

Conti-Stream CN 2000

The next Generation in Carbonation



Carbonation is often one of the last process steps in production of carbonated soft drinks and beer. Thus the carbonation process is critical to not only the final taste and appearance of the product, but influences the filling of the final beverage.

Problem

Traditional methods for dissolution of large volumes of CO₂ (and N₂) have always been unsatisfactory because of the large amounts of excess gas used and the time required for bonding. Systems using energy consuming nozzle systems along with tanks for separation of undissolved gas or the use of holding tubes result in:

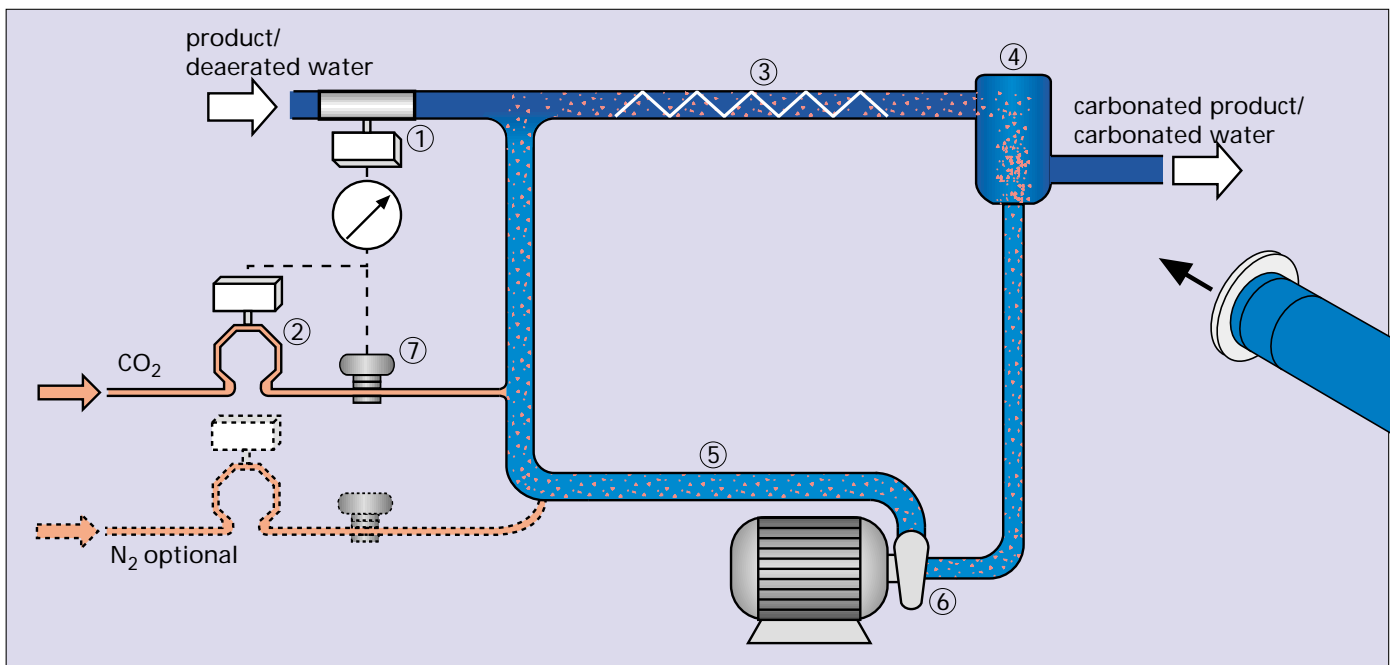
- Equipment with high energy usage resulting in higher operating costs,
- Poor dissolution quality causing loss of filling efficiency,

- Tank systems which give more equipment to clean- and have inflexible carbonation control

Solution

Tuchenhagen has solved the problem with patented Hydrocyclone Technology. Our in-line separation device separates all undissolved gas bubbles which are entrained in the product. The product is virtually bubble-free. The separated gas/liquid mixture is returned to the system via a circulation pump.

This unique system provides better CO₂ bonding to ensure consistent product quality and reduces foaming at the filler.



Conti-Stream CN 2000

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|---|--------------------|
| 1 Flowmeter | 4 Hydrocyclone |
| 2 Mass flowmeter | 5 Circulation path |
| 3 Dissolution path with 2 static mixers | 6 Circulation pump |
| | 7 Control valve |

Applications

- Soft drinks
- Mineral water

- Beer
- Sparkling wine
- Cider

Method

CO₂ is metered into the product downstream of the product inlet connection. The dissolution path consists of two special cleanable static mixers which have a low pressure drop.

The gas/liquid mixture enters the hydrocyclone tangentially so that the undissolved gas forms a two phase vortex at the centre of the hydrocyclone. The bubble-free carbonated product flows tangentially out of the hydrocyclone.

A selfpriming centrifugal pump takes the gas/liquid mixture from the centre of the hydrocyclone and returns it to the inlet of the system. This method allows for in-line dosing up to 12 g/l (6v/v) of CO₂.

Control

The gas flow is detected by an accurate mass flowmeter and dosed into the product in direct proportion to the product flow via a modulating control valve. An in-line CO₂ measuring unit detects and compensates the dosing amount for pre-carbonated products, (e.g. beer).



Features

- Virtually bubble-free product with very good CO₂ bonding
- In-line system
- Wide dosing range up to 12g CO₂/l
- Precise dosing of smallest gas amounts
- Excellent bonding of CO₂/N₂ and combined CO₂/N₂ dosing
- Low pressure drop of 0.5 to 1.5 bar,
- No CO₂ loss

Benefits

- Highest product quality with best carbonated character and taste.
- Reduced foaming during filling
- Rapid product changeovers
- Greater flexibility for different and new products
- Reduced energy consumption
- Lower utility costs

Design

- The factory tested unit is mounted on a compact stainless steel base frame to form part of the pipe-work system.
- Tuchenhagen VARIVENT® components are used as standard for valves and access units for instrumentation for the highest hygienic standards and excellent cleanability.
- Special valve configuration guarantees safe cleaning of the gas path.
- The unit is equipped with a local control system, complete with operating terminal that is based on systems available from the world market leaders.

Alternatives

- Tuchenhagen has developed the system for combined CO₂ / N₂ dosing.
- For carbonation levels up to 3 g/l (1.5 v/v) an alternative Conti-Stream CN 2000 version is available without the hydrocyclone design and re-circulation properties.
- As an option, these systems are equipped with integrated in-line measuring units for CO₂ and N₂.

The Performance

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| • Sizes from DN 25 to DN 125 | product flowrate up to 110 m ³ /h |
| • Final CO ₂ concentrations | 0 - 12 g/l 0 - 6 v/v |
| • Dosing accuracy | ± 0.1 g/l 0.05 v/v |
| • Pressure drop in the product pipe | 0.5 - 1.5 bar |
| • Protection class | IP 55 |
| • Air noise | < 70 dB(A) |
| • Materials | 1.4404/1.4571 (AISI 316 l/ AISI 316 tl) |
| -product contacted parts | EPDM or FKM |
| -seals | |