

Title (en)

Method for introducing gas into water in superequilibrium quantity, apparatus for carrying out the method and water produced by the method.

Title (de)

Verfahren zum Einführen eines Gases in Wasser in Supergleichgewichtsquantität, Apparat zum Ausführen dieses Verfahrens und so erhaltenes Wasser.

Title (fr)

Procédé pour introduire du gaz dans de l'eau en quantité au-dessus de l'équilibre, appareil pour exécuter le procédé et eau obtenue à partir de ce procédé.

Publication

**EP 0312642 A1 19890426 (DE)**

Application

**EP 87115583 A 19871023**

Priority

EP 87115583 A 19871023

Abstract (en)

A method for introducing gas into water in excess quantity relative to an equilibrium condition corresponding to the saturation of water with the gas on any predetermined temperature and pressure, in which the water is intensively moved and circulated to form an intensive vortex which resembles to the form of the funnel of a tornado and the free surface of this funnel is exposed to the gas. The circulation is maintained for a while, at least as every water particle has entered and left the vortex 100 times. An apparatus for carrying out the method comprises a balloon-like container (1), with a tapering lower part (4) and an oblique and tangential inlet duct (13) somewhat below the plane where the container (1) has its largest diameter. A feedback circulation path including a pump (14) and a resonator (15) is provided between the lower end of the container (1) and the duct (13). The resonator (15) forces the water flowing therethrough to rotate in a plane normal to the direction of flow. The so injected water forms a vortex in the container above which gas, preferably oxygen or carbon-dioxide is present which will be taken up by the water. The water made by the method comprises a gas in excess quantity relative to the equilibrium condition in such a way that the gas contained therein is in a stable and bound state.

IPC 1-7

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IPC 8 full level

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CPC (source: EP KR)

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Citation (search report)

- [Y] CH 370057 A 19630630 - BUSS AG [CH]
- [Y] US 3867195 A 19750218 - PFEUFFER ANTON
- [A] US 3246683 A 19660419 - JAN YAP KIE, et al
- [A] DE 1642794 A1 19710429 - STOCKHAUSEN & CIE CHEM FAB
- [A] GB 1260163 A 19720112 - MCINNIS STIRLING ALEXANDER [US]
- [A] US 4008163 A 19770215 - INGELS GLENN R
- [A] US 4337152 A 19820629 - LYNCH JOHN F
- [A] FR 1005450 A 19520410
- [A] US 2986343 A 19610530 - BERNARD TRENTINI, et al

Cited by

US5499871A; CN111530334A; EP0595177A1; EP0393715A1; EP4094823A1; NL2028325B1; WO9012639A1

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