

# Case Study: Chemical Dosing Safety & Auditing (Europe)

GIBES INOV – Compliance and Safety Automation Solutions

## Industry Overview

The European chemical processing sector operates under strict Safety Integrity Level (SIL) regulations. Plants require automation solutions to:

- Ensure compliance with international safety standards.
- Minimize manual intervention and auditing errors.
- Protect personnel and equipment from hazardous incidents.

## Client Background

A European chemical plant needed to:

- Upgrade its chemical dosing system to comply with SIL 2 safety standards.
- Eliminate manual logging of hazardous material consumption.
- Reduce auditing time and mitigate financial and safety risks.

## Key Metrics

Metric	Before GIBES INOV	After GIBES INOV	Result (%)
Safety Integrity Level (SIL)	Unverified (SIL 0)	SIL 2 Certified	Significantly Reduced
Major Safety Incidents	1 incident / 18 months	0 incidents	\$500k Loss Prevention
Auditing Time	5 days (manual review)	1 hour (digital export)	90% Reduction in Time

## Challenges & Constraints

- Existing dosing system lacked automated safety mechanisms.

- Manual logging of hazardous chemical consumption was error-prone.
- Compliance with SIL 2 standards required redundancy and certification.
- Implementation needed to fit within a strict 4-week shutdown window.

## GIBES INOV Solution Architecture

### Hardware Implementation

- Safety PLCs (Rockwell GuardLogix / Siemens F-CPU) deployed for redundant safety control.
- Certified safety relays integrated for emergency shutdown scenarios.
- Fully compliant with SIL 2 safety standards.

### Control Logic

- Programming of safety functions including emergency stops and interlocks to SIL 2 standards.
- Core chemical dosing process controlled by standard PLC while monitored by the safety system for redundancy.

### Data Management & Auditing

- Automated, tamper-proof logging of all safety events and material usage.
- Data securely stored on a local server for 10-year retention.
- Digital log exports reduce auditing time from 5 days to 1 hour.

### Deliverables

- SIL Verification Report.
- Safety Function Design Specification (SFDS).
- Full system integration and commissioning.

## **Implementation Timeline**

- **Week 1–4:** System design and PLC programming.
- **Week 5–18:** Hardware installation, commissioning, testing, and safety certification.

## **Results & Impact**

- Achieved SIL 2 certification for chemical dosing operations.
- Reduced major safety incidents from 1 per 18 months to zero.
- Auditing overhead reduced by 90%, enabling faster compliance verification.
- Financial risk mitigation and enhanced plant safety standards.

## **About GIBES INOV**

GIBES INOV specializes in compliance-focused automation and safety solutions for industrial clients. Our approach ensures measurable ROI while adhering to the highest international safety standards.