OPERATOR USER MANUAL

Purpose of the System

- The Pneumatic Laser QC System automatically inspects laser welding depth during production, determines PASS / FAIL results, and generates QR-based traceability for accepted parts.
- The system is designed for continuous shop-floor operation with minimal operator intervention.

Operator Login & Access

- System runs in kiosk mode
- No login required for normal operation
- Operators cannot access settings
- Critical actions are password-protected

Main Operator Screen (Dashboard)

Figure 1: Main Dashboard

What the Operator Sees

1. Live laser waveform graph
2. Latest inspection result (PASS / FAIL)
3. QR code (PASS only)
4. Recent production cycles
5. System health indicators (PLC, Printer, Modem)

Operator Responsibilities

1. Monitor PASS / FAIL status
2. Ensure printer is online
3. Respond to FAIL conditions as per SOP
4. Inform supervisor if system error appears

Understanding PASS / FAIL Results

Figure 2: Result Panel - Pass

Figure 3: Result Panel - Fail

PASS

1. Weld depth within configured limits
2. QR code generated automatically
3. Part allowed to move to next process

FAIL

1. Weld depth outside limits
2. No QR code generated
3. Part must be segregate

QR Label Printing (Operator)

Automatic Printing

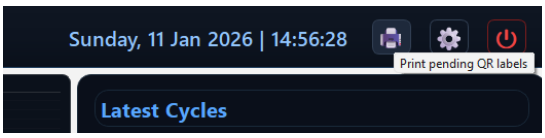

