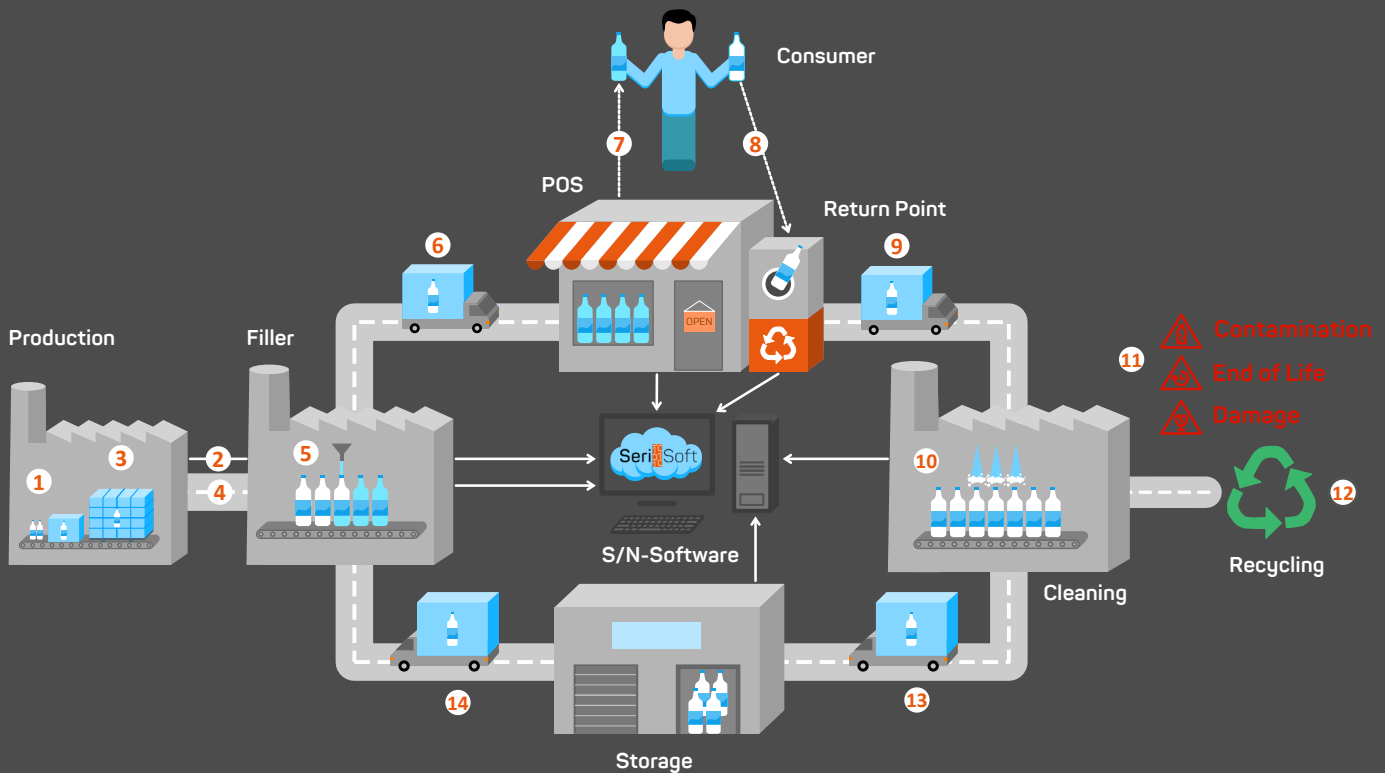


Responding to Increasing Demands

Sustainable practices are becoming increasingly important to consumers, while legal and regulatory requirements continue to rise. These developments are driving the transition toward a circular economy and challenge companies to align sustainability, compliance, and economic efficiency. Our serialization solutions support you in meeting all requirements with confidence while optimizing costs and creating additional value.



**The individual steps and procedures may vary depending on individual requirements.*

- | | |
|---|--|
| <p>1 2D codes are printed onto the containers (e.g. cups / bottles) and verified.</p> <p>2 A list of the used codes is sent back to the serialization software (S/N software).</p> <p>3 Aggregation containers can also be serialized, with aggregation relationships recorded in the S/N software database.</p> <p>4 The containers are transported to the filler, and the S/N software is updated.</p> <p>5 The containers are filled, and the S/N software is updated.</p> <p>6 The filled containers are transported to the point of sale (POS), and the S/N software is updated.</p> <p>7 The product is sold to the customer, and the S/N software is updated.</p> | <p>8 The empty container is returned by the customer at a return point, and the S/N software is updated.</p> <p>9 The container is transported for cleaning, and the S/N software is updated.</p> <p>10 The container is cleaned, and the S/N software is updated.</p> <p>11 Damaged and contaminated containers are sorted out. If a container has reached the end of its lifecycle, it is also removed from circulation.</p> <p>12 Sorted-out containers can be recycled.</p> <p>13 Cleaned containers are transported to storage, and the S/N software is updated.</p> <p>14 The container is reintroduced into the cycle.</p> |
|---|--|

**Cost Savings**

Precise tracking of your packaging significantly reduces losses and extends the product lifecycle. At the same time, automated return processes and seamless traceability increase efficiency by reducing manual effort and minimizing sources of error. This way, you optimize your operations and save both time and costs.

Fraud & Counterfeit Protection

Serialization helps make deposit products more tamper-resistant and strengthens protection against abuse and fraud. Each package receives a unique identifier that supports authenticity checks and makes illegal copies and black-market activities significantly more difficult. This contributes to a secure, transparent deposit system that both consumers and businesses can trust.

**Data Analysis**

Serialized packaging provides valuable data, such as usage frequency, the most popular return locations, and average product lifecycles.

Product Safety & Consumer Protection

Thanks to unique serial numbers, recalls can be precisely limited to affected products or batches, saving costs and resources. This enables companies to respond quickly and accurately, efficiently minimizing potential risks.

**Scalability & Flexibility**

Serialized packaging can be seamlessly integrated into existing systems (e.g., vending machines or apps), significantly facilitating expansion into new regions, partners, and products.

Sustainability Verification

Serialization enables transparent lifecycle tracking of packaging, showing how often items have been reused, a clear advantage for sustainability and customer communication. At the same time, it helps companies comply with legal requirements such as digital product passports and the EU PPWR.

**Efficiency & Optimization**

Thanks to serialization, companies maintain clear oversight of inventory, avoid shortages or surpluses, and can precisely manage packaging flows and transportation. This simplifies inventory control and increases efficiency across the entire supply chain.