

# PACKAGING AND DISINFECTION

## Capability Brief

Water Bottling Lines (Still + Carbonated) | Cold Chain Disinfection (Farm to Shelf)

Biozone designs and integrates engineered packaging and hygiene systems built around stable treatment performance, controlled disinfection stages, and practical plant operation.

Water treatment is configured from water analysis to achieve SANS 241 / WHO drinking water standards.



## ENGINEERED PACKAGING AND HYGIENE SYSTEMS

Biozone delivers end-to-end water packaging and disinfection systems that align treatment performance with real operating environments. Our solutions are engineered from verified inputs (water analysis, hygiene objectives, throughput requirements) and built to maintain reliable output across changing conditions.

### Water Bottling Lines (Still + Carbonated Water Only)

We supply complete bottling line suites. From manual and semi-automated systems through to fully automated packaging lines, including treatment integration to meet drinking water standards.

### Cold Chain Disinfection (Farm to Shelf)

We integrate ozone in air and water to support contamination control, odour reduction, and shelf-life protection across cold chain environments, from packhouses and logistics to distribution and retail zones.

**Treatment selection depends on the client's water analysis. Ozone expertise supported by UV, reverse osmosis, and nanofiltration where required.**

## CAPABILITY AT A GLANCE

Coverage across bottle formats, automation levels, packaging, and cold chain hygiene.

### Bottled water line scope

- Still water and carbonated water lines
- Bottle formats supported: 330 ml to 5 L (and larger formats by request)
- Full suite integration: rinse → fill → cap → label → shrink wrap → shrink pack → conveyance / handling
- Semi-auto: ±2,000–3,000 bottles/day
- Fully automated: ±2,000–50,000 bottles/hour

### Throughput bands (typical):

- Semi-automated lines: ± 2,000–3,000 bottles/day (operator and shift dependent)
- Fully automated lines: ± 2,000–50,000 bottles/hour (line configuration dependent)

### Treatment integration (analysis-driven):

Based on source water results, systems may integrate ozone, UV, reverse osmosis, nanofiltration and filtration stages to achieve SANS 241 drinking water standards.

### Built-in hygiene stage (standard):

All lines include ozone bottle rinse and disinfection prior to filling.

### Optional product configuration:

Clients may select ozonated product water for bottled water resale where required.

### Brand + Site Setup (Optional Add-On)

Biozone can support full market launch readiness, including:

- Logo and brand design
- Label design and compliance-ready packaging artwork
- Retail shop setup design (fridges, signage, merchandising, display)

### Cold Chain Disinfection (Farm to Shelf)

- Industries: produce, abattoirs, dairy, beverage plants

### Core applications:

- **Packhouse rinse water disinfection** using ozonated water
- **Air decontamination and surface disinfection** using EcoBlasters (ozone-in-air)
- **Transportation airspace hygiene support**
- **Distribution and ripening room applications** (including ethylene management where applicable)
- **Retail hygiene reinforcement** for freshness and shelf-life support



# WATER BOTTLING LINE CONFIGURATIONS

Manual, semi-automated, and fully automated lines designed around your target throughput, staffing, and footprint.

Manual Lines Entry-Level Production	Semi-Automated Lines Operator-Assisted Throughput	Fully Automated Lines High Throughput Systems
Low-volume production. Start-up bottlers, remote community supply, pilot operations.	±2,000–3,000 bottles/day (operator and shift dependent).	±2,000–50,000 bottles/hour (line configuration dependent).
Ozone Rinse Disinfection	Ozone Rinse Disinfection	Ozone Rinse Disinfection
Fill + cap stations	Semi-automated filling and capping	Automated rinse/fill/cap with integrated conveyance
Basic conveyance / handling	Label + shrink wrap/shrink pack integration	Labelling, shrink wrapping, and shrink packaging
Simple operation, low complexity, upgrade-ready layout.	Stable output with consistent hygiene control.	Repeatable performance, scalable architecture.

All lines are engineered from project requirements and integrate upstream treatment where needed.

## STILL AND CARBONATED WATER SYSTEMS

Coverage across bottle formats, automation levels, packaging, and cold chain hygiene.

Biozone supplies water bottling lines for **still water** and **carbonated water** applications. Each line is configured to match the operating environment, packaging format, and production targets, with hygiene and water quality treated as engineered system functions.

### Still Water Lines

- Consistent rinse/fill/cap performance across variable operating conditions
- Treatment stages integrated based on water analysis results

### Carbonated Water Lines

- Line configuration supports carbonated water handling requirements
- Integrated control and packaging flow maintains process stability

### Standard Hygiene Stage (All Lines)

- Ozone rinse and disinfection for bottles prior to filling

### Supported Bottle Formats

- 330 ml to 5 L, all common formats; additional by request



## WATER QUALITY ENGINEERING

Treatment architecture is configured from the client's water analysis to achieve SANS 241 drinking water standards.

