

### Introduction

**AGen Process Gate Control Step Verification** is a structured approach to ensuring that manufacturing processes are executed consistently, safely, and in compliance with defined standards. It focuses on verifying critical process steps at designated gates throughout the production flow to prevent defects, reduce variability, and ensure product quality before progressing to the next stage.

By implementing process gate controls, factories can systematically validate that each operation meets technical requirements, work instructions, and quality criteria. This verification acts as an early detection mechanism, allowing issues to be identified and corrected at the point of occurrence rather than downstream, where the cost and impact of defects are significantly higher.

The verification process typically involves documented checks, barcode scanning check, visual inspections, parameter confirmation, and signoffs by trained personnel or automated systems. It ensures accountability, promotes standardization, and supports continuous improvement initiatives by providing traceable data for analysis and corrective actions.

Ultimately, Factory Process Gate Control Step Verification strengthens operational discipline, minimizes risk, and enhances overall manufacturing performance by ensuring that only conforming outputs advance through each stage of production.



## Example of application:

- Semiconductor Manufacturing (Wafer Fabrication) Wafer lot release after photolithography
- Aerospace & Aviation Manufacturing Aircraft structure assembly stages
- Automotive Manufacturing (Powertrain & Safety Systems) Transmission assembly → torque verification gate
- Medical Device Manufacturing (Non-Drug) Implant machining → dimensional & material verification
- Food & Beverage Processing Pasteurization / cooking CCP
- Battery Manufacturing (Li-ion, EV Batteries) Electrode coating → thickness inspection
- Precision Machining & CNC Manufacturing Surface finish verification before coating
- Chemical Processing (Pharmaceutical) Raw Chemical verify before Mixing
- Chemical Processing (Non-Pharmaceutical) Viscosity or chemical composition tests before mixing
- Electronics Manufacturing (PCB assemblies) electronic component identity and batch capturing
- Textile & Apparel (High-End / Technical Textiles) Dyeing color fastness approval and button checking.



## Planning & Setup

### Objective

Planning & Setup for Process Gate Control Step Verification establishes a disciplined approach to ensure each process gate is properly defined, prepared, and validated. It aligns parameters, controls, resources, and criteria to enable reliable verification, prevent error, reduce risk, and maintain consistent process performance.

### Key activities

- Define process gates control step objectives
- Establish verification criteria and acceptance standards
- Assign roles, responsibilities, and gate owners
- Prepare required documentation and checklists as reference
- Set verification methods, tools, and data sources
- Align gate controls with risk and compliance requirements
- Plan verification timing and frequency
- Train relevant personnel on gate requirements
- Review readiness before gate activation

### Digital tools

- ERP / Inventory Management System
- Barcode scanner
- Siren or light indicator
- AGen Material Requirement Planning module
- Central dashboard for control



## Device & User Login

### Objective

**AGen Process Gate Control Step Verification** ensures only authorized users only allow access to the page. AGen comes with build-in-remember user login function whereby the user just needs to key in once then the next login will be allowed to bypass. Quick shortcut makes the accessing application can be launched by just clicking the icon on the desktop.

### Key activities

- Staff log in via computer, mobile device or handheld scanner.
- System assigns:
  - Required product versus physical product
  - Formula Input
- Devices sync the latest Production data.

### Benefits

- Zero mistake production
- Prevents wrong identity of raw material and batch
- Track accountability by user



## Digital Planning (Read, verify, alert)

### Objective

Effective **Process Gate Control Step Verification** relies on a disciplined digital planning setup to ensure quality and compliance. By integrating **ERP systems, barcode scanners, and AGen Checking Module**, organizations can "read" real-time data and "verify" it against Critical-to-Quality (CTQ) standards. Automated **sirens or light indicators** provide immediate alerts for deviations. This digital framework aligns roles and documentation, reducing risk and maintaining consistent performance through automated, data-driven gate activation.

### How it works

- **Definition & Setup:** Requirements are established for each process gate, ensuring that acceptance standards are clearly documented within the system.
- **Data Capture (Read):** Using **barcode scanners** capture real-time data from production items, which is immediately synced with the **AGen**.
- **Automated Validation (Verify):** The **AGen Process Gate Control module** automatically compares the scanned data against the pre-set verification material information.
- **Instant Feedback (Alert):** If the data meets the standards, the gate is activated; else, **sirens or light indicators** trigger alerts to halt the process.