Figure 4: Print icon in Header

1. PASS parts are queued automatically
2. Labels are printed without manual action

Figure 6: QR Label - LHD

Figure 5: QR Label - RHD

Manual Printing (Pending Queue

1. Open QR Printing
2. Select “Pending QR Labels”
3. Select required rows
4. Click Print Selected
5. Confirm print

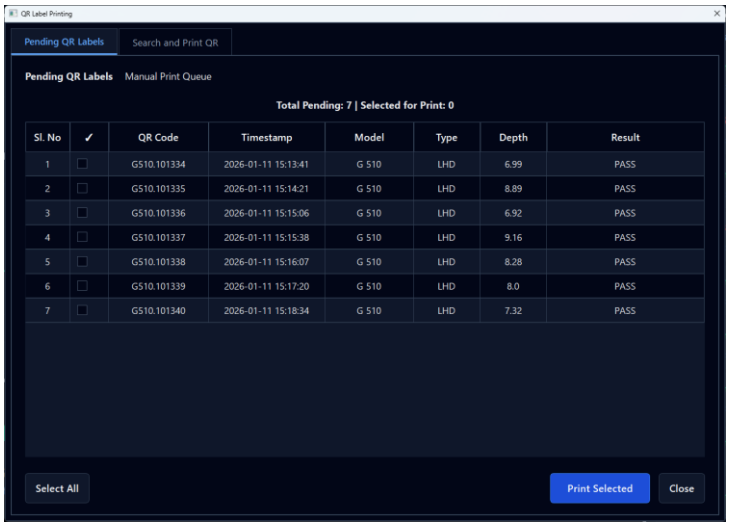

Figure 7: Pending QR Labels - Unselected

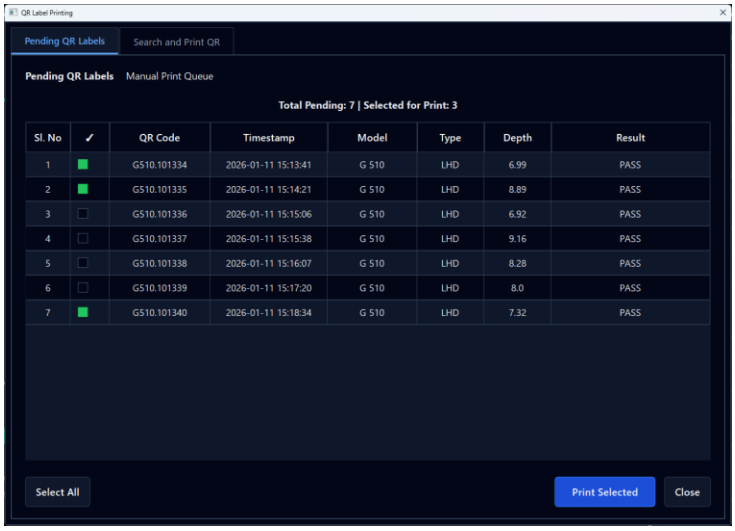

Figure 8: Pending QR Labels - 3 rows selected

Figure 9: Print Dialogue - Confirmation to print QR Labels

Manual QR Search & Reprint

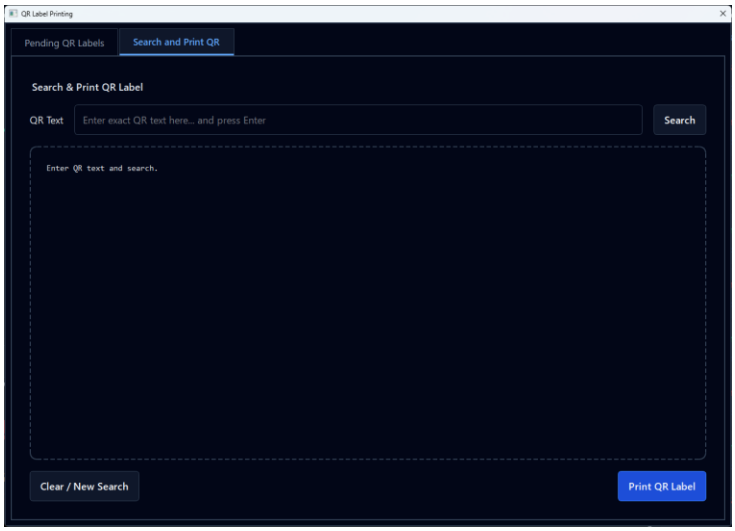

Figure 10: Search and Print QR Label Screen – Pre-Search

When to Use

1. QR label damaged
2. Printer failure during print
3. Audit or verification request

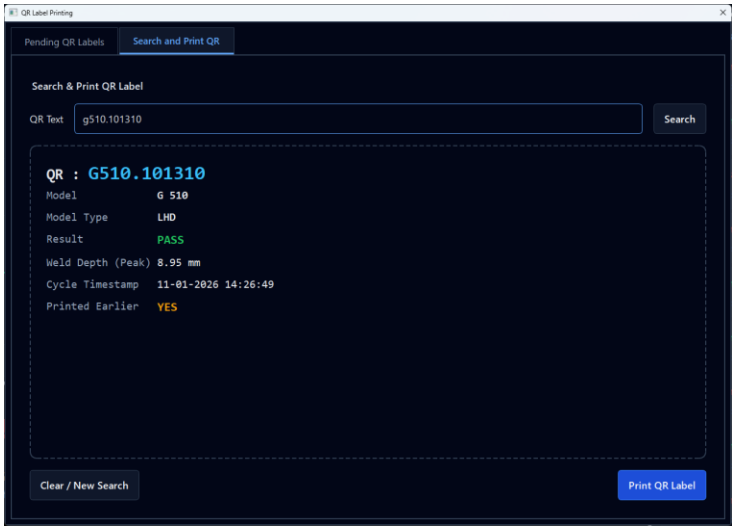

Figure 11: Search and Print QR Label Screen - Post Search

Steps

1. Open Search & Print QR
2. Enter exact QR text
3. Click Search
4. Verify preview details
5. Click Print QR Label

Operator Access & Security

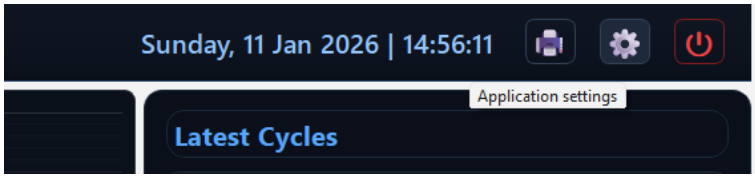

Figure 12: Application Settings Icon in Header

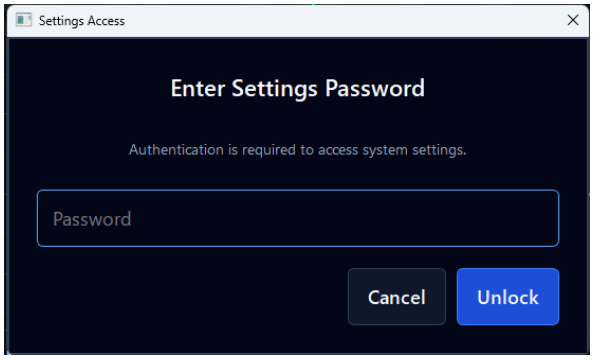

Figure 13: Prompt for entering the security password to access settings

Operator access is protected by a settings password.

