RADIO FREQUENCY IDENTIFICATION

RFID for Cylinder Tracking: Helping LPG Operators Improve Their Bottom Line

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The LPG Industry’s Problem

- 10-40% of cylinders go missing each year
The LPG Industry’s Problem

• Customers select product based on convenience and price.
• LPG operators struggle to differentiate themselves in a commodity market.
• Customers do not return cylinders.
• For every cylinder in the customer’s hands, the operator must maintain 1.5-7 additional cylinders.
• Pilferage and diversion of LPG.
• Non-compliance with government safety regulations = fines, liability, reputational damage from cylinder explosions.
Proposed Solution

• A state-of-the-art asset tracking and supply chain management system,

• Featuring identification technology tailored to the requirements of the LPG industry.
What items get tracked?

• Nowadays, companies are tracking even the smallest and most inexpensive items through their supply chains.
In comparison...
Barcode and QR code will not work on LPG cylinders

• PROS
  • Low per item cost: only 1-5¢ per asset, per application.

• CONS
  • Easily damaged: scuffs, scratches result in no-reads.
  • Will not last for life of cylinder: requires numerous reapplications in most scenarios.
  • Will not read through paint, grease, dirt.
  • Directionally sensitive: must be oriented “just right” to be read.
  • Will not work reliably in filling plant environment.
Tag cylinders with “Camouflage Mount” RFID Tags

Mounted with epoxy at the base of the handle
Using RFID to Identify and Inventory LPG Cylinders

**Achieve complete supply chain transparency**

**Legend**
- Empty Cylinder
- Full Cylinder
- Data flow

**Distributors**
- Ship full cylinder (date)
- Receive empty cylinder (date)
- Receive full cylinder (date)
- Return empty cylinder (date)

**LPG Cylinder Manufacturing Facilities**
- Attach transponder to every cylinder. Record:
  - cylinder serial number
  - RFID code number
  - date of cylinder manufacture
  - tare weight
  - date shipped
  - cylinder recipient (LPG filling plant)

**Central Database**

**LPG Filling Plants**
- Ship (date/distributor)
- Weigh (full)
- Fill cylinder
- Weigh (tare)
- Scrap
- Repair
- Inspect (condition)
- Hydrostatic test (G/NG)
- Inspect (test due?)
- No transponder? Install transponder & capture data

**Customers**
- Receive empty cylinder (date)
- Return empty cylinder (date)
- Receive full cylinder (date)
- Ship full cylinder (date)

**Legend**
- Empty Cylinder
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Consumer Platform

- When Points of Sale (POS) are equipped with tracking capability, consumers may book a cylinder from their mobile phone for just-in-time delivery.
- iOS and android app with your branding.
- Automated SMS booking and messaging platform lets non-smartphone users book cylinders and receive communications.
Why Use RFID Cylinder Tracking System in LPG Operations?

- “Decommoditize” your product: Develop a brand identity.
- Develop customer loyalty.
- Incentivize customers to return cylinders.
- Prove ownership of cylinders.
- Assure cylinder safety.
- Know which customers/supply chain actors are damaging or stealing cylinders.
- Combat diversion and pilferage.
- Access important cylinder information automatically and quickly.
- Automate billing and report generation.
Questions?

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