### Data captured

- SKU / Item code / EAN13 barcode / Product identity
- Quantity counted (Manual counting and input)
- Location (Manual Select or scanning)
- Time stamp (Auto Date and Time Stamp)
- User ID (Auto User ID after login)

### Advantages

- Eliminates manual writing errors
- Formula inserts and formula use are on different pages. No mistake of accident keyboard input into formula.
- Real-time validation
- Guided systematic checking process

## Real-Time Data Sync & Monitoring

### Objective

Real-Time Data Sync & Monitoring for Process Gate Control Step Verification ensures each process gate is executed, validated, and recorded as it happens. By synchronizing live data across systems and continuously monitoring control steps, it provides immediate visibility, early anomaly detection, and traceable compliance. This approach strengthens process integrity, reduces errors, and supports faster, more reliable decision-making across operations.

### Key activities

- Capture real-time process data from machines, sensors, or systems
- Synchronize data across AGen Material Requirement Planning.
- Verify completion of required gate control steps
- Validate process parameters against defined standards or limits
- Monitor process status and performance continuously
- Trigger alerts for deviations, missing steps, or anomalies
- Record time-stamped audit trails for traceability and compliance

### Digital benefits

- Improved process visibility with real-time status tracking
- Faster decision-making through live, accurate data
- Reduced manual checks and paperwork
- Early detection of deviations and process risks
- Higher process compliance and audit readiness
- Enhanced data accuracy and consistency across systems
- Reduced rework, scrap, and operational delays
- Stronger traceability for quality and regulatory requirements

## Variance Analysis

### Objective

The objective is to identify, analyze, and understand deviations between expected and actual process outcomes at each control gate. By systematically comparing planned standards with actual execution data, it enables early detection of gaps, root-cause analysis, and corrective action. This supports process compliance, consistency, and continuous improvement across operations.

### System Generated

- Item Identity compare (System identity must = scanned identity)
- Item quantity compares for item with batch
- No Discrepancies
- Wrong item alert and next action

### Analysis includes

- Put in item versus raw materials formula
- Scanned and comparison history



## Exception Handling & Replanning

### Objective

The objective of **Exception Handling & Replanning** is to provide a systematic framework for managing process deviations and verification failures. It ensures that when a gate control step identifies a variance, immediate corrective actions are triggered to mitigate risks. By integrating real-time alerts with flexible replanning, the system maintains operational continuity, prevents non-compliant progression, and updates schedules or resource allocations to align with quality standards and compliance requirements.

### Key activities

- Detect exceptions such as missed, failed, or delayed gate control steps
- Classify exceptions based on severity, impact, and root cause
- Trigger alerts and notifications to relevant stakeholders
- Analyze cause of deviation using real-time and historical data
- Decide corrective or containment actions
- Replan affected process steps or schedules
- Update process workflows, parameters, or instructions
- Re-verify gate compliance after corrective actions
- Document exceptions and actions for audit and continuous improvement

### Outcome

- Restored compliance of affected process gates
- Minimized process disruptions and downtime
- Faster resolution of deviations and issues
- Improved process reliability and consistency
- Reduced risk of quality defects or non-conformance
- Updated and optimized process plans
- Clear accountability through documented actions
- Enhanced readiness for audits and reviews
- Continuous improvement through lessons learned and feedback loops

## Raw material identity compare & system update

### Objective

The objective of Raw Material Identity Compare & System Update for Process Gate Control Step Verification is to ensure the correct raw materials are verified and matched with system records before each processing stage. The system automatically updates verification status to improve traceability, prevent material mix-ups, reduce operational errors, strengthen quality compliance, and support accurate real-time process gate control throughout production operations.