Biozone does not apply one fixed treatment layout across all projects. System design is driven by the customer's **source water analysis**, required operating conditions, and target output quality. This ensures treatment performance is stable, defensible, and aligned to drinking water standards.

### What we design around:

- Source water variability (seasonal, borehole, municipal, blended supply)
- Contaminant profile and required removal targets
- Required treated water flow and operating schedule
- Site constraints (space, utilities, operator capability)

### Treatment methods we integrate (as required):

- **Ozone** (disinfection and oxidation applications where appropriate)
- **UV** (supplementary disinfection and control)
- **Reverse Osmosis** (dissolved solids reduction / purification)
- **Nanofiltration** (selective removal / softening applications)
- **Filtration and conditioning stages** as required for stability and protection of downstream equipment

**OUTCOME** : A configured treatment train that supports SANS 241 drinking water standards and stable packaged-water production.

**OPTIONAL CONFIGURATION**: Clients may specify ozonated product water for bottling where required.

# FULL PACKAGING LINE INTEGRATION (WATER BOTTLING)

End-to-end packaging capability integrated with rinse–fill–cap–convey systems.

Biozone supplies and integrates a complete packaging suite for water bottling lines. From bottle handling through to final packed product. Packaging modules are selected to match line speed, bottle format, and site constraints.

## Labelling Systems

Pressure-sensitive or sleeve labelling, integrated with conveyor timing and sensor control for consistent label placement.

## Date & Coding systems

### Shrink Sleeving / Heat Shrink

Sleeve application and controlled heat tunnel integration for stable shrink performance and reduced rework.

### Shrink Wrapping & Shrink Packaging

Single and multi-pack bundling, including film handling, sealing, and heat tunnel control.

### Conveyor & Handling Integration

Guides, spacing, accumulation zones, and changeover logic to maintain throughput without bottle instability.

## ENGINEERING OUTCOMES

- Stable packaging quality at target throughput
- Reduced packaging waste and rework
- Better line uptime through integrated control and layout logic

## SYSTEM OPTIONS, CONTROLS & ADD-ONS

Upgrade paths and integration options to improve stability, monitoring, and operational control from compact setups to fully automated lines

Biozone lines can be configured with optional monitoring, control logic, and engineered upgrades depending on the operating environment, required throughput, and reliability targets. Add-ons are selected based on project requirements and available site utilities.

## Control and automation options

- Timer-based control packages for simple, robust operation
- Sensor-based control (where required) for stability and fault prevention
- PLC-ready architecture on supported line series for automation, interlocks, and alarms
- HMI operator interface for status, alarms, and guided operation

## Monitoring and compliance add-ons

- Flow monitoring (feed and product water)
- Pressure monitoring across treatment stages
- TDS / conductivity monitoring for RO/NF systems
- Event logging for maintenance, alarms, and operational review
- Remote monitoring readiness (where required and supported)

## Treatment and disinfection add-ons

- Ozone bottle rinse integration (standard for bottling lines)
- Ozonated product water option (customer-selectable)
- UV integration (where analysis indicates)
- Reverse osmosis/nanofiltration integration (as indicated by water analysis)
- Pre-filtration and staged filtration for variable source water conditions

## Operational upgrades

- Utility optimisation (pump sizing, recirculation, tank logic)
- Redundancy where required (critical pump/sensor strategy)
- Layout and changeover improvements for multi-format packaging



## BRAND + RETAIL LAUNCH SUPPORT

Practical launch support to move from installed line to sale-ready product, focused on execution, compliance readiness, and retail presentation.

Where required, Biozone supports clients beyond equipment delivery by helping prepare a sale-ready water offering. This support is structured to accelerate launch and reduce avoidable rework during commissioning and early production runs.

### Label design readiness

Label dimensions, placement guidance, and print-ready format coordination to match bottle selection and line handling.

### Packaging presentation setup

Basic retail pack formats, shrink bundle configuration, and product presentation consistency.

### Retail setup planning (optional)

Practical layout support for refill stations or retail points — focusing on flow, hygiene, and equipment placement.

### Visual assets for launch

Product mockups and simple rollout collateral aligned to installed equipment and product format.

### Rollout consistency

Standardised look-and-feel across bottle, label, and point-of-sale elements to reduce brand variability. Important note (scope clarity)

Biozone's core deliverable is engineered treatment and bottling/packaging integration. Brand and retail launch support is offered as an add-on service for clients who need a complete go-live pathway.

### Label Design



### Shop Front Design



### Outdoor Advertising



# COLD CHAIN DISINFECTION: FARM TO SHELF

Ozone-based air and water treatment integrated across handling stages to reduce contamination pressure and support shelf-life stability.

