



Beverage and Bottled Water Plant Operations Course: Water Treatment, Blow-Fill-Cap Lines and CIP



Beverage and Bottled Water Plant Operations Course: Water Treatment, Blow-Fill-Cap Lines and CIP

Introduction:

Beverage and bottled water plant operations, from water treatment and blow-fill-cap lines to CIP, is a 5-day course for production, quality assurance and maintenance teams in bottled water and soft drink factories, ending with a Bottling Line Operating and Product Release Plan for a case plant. Plants face recalls and lost output when ozone doses drift, carbonation falls short and filler valves are cleaned by habit. Nominees already run, test or maintain bottling equipment, and learn through inspection walkthroughs of treatment skids, syrup rooms and filling halls. CoreConcept Training Center delivers this beverage and bottled water plant operations course.

Course Objectives:

- Operate source and product water treatment trains from multimedia and carbon filtration to reverse osmosis polishing, mineral dosing and UV
- Control ozonation dose, contact time and pH so that product water stays disinfected while bromate formation remains within the set limit
- Prepare sugar syrup and finished beverage in the syrup room and set carbonation to the target CO₂ volumes for each product
- Run PET blow-fill-cap monoblocks by setting rinser, filler valve, fill level and cap application torque checks for each format
- Validate CIP cycles for syrup, mixer and filler circuits and verify cleaning results before production restarts
- Measure bottling line efficiency, shorten changeovers and apply product release testing before pallets leave the warehouse

Target Audience:

- Water treatment operators responsible for filtration skids, reverse osmosis units, ozone generators and UV reactors
 - Syrup room and blending staff responsible for sugar dissolving, concentrate dosing and carbonation set points
 - Filling hall operators and shift leaders responsible for blow-fill-cap monoblocks, format changes and line output
 - Quality assurance and laboratory staff responsible for in-process checks, microbiological sampling and batch release
 - Maintenance technicians responsible for fillers, cappers, compressors, CO₂ systems and CIP stations
-

Course Outline:

Day 1: Beverage Plant Map, Product Types and Water Quality Baseline

- Plant Flow Map From Borehole Intake to Palletiser
- Product Category Sheet for Purified, Spring, Mineral and Sparkling Water
- Soft Drink Formula Card for Concentrate, Sugar, Acid and Water
- Raw Water Analysis Profile for Hardness, Bromide and Microbial Load
- Current Line Loss and Customer Complaint Review Log

Day 2: Product Water Treatment, Ozonation and Bromate Control

- Multimedia and Activated Carbon Filter Backwash Routine
- Reverse Osmosis Polishing Skid Recovery and Conductivity Checks
- Mineral Dosing Pump Calibration for Taste and Hardness Targets
- Ozone Contact Tank Dose, Residual and pH Adjustment
- Bromate Formation Controls Using Ozone Limits and Bromide Screening

Day 3: Syrup Room, Carbonation and Blow-Fill-Cap Monoblock Settings

- Sugar Dissolving Tank Brix Measurement and Syrup Filtration
- Concentrate Dosing and Final Beverage Blending Ratio Control
- Carbonator Temperature and Pressure Settings Using Henry's Law
- Rinser, Filler Valve and Fill Level Probe Adjustment
- Capper Head Torque Testing and Closure Application Checks

Day 4: CIP Validation, Contamination Risks and Line Efficiency

- CIP Circuit Sequence Using TACT Factors for Syrup and Filler
- Caustic and Acid Strength Titration With Final Rinse Verification
- Hazard Analysis Worksheet for Product Water and Filling Zone
- Changeover Time Study Splitting Internal and External Format Tasks
- Bottling Line OEE Calculation Around the Filler Bottleneck

Day 5: Inspection Walkthrough and the Bottling Line Operating and Product Release Plan

- Case Plant Walkthrough of Treatment Skids and Ozone Contact Tanks
 - Syrup Room and Carbonation Inspection Against Set Point Sheet
 - Filling Hall Audit of Fill Level, Torque and CIP Records
 - Product Release Testing Checklist for Microbiology, CO₂ and Seal Integrity
 - Bottling Line Operating and Product Release Plan Completion
-

Skills You Will Gain:

- Product Water Treatment Operation
- Ozonation and Bromate Control
- Syrup Preparation and Brix Control
- Carbonation Adjustment
- Filler and Capper Setting
- CIP Circuit Verification
- Changeover Time Reduction
- Batch Release Decision Making

Why Attend This Course:

- Deliver a Bottling Line Operating and Product Release Plan for a case plant to the plant manager and the quality assurance lead for adoption
- Decide whether a batch can be released, held or reworked using water quality, carbonation, fill level, torque and microbiological results
- Avoid recalls, consumer complaints and lost line hours caused by drifting ozone doses, under-carbonated product, leaking closures and poorly cleaned filler valves
- Coach operators and technicians on set point sheets, backwash routines, CIP checks and the release checklist used on the walkthrough

Conclusion:

Back at the plant, the participant hands the Bottling Line Operating and Product Release Plan to the plant manager, the quality assurance lead and the maintenance supervisor. Production uses it to fix treatment, syrup, carbonation and filling set points; quality assurance uses its release checklist to decide on each batch; maintenance uses its CIP and changeover sections to plan downtime. After the first month of use, the team should review held batches, complaint trends, changeover times and line OEE against the plan and revise the set points that did not hold.

Frequently Asked Questions FAQ:

What should participants know before a beverage and bottled water plant operations course?

Participants should already operate, test or maintain equipment in a bottled water or soft drink plant. Basic arithmetic and reading of set point sheets are enough. Bringing anonymised water analyses, CIP records or line stoppage reports helps them apply the walkthroughs to their own lines.

How does a beverage and bottled water plant operations course differ from a general food processing or PET moulding course?

It follows one product family from raw water to released pallet: treatment, ozonation, syrup, carbonation, filling, capping, CIP and release. General food processing courses cover many product lines and heat treatment, while PET moulding courses focus on preform and mould settings and scrap.

Why does ozonation in beverage and bottled water plant operations need bromate control?

Ozone reacts with bromide naturally present in some source waters to form bromate. Plants control it by limiting ozone dose, lowering pH where the product allows, screening sources for bromide and checking treated water regularly, so disinfection does not create a new contaminant.

What do participants take back from the beverage and bottled water plant operations course?

Participants take back a Bottling Line Operating and Product Release Plan for a case plant, with treatment and ozone set points, a syrup and carbonation sheet, filler and capper checks, CIP verification steps, a changeover study and a product release checklist.
