Final Inspection Program Summary

Purpose

The Final Inspection Program was created to replace our paper-based final inspection forms with a fully digital solution. The primary goal was to eliminate the need for printed documents, streamline the sign-off process, and provide a tamper-proof digital audit trail for each load of parts. The initial spark came from our Quality Manager's interest in using a touchpad for digital sign-offs - which led to the discovery and successful integration of Signature Pad.js into a custom-built web app. It also allows data to be easily retrieved upon request by utilizing search methods for multiple criteria.

Key Tech Stack

- Frontend: HTML, JavaScript, jQuery, Bootstrap, Signature Pad.js

- Backend: ASP.NET Core Web API (C#)

- Database: SQL Server

- Other Tools: IIS, Git, SSMS

Key Features

- Digital sign-off via Signature Pad with multiple signatures supported

- Part and furnace load data auto-populated from SQL Server

- Toggle between "partial" and "final" sign-offs for inspection stages

- Form saves partially completed data and auto-locks once fully signed

- Timestamp and user log tracking on every signature

- Internal web-based application accessible on intranet

- Searchable database of completed inspections with PDF export

Problems and Solutions

Problem:

Paper inspection forms were difficult to track, easy to misplace, and provided no audit trail.

Solution:

Moved to a digital signature system with real-time data binding and server-side tracking. Built a

secure, internal-facing web app that allowed inspectors to view, sign, and save forms directly from the production floor using tablets.

Problem:

Signatures needed to be captured clearly and securely from non-technical users.

Solution:

Implemented Signature Pad.js with a canvas-based touch input, tested across multiple devices, and added validations to ensure signature capture before submission.

Stumbles and Learned Skills

During implementation, initial attempts to use off-the-shelf software led to compatibility and customization issues. Building a custom system gave full control over layout, data flow, and security. One major challenge was ensuring signatures displayed properly across browsers and devices - requiring experimentation with canvas scaling and saving techniques. This was also my first attempt to integrate outside hardware (an extended display with signature pad) into my program as some of the older computers on the shop floor were not equipped with touchpad sensitivity and the mouse was less responsive.

Program Impact

- Fully replaced paper-based inspection forms

- Significantly reduced inspection errors and missed signatures

- Provided a searchable database of inspection history, improving audit readiness

- Ensured real-time data availability across departments

- Improved accountability and traceability by logging user, timestamp, and other information

- Continues to be used daily on the plant floor and praised for its simplicity and reliability