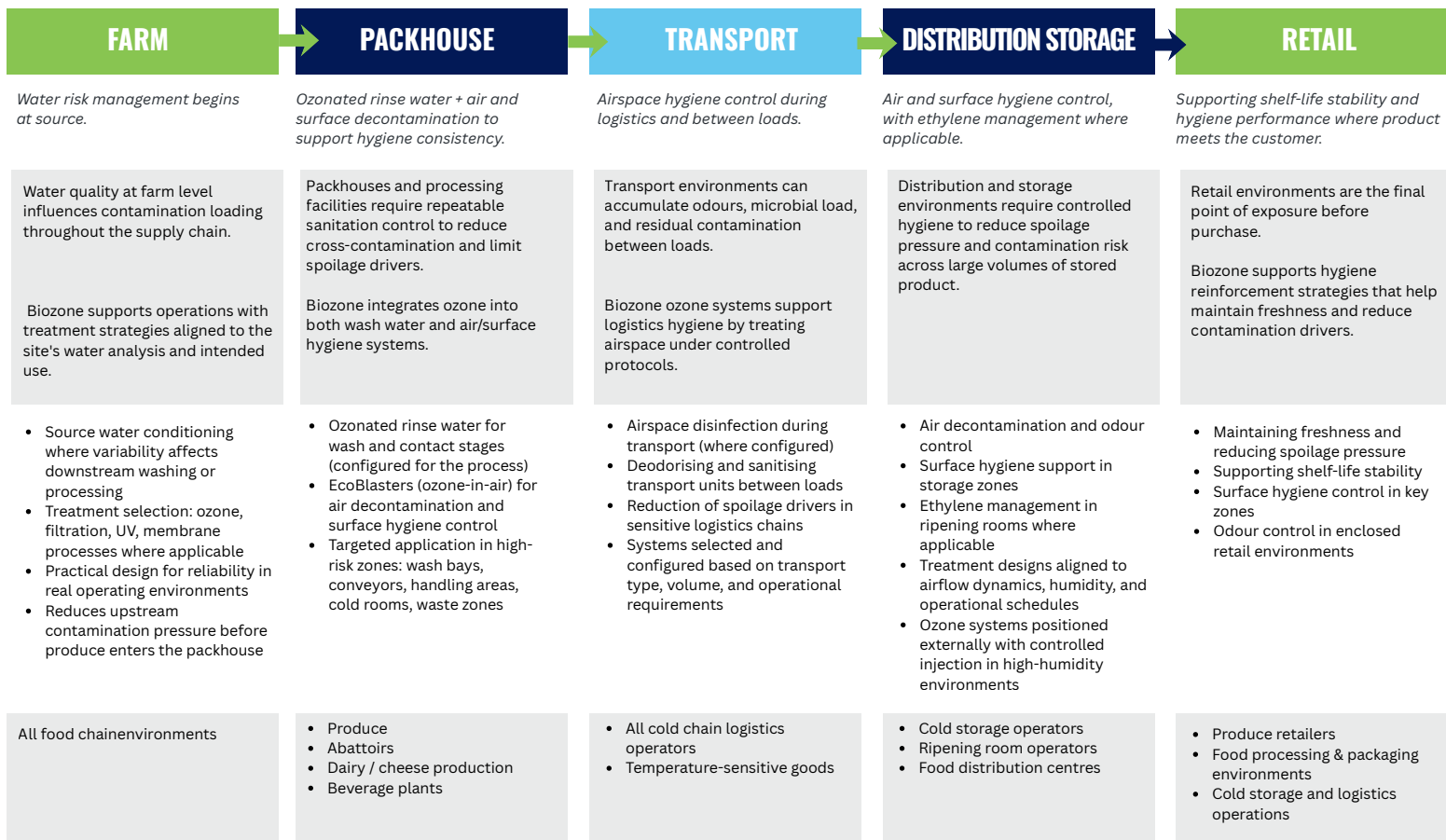
Biozone supports cold chain operations by integrating ozone in water and air where hygiene control directly impacts product quality, shelf-life, odour management, and operational compliance.

Cold chain disinfection is engineered as a multi-stage hygiene strategy, applied across:

- **Water treatment at source and processing points**
- **Ozonated rinse water for wash steps**
- **Air and surface decontamination using EcoBlasters (ozone-in-air)**
- **Transport airspace disinfection**
- **Distribution hygiene control and ethylene management where applicable**
- **Retail environment hygiene reinforcement**

Biozone applies treatment based on site conditions and risk profile, not a one-size-fits-all approach.

Use your existing Farm → Shelf infographic as the hero visual, refined into your brand palette (navy/grey/white). Keep it clean and engineering-style.



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