THE INSERTION TECHNOLOGY ADVANTAGE

Aseptic integration of sterile components into BFS containers

WHAT IS INSERTION TECHNOLOGY?

Blow-Fill-Seal (BFS) traditionally produces sealed sterile containers, but insertion technology takes this further by adding components directly into the container during the process.

These components can include:

- Dropper tips
- Stoppers
- Caps and closures
- Multi-use access systems

The process uses integrated isolator systems to transfer sterile components into the BFS machine under controlled conditions.

The result: a complete, ready-to-use drug delivery system.

WHY IT MATTERS

All stages of the process are carried out within a controlled Class 100 environment, helping to ensure high sterility assurance.
Insertion technology helps simplify the manufacturing process while improving product safety.

- Fewer production steps
- Less handling of components
- Reduced risk of contamination
- More consistent product quality

Because everything happens inside a controlled environment, there is less opportunity for errors or contamination.

WHERE IT’S USED

Insertion technology is used across a wide range of pharmaceutical products:

Ophthalmics
Accurate dropper systems built directly into the container

Injectables
Pre-inserted stoppers and access systems

Hospital products
Multi-dose or controlled-access containers

Biologics
Sterile handling for sensitive or complex drugs

Recognised as an advanced aseptic process, BFS continues to expand into new pharmaceutical applications.

HOW IT WORKS

1. Components are sterilised before entering the system
2. They are transferred into a sterile environment
3. The BFS container is formed and filled
4. The component is inserted
5. The container is sealed

All of this happens in one continuous, fully enclosed process without human contact.

KEY BENEFITS:

- Higher sterility assurance
- Reduced contamination risk
- Fewer operators required
- No need for separate assembly
- Compact and efficient production
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By combining multiple steps into one, manufacturers can reduce complexity while improving control.

COMPARED TO TRADITIONAL METHODS

Traditional

- Multiple handling and assembly steps
- Greater reliance on operators
- Higher contamination risk
- Separate production lines

BFS Insertion Technology:

- Single continuous process
- Fully enclosed system
- Minimal human intervention
- Integrated production

Fewer steps = lower risk and greater consistency.

FUTURE OUTLOOK

As demand grows for:

- Sterile, ready-to-use products
- Patient-friendly delivery systems
- More complex drug formulations

Insertion technology is becoming increasingly important.

As regulatory expectations and product complexity increase, technologies that offer higher sterility assurance and process control will become essential.

It allows manufacturers to move beyond simple containers and create integrated drug delivery systems.