



# **QASWA INDUSTRIES**

## **(SCM DTE)**

### **Internship Report**

**Task Assign:** 1) Yiha 800 Show Stopper Component Search  
2)E-Tendering Portal Development

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**Internship Duration:** [10-07-2025 to 05-09-2025]

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## 1.0 Executive Summary

This report addresses three critical initiatives: resolving chronic production halts ("Show Stopper" cases) caused by failures of the **Yiha 800** component, and the development of a new **E-Tendering Portal** to streamline our procurement process.

For the Yiha 800, our research has identified three potential alternate part numbers from reputable manufacturers. These parts have been submitted for formal technical evaluation to ensure compatibility and performance. The successful adoption of an alternate part is expected to significantly reduce downtime and supply chain risk.

Concurrently, the development of the proposed E-Tendering Portal is underway. The project will utilize a modern tech stack: **React.js** for the frontend and **Node.js/Express.js** with **PostgreSQL** for the backend. This report outlines the complete schema, development approach, and testing strategy to ensure a robust and efficient platform.

## 2.0 Introduction

### 2.1 Background

The Yiha 800 component has been identified as a single point of failure in our Assembly Line B, causing unplanned downtime ("Show Stopper" cases), leading to significant production losses and maintenance costs. The current sole-source supplier presents a significant supply chain risk.

To modernize our procurement and mitigate such risks in the future, the development of an E-Tendering portal has been approved. This system will allow for efficient vendor onboarding, competitive bidding, and better management of part alternatives.

### 2.2 Project Objectives

1. Identify and validate technically suitable alternate parts for the Yiha 800.
2. Formally evaluate and gain acceptance for a new primary component.
3. Design, develop, and test a fully functional E-Tendering portal.

## 3.0 Task 1: Research and Identification of Alternate Parts for Yiha 800 "Show Stopper"

### 3.1 Methodology

1. **Data Analysis:** Reviewed maintenance logs to confirm the failure mode and specifications of the Yiha 800 (e.g., voltage rating, current capacity, physical dimensions, connector type, operating temperature).

2. **Market Research:** Conducted research through industry catalogs (e.g., Digi-Key, Mouser), direct manufacturer websites (TI, Analog Devices, Infineon), and distributor networks.
3. **Cross-Referencing:** Utilized component cross-reference tools to find parts with identical or superior form, fit, and function (FFF).
4. **Vendor Qualification:** Shortlisted parts only from manufacturers with a proven track record of quality and reliability.

### 3.2 Findings & Identified Alternate Parts

The Yiha 800 is a **Transistor Motorola and Alpha Hookup etc.** The primary failure mode is thermal runaway due to insufficient heat dissipation.

## 4.0 Task 2: Technical Evaluation and Acceptance Process

### 4.1 Submission for Evaluation

The identified part numbers (**2N2369A**) (**TCK-050**) and their technical data sheets have been formally submitted to the **Technical Evaluation Committee** (TEC) via document control system (Ref: **QP0-2425-000100**).

### 4.2 Evaluation Criteria

The TEC will evaluate the alternate parts based on the following criteria:

1. **Functional Compatibility:** Does it perform the exact same electrical function?
2. **Form Factor:** Are the physical dimensions and mounting identical?
3. **Electrical Specifications:** Are the voltage, current, and isolation ratings equal or superior?
4. **Environmental Specifications:** Does it meet the operating temperature, humidity, and vibration requirements?
5. **Reliability & Lifespan:** Based on MTBF (Mean Time Between Failures) data.
6. **Vendor Support:** Availability of stock, lead times, and technical support.

### 4.3 Acceptance Procedure

1. **Lab Testing:** The TEC will bench-test sample units under simulated operational loads.
2. **Pilot Installation:** Upon successful lab tests, a unit will be installed on a non-critical machine for a 30-day field trial.

3. **Committee Review:** The TEC will review all test and trial data.
4. **Formal Acceptance:** If successful, the TEC will issue a **Technical Approval Notice**, authorizing the part for full-scale procurement and use.

## 5.0 Task 3: E-Tendering Portal Development

### 5.1 Proposed Technology Stack

- **Frontend:** React.js (with Hooks, Context API for state management), Axios for API calls, Bootstrap/Material-UI for styling.
- **Backend:** Node.js runtime with Express.js framework.
- **Database:** PostgreSQL (for its robustness, ACID compliance, and JSON capabilities).
- **Authentication:** JWT (JSON Web Tokens).
- **Other:** Jest & Supertest for testing, Docker for containerization.

### 5.2 Database Schema Design (Proposed)

The core schema will include the following tables:

- users (id, email, password\_hash, role['admin', 'vendor', 'buyer'], company\_id)
- companies (id, name, address, contact\_info, category)
- tenders (id, title, description, reference\_num, published\_date, closing\_date, status['draft', 'published', 'closed'])
- tender\_items (id, tender\_id, item\_name, description, quantity, technical\_specs)
- bids (id, tender\_id, vendor\_id (FK to users), submitted\_date, total\_quote\_amount)
- bid\_items (id, bid\_id, tender\_item\_id, unit\_price, total\_price)
- documents (id, tender\_id, document\_path, title)

*(See Appendix B for a high-level Entity-Relationship Diagram)*

### 5.3 Frontend (React.js) Overview

The UI will be structured into modules:

- **Admin Portal:** Manage users, all tenders, and view all bids.
- **Buyer Portal:** Create, publish, and manage tender documents. Evaluate bids.

- **Vendor Portal:** View published tenders, download documents, ask clarifications, and submit bids.
- Key Components: Login Form, Tender List, Tender Detail View, Bid Submission Form, Dashboard.

#### 5.4 Backend (Node.js/Express.js) Overview

A RESTful API will be built with the following key endpoints:

- POST /api/auth/login (User authentication)
- GET /api/tenders (Get list of tenders)
- POST /api/tenders (Create a new tender - Buyer only)
- POST /api/tenders/:id/bids (Submit a bid for a tender - Vendor only)
- GET /api/tenders/:id/bids (View all bids for a tender - Buyer/Admin only)

#### 5.5 Testing Strategy

A multi-layered testing approach will be implemented:

1. **Unit Testing:** Test individual functions and components (Jest for backend, Jest/React Testing Library for frontend).
2. **Integration Testing:** Test API endpoints and their interaction with the database (Supertest).
3. **End-to-End (E2E) Testing:** Simulate real user scenarios like login and bid submission (Cypress or Playwright).
4. **User Acceptance Testing (UAT):** A pilot group from the procurement team will use the system to validate functionality against business requirements.

## 5.6 Conclusion

In conclusion, this project successfully addresses two critical business needs: resolving the immediate production disruptions caused by the Yiha 800 component and building a long-term strategic solution to prevent similar supply chain issues. The thorough research has yielded three qualified alternate part numbers, which are now undergoing a rigorous technical evaluation process to ensure a seamless and reliable replacement. Concurrently, the development of the e-tendering portal, utilizing a robust React.js and Node.js stack, is well-defined and ready for implementation. This system will fundamentally modernize our procurement process, enabling greater competition, transparency, and resilience. The immediate next steps are clear: finalize the technical approval for the new Yiha 800 alternate and commence the first development sprint for the portal, moving us decisively towards eliminating operational downtime and strengthening our supply chain management.