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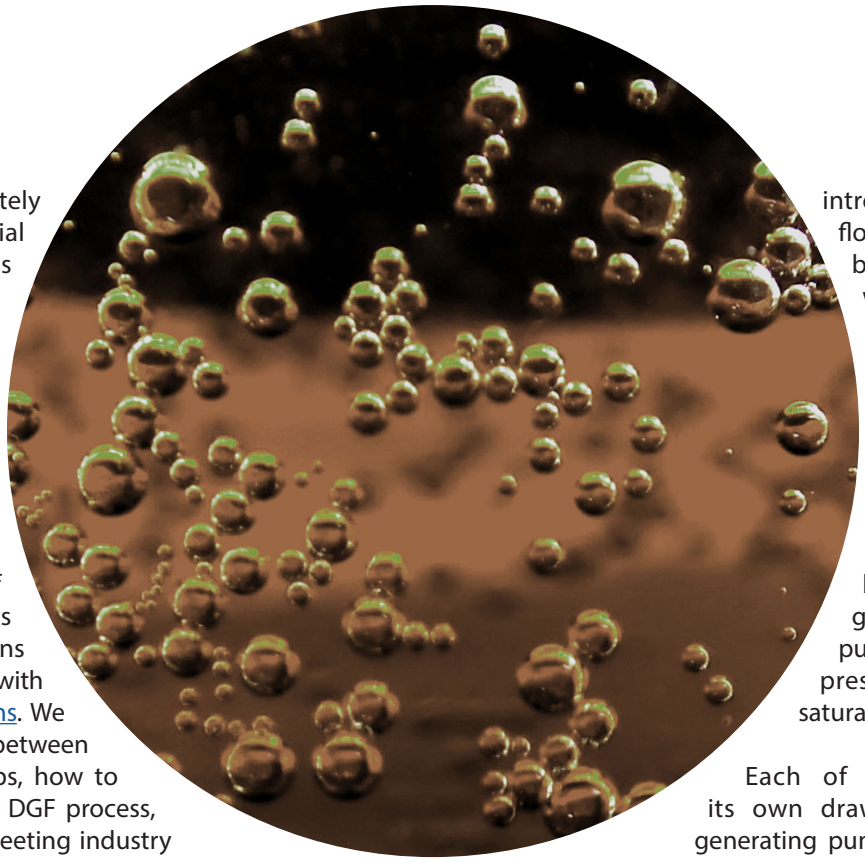
# Finding The Right Solution For Bubble Generation



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It may not be immediately apparent just how crucial bubbles are to oil and gas operations. They play a critical role in a process known as dissolved gas flotation (DGF), which is imperative for removing contaminants. And not all bubbles are created the same.

To get a better sense of DGF and the best ways for oil and gas operations to approach it, we spoke with professionals from Siemens. We covered the differences between bubble-generating pumps, how to save on costs during the DGF process, and the importance of meeting industry standards.

### Why is DGF important for oil and gas operations?

DGF systems offer a compact solution for clarifying wastewater from a variety of industries. Flotation units are used in the oil and gas industry due to their high efficiency of oil and suspended solids removal. Through the use of bubbles, flotation units are used to further treat the contaminants that upstream gravity separators were not able to remove. DGF units in particular are effective because the bubble populations and sizes that are generated are optimal for creating collisions between oil and suspended solids. These bubbles adhere to the contaminants and allow them to float to the surface at a high rate, so that they may be removed by a skimming device.

### How are bubble-generating pumps utilized in the oil and gas industry?

There many different methods for introducing bubbles into a flotation unit. Bubbles can be created mechanically with the use of high velocity rotors, and hydraulically by pumping high pressure water through an eductor and creating a venturi effect to draw gas into the stream. They can also be created by adding compressed gas downstream of a pump or by pumping high-pressure water through a saturation vessel.

Each of these techniques has its own drawbacks that a bubble-generating pump overcomes. Eductors and Rotors are effective at pulling gas into the stream but tend to generate the largest bubbles. Saturation tanks are a bit more complex and require a pump, pressure vessel, and level control. Using compressed gas can be expensive because it requires a constant supply of fresh gas and eliminates the ability to recycle the separate gas from the headspace of the vessel. Bubble-generating pumps eliminate multiple pieces of equipment while delivering microbubbles that are smaller, more numerous, and better at removing contaminants.

**How does the Brise 2.0™ pump provide better flotation performance than its competitors?**

The Brise 2.0 pump is the next generation of the Siemens bubble-generation pump. It uses a dual-sided impeller that causes both water and gas to be educted into the pump volute. The impeller veins pressurize the gas/water mixture causing the gas to dissolve. This causes the generation of microbubbles that release from the solution when the pressure is dropped as this water enters the float cell. The Brise 2.0 draws more gas, which increases the rate of collision between bubble and contaminant, resulting in higher contaminant removal efficiency. This pump eliminates the need for compressors, eductors, and saturation vessels. Using the Brise 2.0 pump, gas can be recycled from the headspace of the floatation unit and recycled. The ability of the pump to recycle gas eliminates the need for a constant supply and treatment of the gas source.

**What does it mean for the pump to meet American National Standards Institute (ANSI) standards? Why is this important?**

ANSI pumps are held to strict dimensional standards and are the preferred style of end-suction pumps in industrial applications, including oil and gas and chemical. The standard allows for interchangeability of pumps from one vendor to another. Customers can switch between vendors and brands without making any changes to the mounting or piping.

**How else can operations save on costs by utilizing the Brise 2.0?**

The Brise 2.0 pump eliminates capital equipment needed in new flotation unit installations and has the ability to reduce the operational expenses of existing units. Its standard ANSI design allows for shorter lead times, reduced downtime and maintenance, and gives operators the comfort of using a familiar product. The pump comes in 4 different sizes with flow rates up to 1,000 gallons per minute, which reduces the number of pumps required for large systems.

**How are maintenance requirements reduced?**

The Brise 2.0 pump is designed at the highest ANSI standards. It is built with an oversized shaft and bearing assembly to withstand higher loads. The pump's back pull-out design simplifies maintenance by allowing the rotating parts to be removed without disassembling the piping. The standard material of construction is 316SS, is also available in CD-4 and other more exotic materials, and comes with a full 1-year warranty.

**Why do you believe that the Brise 2.0 is well positioned to help operations evolve alongside the changing oil and gas industry?**

The Brise 2.0 pump combines industry-leading performance with industry-accepted technology. The standard ANSI design gives operators the comfort of using a widely accepted standard pump, while the process improvements allow for superior flotation performance. ■