

IOT • FUEL RETAIL AUTOMATION

An IoT Automation System for Fuel Dispensing

How Sidhyati replaced manual-intensive fuel operations with a connected sensor-to-cloud platform, bringing real-time accuracy, centralized control, and measurable financial gains across pump stations.

Real-time

Sensor-to-cloud fuel data

Zero

Manual data-entry discrepancies

Multi-site

Centralized pump-station control

OVERVIEW

Integrating IoT technology into fuel retail has transformed the efficiency and accuracy of dispensing operations. Traditionally manual-intensive, these workflows were prone to inaccurate data, operational delays, and financial losses from human error. This case study details how Sidhyati designed and delivered a connected automation system that turns raw sensor readings from pumps, tanks, and nozzles into secure, centralized, real-time intelligence.

THE CHALLENGE

Manual monitoring and data entry in fuel dispensing were error-prone, driving discrepancies in fuel inventory, sales reconciliation, and payment collection.

Integrating diverse sensor data from pumps, tanks, and nozzles raised interoperability hurdles across varied standards and protocols, while secure, centralized data management across multiple stations remained crucial yet complex.

OUR APPROACH

We paired ruggedized field hardware with a cloud data layer: sensors in tanks and dispensing nozzles feed a controller unit that processes readings for fuel density, tank levels, and dispensing accuracy.

A normalization layer reconciles differing sensor protocols into one data model, with interfaces to databases and APIs for real-time updates and secure, centralized storage.

SENSOR → CLOUD An end-to-end IoT pipeline, edge to dashboard

01

Sense

Density, tank-level & dispensing sensors

02

Process

Edge controller normalizes signals

03

Centralize

Secure APIs & centralized storage

04

Manage

Web apps for remote operations

THE SOLUTION

A robust IoT automation system in two parts: hardware sensors across tanks and dispensing nozzles with a controller unit for on-site processing, and a software layer that centralizes data collection and integrates with databases and APIs. Client web applications put full station control in operators' hands, from any location.

■ Remote station management

Operate pump stations from anywhere.

■ Rate setting & sales tracking

Adjust pricing and monitor sales live.

■ Payment processing

Reconcile collections without manual entry.

■ Comprehensive reporting

Insights on reconciliation, inventory & efficiency.

THE IMPACT

→ Improved operational efficiency by **reducing manual intervention** and eliminating human error.

→ Enhanced user experience with intuitive interfaces and remote accessibility.

→ Significant financial gains through **reduced fuel losses** and increased profitability.

→ Ensured data integrity through centralized management, eliminating discrepancies and lowering operational costs.