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Operating principle of Flamcovent micro-bubble air separators

Use of PALL rings: a new process

The operation of the Flamcovent air separators is based on a completely new method of separating gases from liquids (water). This new method is in turn based on a long existing, well-tried procedure in the processing industry. It entails the use of special packing bodies, originally derived from the well known Raschig ring. The Raschig ring subsequently gave rise to many variants, of which the PALL ring is the best known in the processing industry.

For many years now, PALL rings have been applied in the processing industry for the purpose of mixing gases with or separating them from liquids. The use of PALL rings to remove all air from central heating systems is however entirely new (patented). The operating principle of PALL rings resides in the special properties which these rings possess, namely:

- large surface area per m³;
- high probability of collision and adhesion;
- low resistance to fluid flow.



Type	Number/m ³	Number/litres	Surface m ² /m ³
PALL 10	770.000	770	515
PALL 15	240.000	240	360
PALL 25	51.000	51	215
PALL 38	15.000	15	135
PALL 50	6.000	6	105

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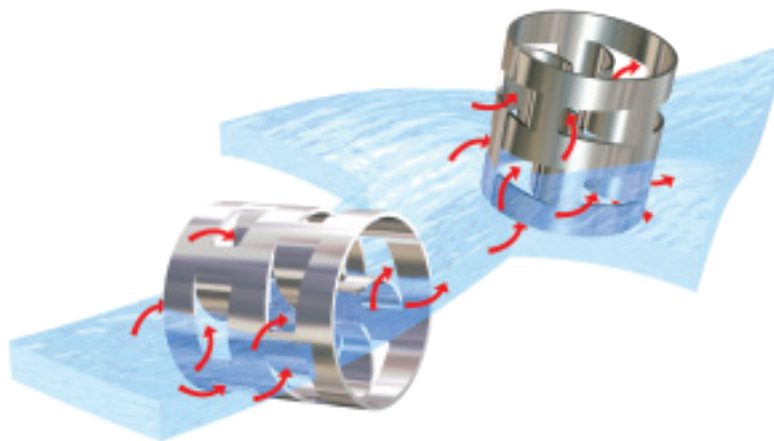
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Flamcovent and the coalescence effect

The operation of Flamcovent air separators is based on the concept of coalescence.

This means in practice that small air bubbles tend to adhere to a surface, and then to grow together to form larger air bubbles.

When a stream of fluid flows past and through PALL rings, the stream is deflected in many different directions.



The construction of the PALL ring is such that all the fluid is brought into contact with the total surface of the PALL ring that is available for adhesion.

The microscopically small air bubbles present in the fluid come to attach themselves to the contact surface of the PALL ring. Once these micro-bubbles have grown to form larger bubbles, they can be separated from the fluid.

The adhesion of air bubbles, is known as 'coalescence'.

A large number of PALL rings are applied in the Flamcovent air separators, so that a very large contact and adhesion surface is obtained.

Flamcovent Type	PALL ring Type	Filling litres	Contact surface cm ²
22	PALL 10	0,15	770
3/4"	PALL 10	0,15	770
1"	PALL 10	0,28	1435
1 1/4"	PALL 10	0,41	2105
1 1/2"	PALL 10	0,41	2105

Flamcovent Type	PALL ring Type	Filling litres	Contact surface m ²
50 S/F	PALL 15	5	1,8
65 S/F	PALL 15	5	1,8
80 S/F	PALL 25	16	3,4
100 S/F	PALL 25	16	3,4
125 S/F	PALL 38	44	5,9
150 S/F	PALL 38	44	5,9
200 S/F	PALL 38	82	11,1
250 S/F	PALL 50	200	12,5
300 S/F	PALL 50	225	14,0
350 S/F	PALL 50	450	28,1
400 S/F	PALL 50	500	31,3