

## Monitoring and Leak Prevention System for Freon in Low-Temperature Supermarket Refrigeration Units with Spoiled Product Odor Detection

### Key Features:

- Automatic detection of freon leaks down to 1 ppm
- Use of gas analyzers + AI for diagnostics and alerts
- Leak containment activation when concentration exceeds 5 ppm
- Monitoring of freezing quality through chemical indicators
- Integration with SaaS platform and Telegram alert channel
- Backup systems: power supply, internet (Li-Fi), gas sensors
- Support for up to 100 refrigeration chambers within a single complex

### Updated Context for 2025

#### Trends and Regulatory Changes:

- Stricter requirements under F-Gas Regulation (EU No 517/2014)
- Penalties for HFC leaks up to €100,000 per incident in some EU countries
- Transition to CO<sub>2</sub> and ammonia refrigerants — requires more precise detection
- Increased focus on environmentally responsible solutions (EU Green Deal, ESG compliance)
- Growing interest in IoT solutions in the refrigeration industry

### Updated Budget Estimate

STAGE	AMOUNT (EUR)
Stage 1: System rehabilitation	24,000 EUR
Stage 2: Certification and patenting	36,000 EUR
Stage 3: Company relocation to Greece	60,000 EUR
Stage 4: Manufacturing of 100 systems	132,000 EUR
Direct purchase of equipment & components	37,950 EUR
Component orders via Alibaba	30,600 EUR
<b>TOTAL:</b>	<b>320,550 EUR</b>

## New Expense Items

CATEGORY	COST (EUR)	COMMENT
Market analysis and trend research	5,000–10,000 EUR	Study of key players, demand, competitors in the EU
Market entry strategy for the EU	7,000–15,000 EUR	Entry plan, pilot country selection, go-to-market model

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## Additional Recommended Activities

ACTIVITY	DESCRIPTION	EST. COST (EUR)
CE / REACH / ISO certification	Compliance with safety and environmental standards	5,000–10,000 EUR
Localization and translation of materials	Adapting documentation and brand for EU market	3,000–6,000 EUR
Website and mobile app development	For system monitoring and management	10,000–20,000 EUR
Digital marketing (SEO, SMM, Ads)	Online lead generation	8,000–15,000 EUR
Pilot launch in 1–2 EU countries	Real-life field testing	10,000–30,000 EUR
Legal support for EU registration	Entity setup, tax registration, contracts	3,000–7,000 EUR
Participation in expos and conferences	Professional networking and promotion	2,000–5,000 EUR
PR and media outreach	Creating expert presence through media and events	2,000–6,000 EUR

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## Marketing Recommendations

### Target groups:

- Supermarket chains (Carrefour, Tesco, Lidl)
- Refrigeration service companies
- Environmental organizations (Greenpeace, WWF EU)
- Refrigeration equipment manufacturers (Daikin, Emerson)

### Promotion strategy:

- “Test before you buy” approach: trial system installation in a supermarket
  - B2B sales via distributor networks or service company partnerships
  - Demonstration hubs in key EU cities
  - Mobile app for service and control
  - Email campaigns offering trial options
  - SEO and content marketing (articles, case studies, leak issue insights)
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## Legal Recommendations

- 1. Company Registration in the EU**
    - Best location: Greece (low tax, simple setup, eurozone access)
    - Legal form: Ltd. Company
    - Required documents: Articles of Association, ID of director, local address, patent and certification copies
  - 2. Certification & Compliance**
    - CE Marking — mandatory for sale in the EU
    - ISO 9001 / 14001 — quality and environmental management systems
    - REACH — if using chemical substances
    - GDPR — if user data is collected
  - 3. Technology Patenting**
    - File applications with EUIPO or European Patent Office
    - Prepare patent description and claims
    - Protect IP for licensing opportunities
  - 4. Contracts and Agreements**
    - Customer contracts (sales, lease, subscription)
    - NDAs for partners
    - SLA (Service Level Agreements)
    - Privacy policies and GDPR compliance documents
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## Summary of Total Expenses

CATEGORY	ESTIMATED AMOUNT (EUR)
Revised core budget	320,550 EUR
Market analysis	5,000–10,000 EUR
EU market entry strategy	7,000–15,000 EUR
Certification and compliance	5,000–10,000 EUR
Localization	3,000–6,000 EUR
Website and mobile app	10,000–20,000 EUR
Digital marketing	8,000–15,000 EUR
Pilot testing	10,000–30,000 EUR
Legal support	3,000–7,000 EUR
Events and conferences	2,000–5,000 EUR
PR and media	2,000–6,000 EUR
<b>Total budget range:</b>	<b>~375,550 – 444,550 EUR</b>

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## Summary and Conclusions

Your system offers a **unique solution** that combines automatic freon leak detection with AI-based monitoring of food quality. The EU market is ready for such innovation due to stricter F-Gas emission rules.

You already have a working system, deployment experience, hardware, and technical staff. However, proper marketing and legal groundwork are essential for successful EU entry.

### Key steps:

- Register a legal entity in Greece
- Obtain CE certification and patent the invention in the EU
- Conduct market analytics and define target countries
- Launch a pilot in one EU country
- Launch digital marketing, website, and B2B sales
- Engage refrigeration service companies as distributors

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