### Actions

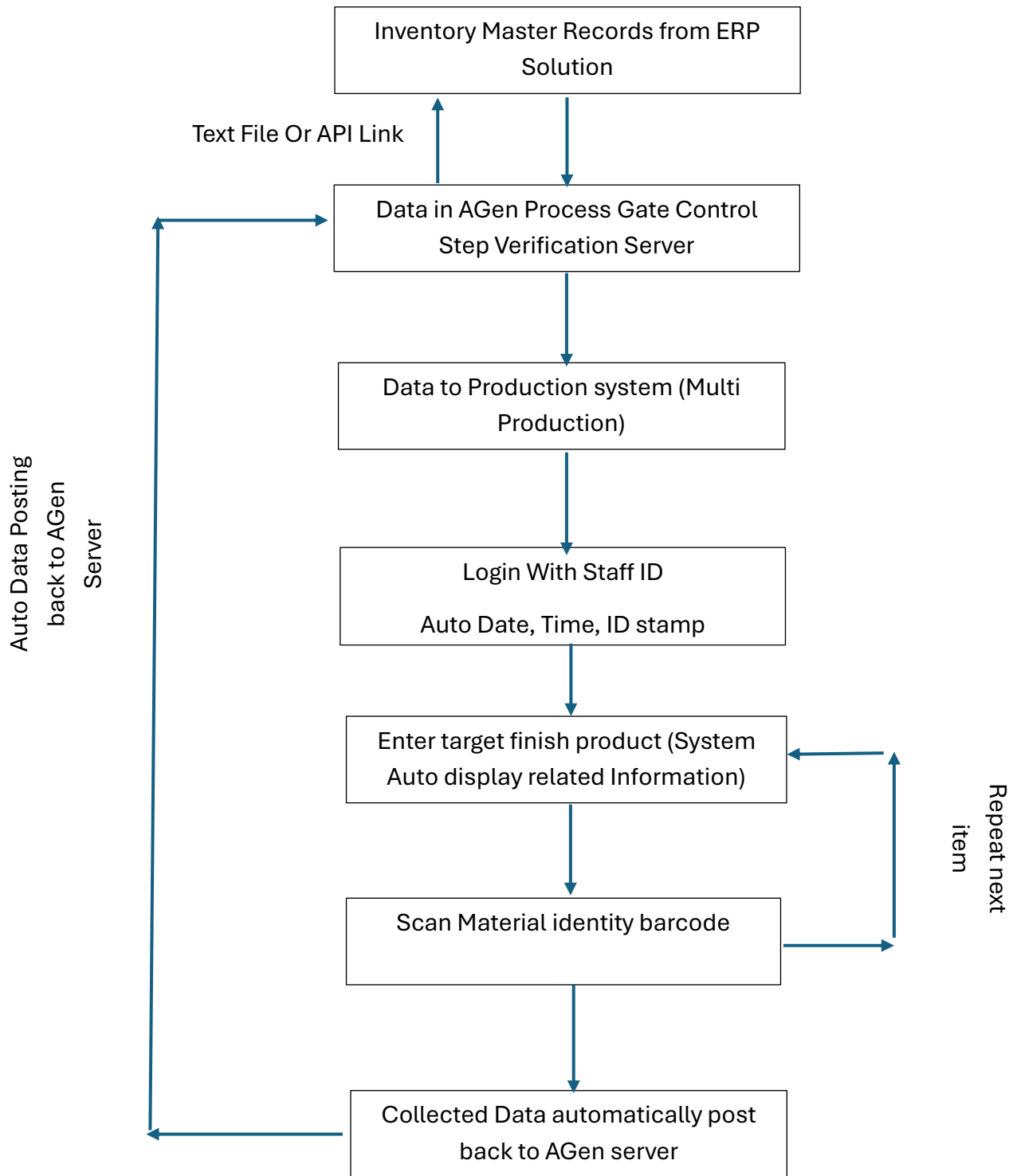
- Scan raw material barcode, QR code, or RFID tag before process entry.
- Compare raw material identity with approved production order records.
- Verify material identity accuracy.
- Block unauthorized or mismatched materials from proceeding to the next process gate.
- Automatically update material verification status in the AGen system.
- Record operator ID, verification time, and process step for traceability.
- Synchronize verification data with ERP.
- Maintain real-time monitoring and audit trail for compliance purposes.

### Integration

- Enterprise Resource Planning (ERP)
- AGen Material Requirement Planning



## Process Flow for Process Gate Control Step Verification



## Device Accessing Gate Control Step Verification

### Objective

AGen device management solution is offering our customers the centralised access from different devices to AGen server. The system administrator can easily detect which user or department device is trying to access online. It makes the server information to be displayed and share among the staff.

### Actions

- All users connected to AGen server
- Device Login Requirement

### Outcome

- Device basic information
- Information updating



## Build In Free Barcode scanner

### Objective

AGen comes with free build in barcode scanner for the objective of making sure the barcode reading operation performed by AGen application does not affect even the primary barcode scanner customer use is defect during the operation. We understand how important reading barcode data is for our customers. We hope staff have no excuse to blame the devices, so they do not need to work on their task.