Protected functions include:

1. Model management
2. QR configuration
3. Alert contact management
4. System shutdown

Model Management

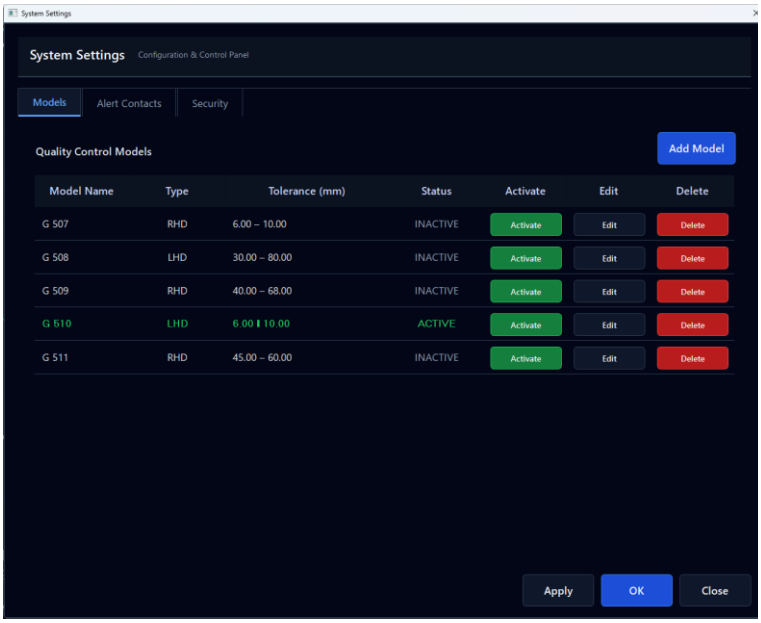

Figure 14: Model Management screen

Each model represents a product with:

1. Welding tolerance limits
2. Model type (RHD / LHD)
3. QR behavior

Supervisor Actions

1. Add new models
2. Edit tolerance limits
3. Activate one model at a time
4. Delete inactive models only

✔ Only one model can be active
✔ Active model is clearly highlighted in green colour

Model Activation & QR Rules

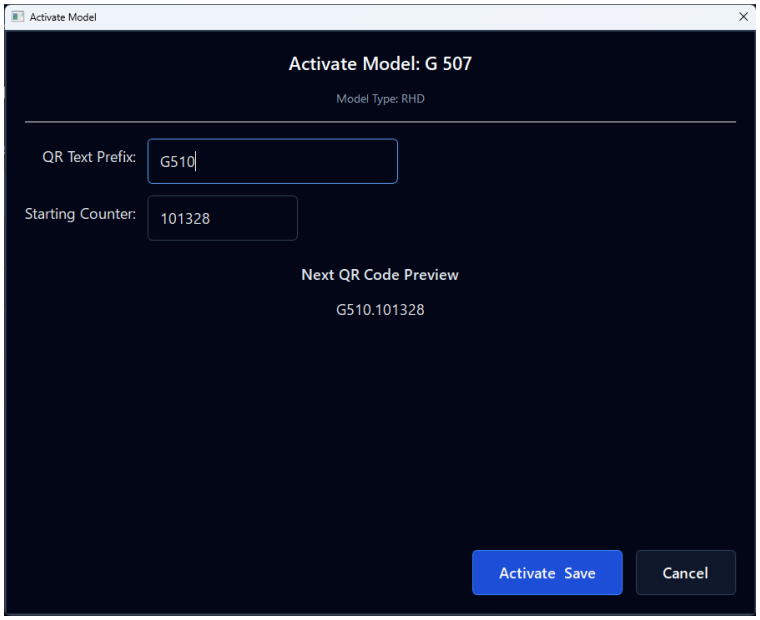

Figure 15: Activate Model Screen

During Activation, Supervisor can:

