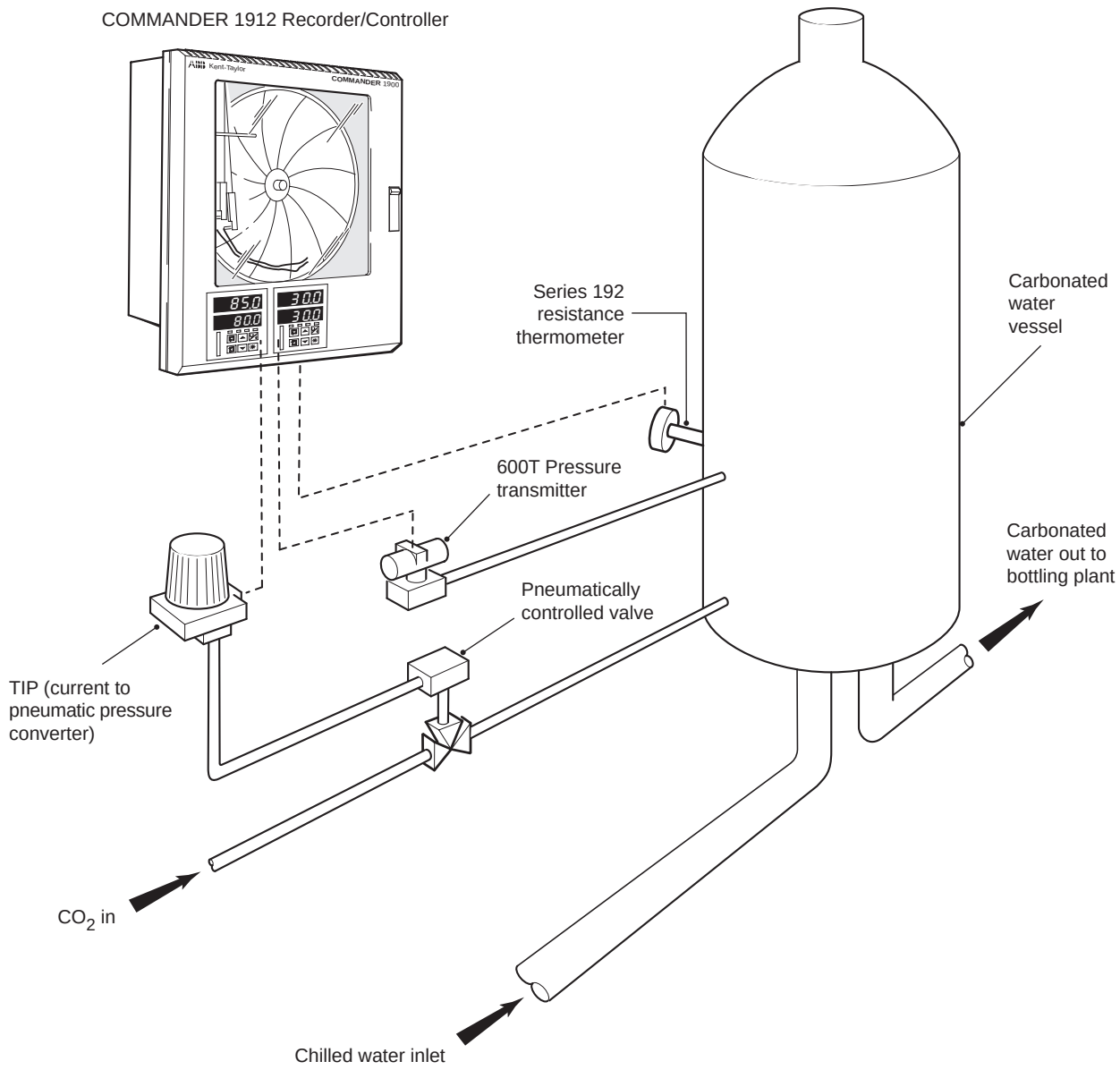
Application Guide

Carbonation Control Systems

In the Soft Drinks and Food Processing Industry



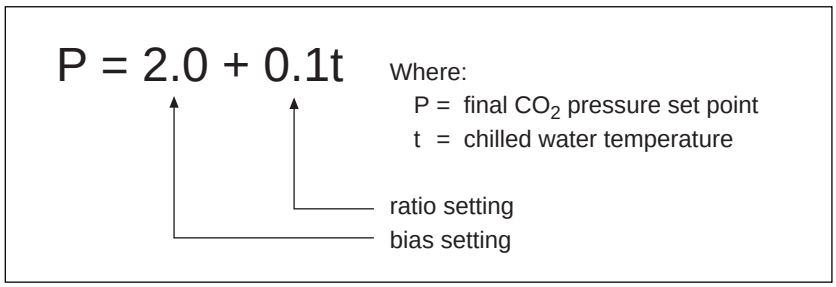
Example of Carbonation Control System in Processing Plant

ABB Instrumentation

Why use a Carbonation Control System?

The level of CO_2 in carbonated drink varies between manufacturers. Each manufacturer will require different CO_2 levels dependant on the final product (cola type drinks require a different carbonation level to carbonated orange drinks).

- It is normally necessary to control and record the CO_2 gas pressure and record the temperature of the chilled water as part of the quality control procedures.
- The CO_2 pressure set point varies due to the type of product and also if the temperature of the chilled water changes. Therefore the CO_2 pressure set point is a function of the water temperature e.g.



In the above example, with water chilled at 10°C, the design CO_2 pressure is 3.0bar. If the water temperature changes by +1°C, the CO_2 pressure required would increase to 3.1bar.

- By varying the bias and ratio values, different CO_2 levels can be produced for the complete range of carbonated drinks.

Why use ABB Instrumentation?

- Choice of dedicated recorder or recorder/controllers.
- Comprehensive range of products – ABB can supply all necessary equipment, including systems which are 'tailored' to the customers requirement (some applications have separate controllers and recorders or do not need the recording facility).
- Straightforward operator controls make adjustments of ratio and bias terms easy for different carbonated drinks.
- Advanced recording and design features (0.1% Measurement accuracy), including password protection.
- COMMANDER 1900 controls all associated system transmitters and sensors.
- Self-contained units suitable for panel-, wall- or post-mounting.
- Chemical resistant housings. The cases are rated NEMA4X (IP66) as standard, making them suitable for use in almost any location in a modern food processing plant, where cleaning of all surfaces takes place.
- Minimal system maintenance requirements.
- Proven reliability – over 100 years of process instrumentation experience.

What ABB Products are Suitable?

- COMMANDER 1900 Circular Recorder/Controllers:

  2-Pen with one control channel

  - Channel 1 records and controls CO_2 pressure.
  - Channel 2 records chilled water temperature and provides the remote set point for channel 1 (by soft wiring).

    Note: Decimal points on pressure and temperature ranges must be the same.

- COMMANDER 300 or 310 Controllers:

  These can be used as separate controllers or where no recording is required (note, remote set point can accept chilled water RTD directly).

- COMMANDER 1900 or PR100 can be used as separate recorders.
- 600T or 500T Pressure transmitters for CO_2 pressure measurement – offer superior long-term stability/repeatability at the calibrated range.
- TIP Current to pneumatic converter for converting electrical control output to an air signal.

Associated Applications on Carbonation Control Systems

- CO_2 in N_2 control in brewing (Analytical equipment)

The Company's policy is one of continuous product improvement and the right is reserved to modify the information contained herein without notice.

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