

Round cord rings as lid seals for ozone generators

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Ozonia AG develops and manufactures ozone generators to customers' specifications. Since ozone gas is a strong oxidizing agent and the generators come in many different sizes, selecting the right sealing elements poses a great challenge with regard to safety, cost-effectiveness and efficiency. Owing to their good performance when handled correctly, round cord rings from Angst+Pfister meet all of the basic requirements.

Ozonia AG is a subsidiary of the France-based Suez group, which operates in the area of water and energy technology. Ozonia specializes in ultraviolet and ozone disinfection technology. With offices in France, Switzerland, the USA, Scotland, Russia, South Korea, China and Japan, Ozonia is the market leader in its field. At its plant in Dübendorf, Switzerland, a team of 70 develops and manufactures state-of-the-art ultraviolet and ozone disinfection technology.

Ozone as a disinfectant

Ozone gas (O₃) has many different uses. The gas is used for drinking water purification, in industrial and municipal wastewater treatment, for cellulose bleaching and in chemical applications. To perform these tasks, Ozonia AG develops complex equipment, particularly ozone generators. They are designed and manufactured to order to meet customer-defined specifications, size and output.

The generators produce ozone in a high-voltage electric field between two electrodes. A ceramic dielectric and a gap filled with gas containing oxygen occupy the space between the electrodes. Pure oxygen is used preferably, or else ambient air or dried air. Discharge activity in the electric field established between the electrodes breaks the chemical bond of the oxygen molecules, which leads to ozone formation. Up to several kilograms of ozone can be generated per hour in a generator when pure oxygen is used. Ozone acts as a strong oxidant when brought into contact with other substances. This places highest demands on all sealing elements in ozone generators.

Round cord rings as lid seals

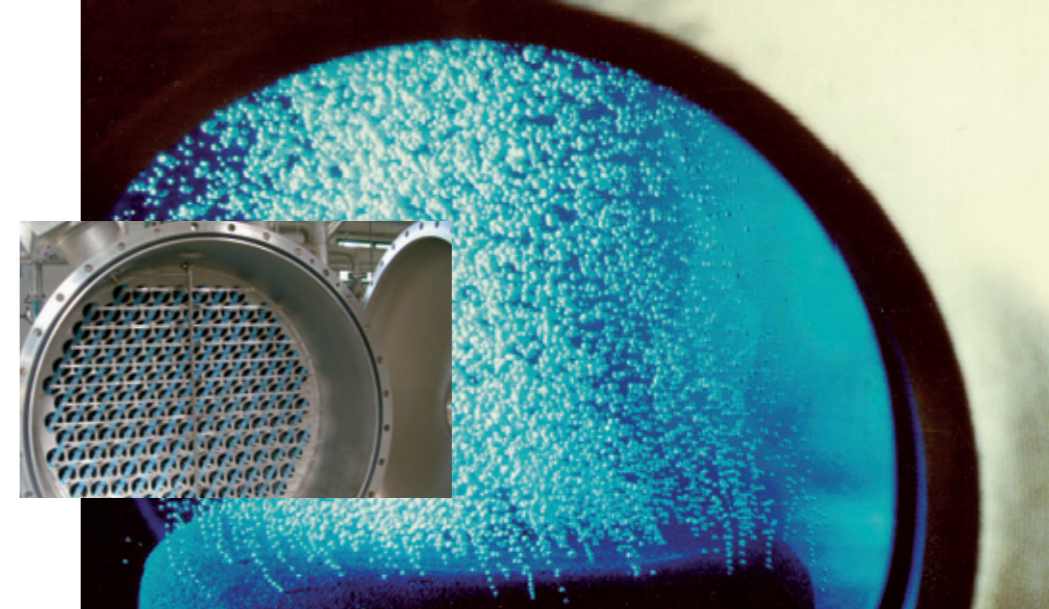
The following conditions had to be met when selecting lid seals for ozone generators:

- as much ozone resistance as possible;
- gas tightness at an absolute pressure of 3 bars;
- temperature resistance up to +50 °C;
- individual seal manufacturing with varying inner round cord ring diameters of up to 2,200 mm;
- cost-effective manufacturing of single units or small batches;
- short-as-possible delivery times.

Fluoroelastomer (FKM) round cord rings from Angst+Pfister meet all of the above conditions ranging from the technical requirements for the seal material to cost-effective manufacturing and delivery times.



Ozone generator



Ozonization

A production method with a crucial advantage

Round cord rings are hot-vulcanized together using extruded elastomer cords. The joint is fused with an angle of 45° or with a butt joint, depending on the material. This is the most economical way of making single units or small batches of large, highest-quality O-rings. Unlike with cementing or cold vulcanizing, hot vulcanizing uses the same material as the extrudate. The vulcanized patch is identical to the base extrudate in terms of elasticity and chemical resistance. In contrast, cemented patches are hard, inflexible joints that are far inferior to the base elastomer with regard to chemical and heat resistance. Compared to the standard method of shaped O-ring production, hot vulcanization of round cord rings mainly offers the advantage of cost-effective small batch manufacturing. Changing from one inner cord ring diameter or cord diameter to the next can be done flexibly, at shortest notice and with no tooling costs.

Correct handling is essential

Testing

As mentioned before, the optimal, barely visible vulcanization patch of round cords has the same chemical and heat resistance as the base elastomer. Even though the mechanical stability of the joint is not quite as high as the round cord's, it can still be deemed mechanically functional. Nevertheless, the vulcanized patch may only be subjected to stretching tension while in use, for safety reasons. Excessive bending should be avoided by all means. This holds both for testing the vulcanization patch and mounting the round cord rings.

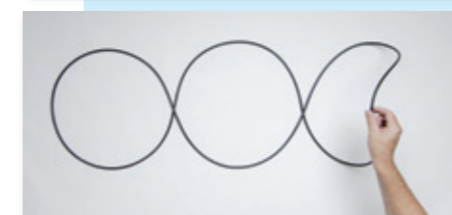
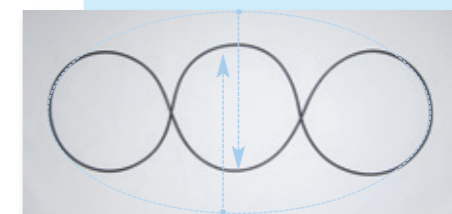
The following rules must be observed:

- Vulcanization patches should only be tested under tensile load.
- Avoid excessive bending and attendant undue high surface tension in the vulcanization patch area.

As a guideline, a minimal acceptable bending radius at the vulcanization patch equal to ¼ of the inner cord ring diameter should be observed.

Broad product range in stock

Angst+Pfister holds a substantial round cord product range in stock for fabrication of round cord rings to customers' specifications with the shortest delivery times. The stocked product range includes round cords made from NR, NBR, H-NBR, CR, EPDM, VMQ, and FKM materials and with cord diameters ranging from 1 mm to 30 mm.



Twist-free folding

In order to enable round cord rings to preserve their circular form even after longer storing periods and to remain easily installable, Angst+Pfister recommends folding them without twisting them following the illustrated steps 1 to 4.

This careful handling of round cord rings helps to avoid warping when they are installed. The rings can be inserted into the grooves with ease.

Contact us. We would be pleased to offer advice and to find the best and most cost-effective solution for you.

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