if the air-bubbles are small.

The same oxygen input would required a higher air-flow rate if the air bubbles were bigger. The perforation as well as the air diffusion pattern of the membrane plays the key-role in this regard.

→ The faster the air bubble is released from the membrane, the smaller it stays

Transfer of oxygen into wastewater occurs quicker with smaller air bubbles than from larger ones.

The size of the air bubbles is determined by the perforations: fine perforation slits (holes) produce smaller air bubbles.

However, the size of air bubbles is not only determined by the perforation size. The time it takes for the air bubble to release from the membrane also plays an important role. If an air bubble sticks to the membrane for a long time, it

becomes further inflated by the incoming air, resulting in a larger air bubble than originally intended.

The release behavior of air bubbles is determined by the membrane material. The differences can be quite significant - especially between the common materials: EPDM, silicone, PU and PTFE.

The material of OTT membranes is matched to the application to ensure long service life, fouling resistant properties, and the rapid release of air bubbles. The release behavior of fine bubble patterns can be seen in the very fine "bubble chains".

→ A dense and uniform cluster of bubbles is the basis for an efficient aeration system

Once the air bubbles are released from the membrane, they flow through the wastewater towards the water surface and, in doing so, transfer oxygen to the wastewater. The more air bubbles that are generated from a specific air volume, the greater the amount of oxygen transferred to the wastewater. This higher oxygen transfer rate saves energy.

In order to generate air bubbles in the desired size and number, it is important that air is uniformly emitted from the intended membrane surface area. Unless the same amount of air escapes from all perforations, a loss of system performance occurs.

Since all membranes in a diffuser system are connected to the same air supply source, the opening pressure of the membranes determines the air volume passing through the different membrane elements: Membranes with a low

opening pressure let more air through the perforations than those with a higher opening pressure.

The opening pressure of the membranes is determined by the size of the perforation slits as well as the wall thickness of the membrane. The more these two influencing factors differ from perforation slit to perforation slit, the greater the difference in the opening pressure will be. To ensure that all membranes of a diffuser system diffuse air uniformly, we manufacture the membranes under tightest tolerances and in such a way that the opening pressure of all membranes lies within a pressure margin of +/- 4 mbar (0,059 psi). In this way we can guarantee a unique, fine and dense cluster of bubbles that result in the highest system efficiency potential. Thus, OTT aeration systems achieve the highest operational performance at low energy costs.