1. Set QR prefix
2. Set starting QR counter
3. Preview next QR label

✔ Prevents duplicate QR codes
✔ Ensures traceability consistency

Add and Edit Models

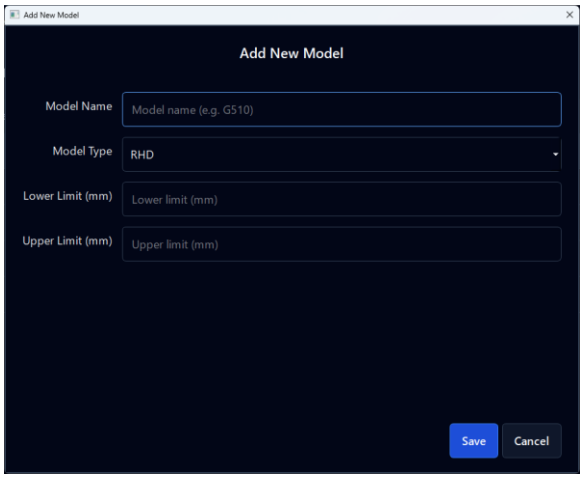

Figure 16: Add New Model Screen

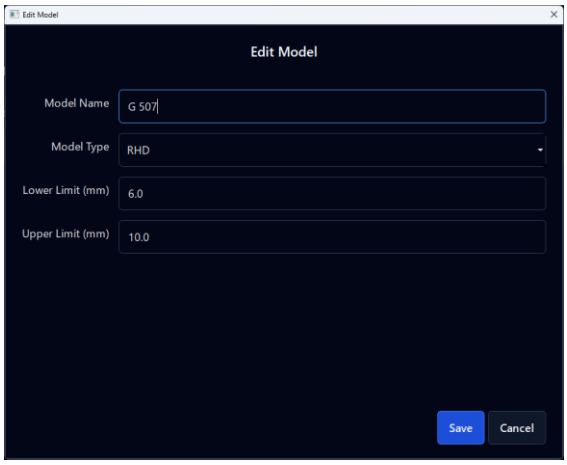

Figure 17: Edit Existing Model Screen

Alert Contact Management

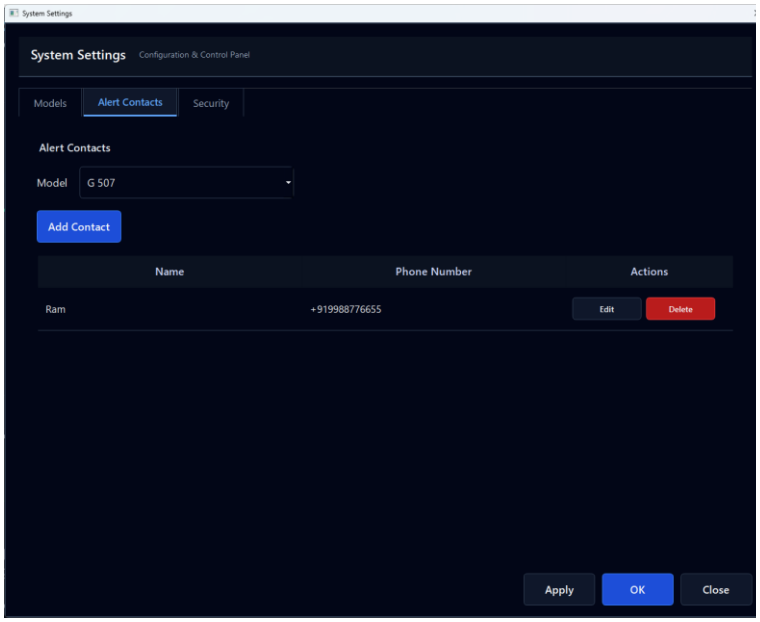

Figure 18: Alert Contacts Screen

Define who receives SMS alerts for quality/system events.