### Actions

- Enable or disable the barcode scanner from the AGen software.
- Device basic barcode scanning can still be performed with device camera.
- Use the build in free barcode scanner to capture barcode.

### Advanced insights

- Build in free barcode scanner in AGen give you backup if your barcode scanner is failed in your device.
- This barcode scanner also helps production floor who do not want to invest in barcode scanners.
- It makes sure the operator are scanning and able to scan the barcode generated to represent identity of the raw materials before allow for next process.



## Reporting & Insights

### Objective

Learn and improve future operations. From AGen user configurable reporting tools, back-end users can anytime configure their own daily report. Users will not be constrained by the software reporting capability.

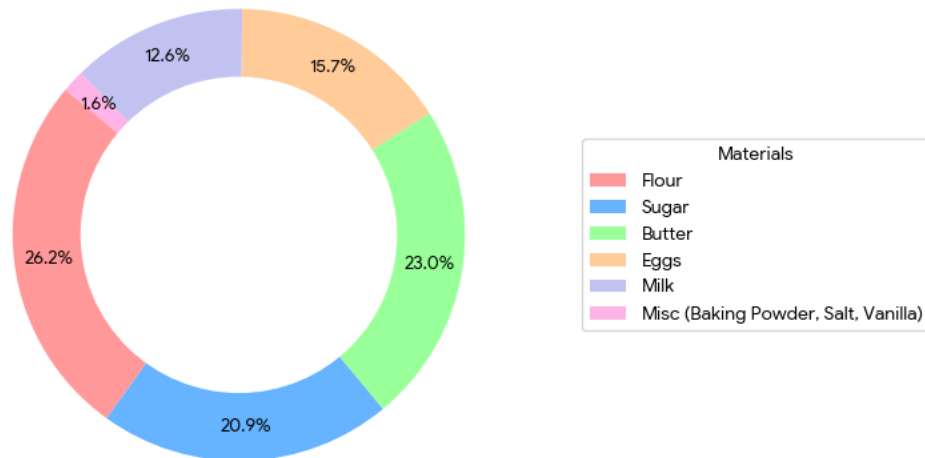
### Standard reports

- Daily production reporting
- Formula Report
- Daily verification Report

### Advanced insights

- Trend analysis over multiple products.
- Chart based on formula

Raw Material Distribution for 100 Cupcakes (by Weight)



## Daily Email Alert for Data Transfer Summary

### Objective

Automatic alert administrators on daily data collected by different products planned automatically. System administrators in surface need to make sure all the production planning done is moving smooth daily in every branch so they can complete their administrative task on the devices and data planning process.

### Actions

- Enable or disable the auto email alert from AGen software.
- Configure the information required to appear on the email.
- Daily data transfer activity review from AGen summary page.

### Advanced insights

- Building an email alert system makes device administrator life easier.
- Let the software automatically work and report to you without any clicking.



Date	Week	Barcode	Online	Posted	Total	Status	Remark
23/04/2026	Thursday	2102	13/13	2102/2102	3734	Success	No
22/04/2026	Wednesday	2262	13/13	2481/2262	3734	Success	Post yesterday fail posting date
21/04/2026	Tuesday	2744	13/13	2525/2744	3734	Need Attention	Data posting fail
20/04/2026	Monday	3904	13/13	4422/3904	3734	Success	Post yesterday fail posting date
19/04/2026	Sunday	2635	13/13	2635/2635	3734	Success	No
18/04/2026	Saturday	3010	13/13	3011/3010	3734	Success	Post yesterday fail posting date
17/04/2026	Friday	4269	13/13	4269/4269	3734	Success	No
16/04/2026	Thursday	3916	13/13	3915/3916	3734	Need Attention	Data posting fail
15/04/2026	Wednesday	3631	13/13	3631/3631	3734	Success	No
14/04/2026	Tuesday	3618	13/13	3618/3618	3734	Success	No
13/04/2026	Monday	3384	13/13	3384/3384	3734	Success	No
12/04/2026	Sunday	2407	13/13	2407/2407	3734	Success	No
11/04/2026	Saturday	2759	13/13	2759/2759	3734	Success	No
10/04/2026	Friday	3693	13/13	3693/3693	3734	Success	No
09/04/2026	Thursday	3444	13/13	31288/3444	3734	Success	Post yesterday fail posting date
08/04/2026	Wednesday	2350	13/13	13819/2350	3734	Success	Post yesterday fail posting date