

ceramic toilet assembly line

2026-07-23 · <https://www.topassemblyline.com/product/ceramic-toilet-assembly-line/>



This is a specialized automated assembly line meticulously engineered for the manufacturing of ceramic toilets, smart toilet seats, and other sanitary ware. Addressing the extreme weight, fragility, and complex processing requirements of fired ceramic bodies, this production system employs a **heavy-duty dual-speed chain** (Welt conveyor) combined with a robust metal pallet system. This design ensures vibration-free transportation of

heavy green bodies while integrating seamlessly with robotic glazing and handling systems.

I. Conveyor System & Layout Configuration

The backbone of this line is an industrial-grade heavy-duty welt chain, selected for its exceptional load-bearing capacity and wear resistance. The layout features a straight-line flow with dedicated sections for storage and handling. A key feature is the integration of **transparent PVC soft curtains** along the length of the line, which isolate the spray glazing area to contain ceramic dust and overspray, while still allowing for clear visual management and inspection. The system utilizes a motorized rail or gantry robot interface above the conveyor to automate the heavy lifting of wet ceramic blanks.

II. Core Manufacturing Process Flow

The production of ceramic sanitary ware involves a blend of traditional craftsmanship and modern automation:

1. **Green Body Handling:** Automated guided vehicles (AGVs) or overhead hoists deliver raw, unfired ceramic molds (green bodies) to the loading station.
2. **Spray Glazing (Enameling):** Utilizing a robotic arm or a traversing spray gun system, a consistent layer of liquid glaze is applied to the ceramic body. The enclosed curtain area ensures a clean working environment.
3. **Drying:** The glazed bodies are transported through a controlled drying tunnel to remove excess moisture before firing.
4. **Firing & Cooling:** The dried pieces are conveyed into a tunnel kiln for high-temperature sintering. After reaching the target temperature, they exit into a cooling zone.
5. **Finishing & Assembly:** Post-firing, the ceramic units undergo precision machining (hole cutting, polishing) and the installation of internal plumbing hardware (flush valves, hinges) followed by a water-tightness test.

III. Quality Control & Testing Architecture

The mid-section of the line integrates automated inspection stations. If a unit is detected with uneven glazing thickness, cracks, or dimensional deviations, the PLC system flags the specific pallet ID for manual rework. All finished products undergo a rigorous pressure test to simulate real-world usage and ensure there are no micro-leaks in the ceramic shell or valve connections.

IV. Technical Specifications

- **Target Products:** Monobloc Toilets / Smart Toilet Shells
- **Line Speed:** Variable Frequency Drive (VFD), 3-6 meters/minute (depending on drying and firing cycle times)
- **Conveyor Type:** Heavy-duty dual-speed chain with durable pallet guidance
- **Pneumatics:** 0.6-0.8 MPa (For pneumatic handling arms and dust-blowing equipment)
- **Load Capacity:** ≥ 80 kg per pallet/work carrier

V. Design Advantages

By leveraging the high rigidity of the heavy-duty well chain, this **toilet assembly line** effectively manages the significant self-weight and vibration sensitivity of ceramic green bodies during transport. The transparent soft curtain system efficiently contains the spray glazing dust while providing unobstructed visibility for supervisors to monitor production progress, making it an exemplary solution for sanitary ware manufacturers pursuing automation and yield improvement.