1. Model-specific contacts
2. Add / Edit / Delete contacts
3. Phone number validation

Password Management

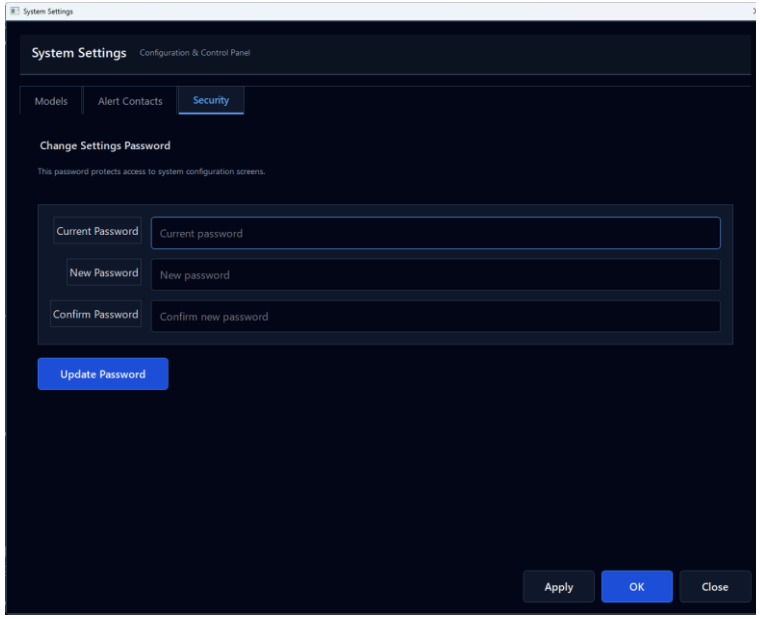

Figure 19: Change Security Password Screen

1. Maintain confidentiality
2. Change password periodically
3. Ensure only authorized access

Safe Shutdown Procedure

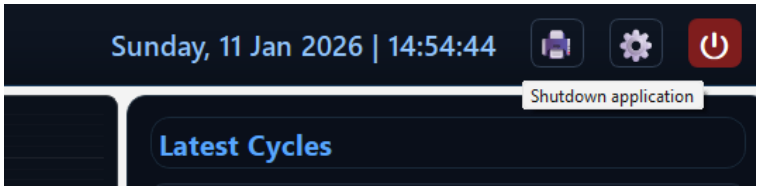

Figure 20: Shutdown Application Icon in Header

1. Authenticate with password
2. Confirm shutdown warning
3. Ensure no active cycle is running
4. Exit application safely

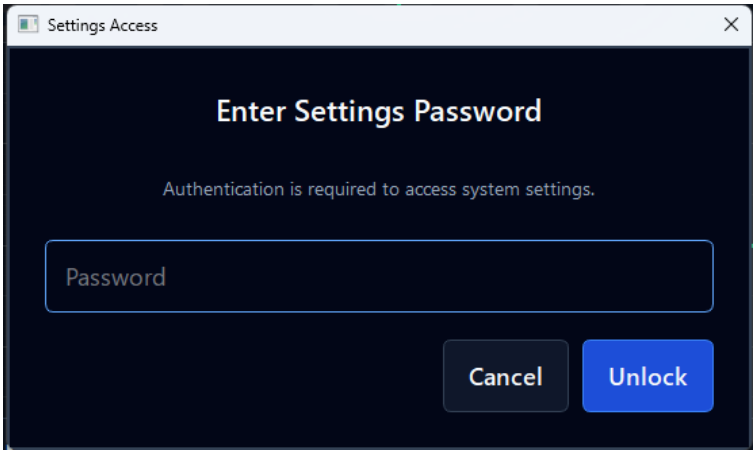

Figure 21: Prompt for entering security password

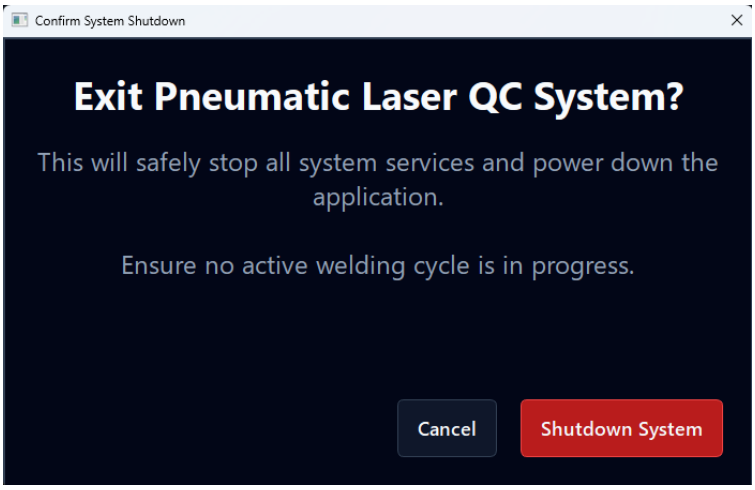

Figure 22: Shutdown Confirmation Dialogue