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A practical guide to safer chemical dosing with Iwaki dosing cabinets

Introduction

Chemical dosing is a critical part of many industrial processes. It may support water treatment, cleaning, pH correction, chemical transfer, process utilities, effluent treatment, emissions control or production-critical chemical addition.

But a chemical dosing point is rarely just a pump.

The wider installation — pipework, valves, fittings, containment, access, visibility, material compatibility, controls and documentation — all influence how safely and reliably the system performs.

For aggressive or hazardous liquids, these details matter. Poorly arranged dosing systems can create safety risks, maintenance problems, compliance issues, quality issues, contamination and unnecessary downtime.

Iwaki dosing cabinets provide a more controlled approach. By bringing the pump and associated components together in a pre-assembled cabinet, they help create a safer, more orderly and more maintainable chemical dosing installation.

As the official UK distributor for Iwaki, Sensys supports customers with both standard and bespoke dosing cabinet solutions for demanding process applications.

Iwaki's standard systems range includes more than four hundred configurations, with options for dosing cabinets, safety cabinets, process units, mobile devices and other chemical-handling solutions.

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1. Why chemical dosing points become risk points

Chemical dosing systems often sit at the intersection of process performance, operator safety and environmental responsibility.

When they are designed well, they quietly support the process. When they are poorly specified, poorly installed or difficult to maintain, they can become a recurring source of risk.

The challenge is that many of these issues do not appear immediately. A dosing system may work on day one, but become harder to inspect, maintain and trust over time.

A cabinet-based approach helps reduce this risk by placing the dosing equipment within a defined, purpose-built system. It supports better visibility, safer access and a more disciplined approach to chemical handling.

Common problems include:

- Exposed pipework carrying aggressive chemicals
- Leaks from fittings, valves or dosing lines
- Poor access for inspection and maintenance
- Incompatible materials
- Unclear valve positions or flow paths
- Pumps exposed to fumes, splashes, weather or impact
- Limited containment around the dosing area
- Ad hoc changes made over time without a clear design basis
- Lack of provision for duty and standby operation
- Inconsistent installations across multiple sites

A standalone dosing pump may be suitable for simple, low-risk duties where access is easy, the chemical is relatively benign and the consequences of failure are limited.

Where risk is higher, a dosing cabinet should be considered.

A cabinet-based solution may be the better choice when:

- The chemical is aggressive, hazardous or difficult to handle
- Operators need protection from splashes, fumes or leaks
- The dosing point is exposed, outdoors or difficult to access
- The process is production-critical
- Downtime would have significant impact
- Duty and standby dosing is required
- A cleaner, more standardised installation is needed
- Documentation and auditability matter
- A pre-assembled system is preferred

The key question is not just, “Can the pump dose the chemical?”

It is:

Can the full dosing installation manage the chemical safely and reliably over the life of the system?

2. When to consider a dosing cabinet rather than a standalone pump

3. Key benefits of cabinet-based dosing

A dosing cabinet brings several practical benefits together in one system.

Safer chemical handling

The cabinet provides a physical barrier between the operator and the dosing arrangement. This can help reduce exposure risk during normal operation, inspection and maintenance.

Improved orderliness

The pump, pipework, valves and fittings are arranged within a defined system. This makes the dosing point easier to understand, inspect and maintain.

Better visibility

Transparent cabinet doors can allow operators to visually inspect the system before opening the cabinet. This helps identify potential issues such as leaks, crystallisation or unusual pump behaviour earlier.

Easier maintenance

A well-arranged cabinet improves access to the components that need to be checked, serviced or replaced. This can reduce fault-finding time and support better maintenance discipline.

Reduced installation complexity

A pre-assembled cabinet can reduce the time and complexity involved in sourcing separate pumps, valves, pipework, fittings and safety components.

Improved reliability

By treating the dosing point as a complete system, rather than a collection of individual parts, cabinet-based dosing can help reduce installation-related faults.

Support for duty and standby arrangements

Depending on the duty, cabinets can be specified with multiple pumps or provision for a reserve pump. This can help protect critical processes from avoidable downtime.

4. Safety and compliance considerations

Chemical dosing systems need to support both safe operation and responsible chemical management.

For many organisations, this includes:

- Protecting operators and maintenance teams
- Reducing exposure to aggressive or hazardous liquids
- Preventing or controlling leaks
- Protecting surrounding equipment and infrastructure
- Supporting environmental protection
- Maintaining safe access for inspection and maintenance
- Demonstrating that risk has been considered at equipment level

A dosing cabinet can support these requirements by creating a more controlled dosing environment.

The cabinet does not remove the need for risk assessments, correct chemical storage, appropriate PPE, safe operating procedures or competent maintenance. But it does provide an engineered layer of protection around one of the most important risk points: the chemical dosing installation itself.

For higher-risk environments, this is particularly valuable. Blue-chip manufacturers and regulated industries are rarely looking for the cheapest pump alone. They are looking for a system that supports safe, reliable and auditable operation.

5. Downtime and maintenance considerations

Potential impact

Chemical dosing faults can have a disproportionate impact on production.

A small leak, blocked line, failed pump or inaccessible valve can quickly affect:

- Product quality
- Cleaning performance
- pH control
- Water treatment
- Wastewater compliance
- Emissions control
- Process stability
- Production continuity

Common downtime drivers

Downtime is often caused by issues around the pump, not just by the pump itself.

Common downtime drivers include:

- Poor suction arrangements
- Incompatible materials
- Difficult access
- Unclear pipework
- Lack of isolation points
- No standby capacity
- Weather-exposed components
- Reactive maintenance rather than planned maintenance

Maintenance Considerations

A dosing cabinet helps reduce these risks by improving layout, access and system consistency.

For maintenance teams, a cabinet-based system can make it easier to:

- Check pump operation
- Inspect pipework and valves
- Identify visible leaks
- Confirm valve positions
- Carry out servicing
- Replace components
- Diagnose faults
- Keep dosing areas clean and orderly

6. Application examples by sector

Water and wastewater treatment

In water and wastewater treatment, dosing systems are often linked directly to compliance, discharge quality and environmental protection.

Typical duties may include:

- pH correction
- Precipitation chemical dosing
- Disinfection
- Odour control
- Anti-scalant dosing
- Chemical dosing into treatment processes

If dosing becomes unreliable, the issue can quickly move from an engineering problem to a compliance or quality control risk.

6. Application examples by sector

Food and beverage production

In food and beverage environments, dosing often supports cleaning, hygiene, utilities and wastewater treatment.

Typical duties may include:

- CIP chemical dosing
- Bottle washing
- pH adjustment
- Boiler water treatment
- Cooling water treatment
- Effluent treatment

In food and beverage production, reliable chemical dosing supports cleaning performance, production continuity, quality control and site compliance.

6. Application examples by sector

Pharmaceutical manufacturing

In pharmaceutical environments, the emphasis is often on control, documentation and maintainability.

Dosing systems may support:

- Process utilities
- Cleaning systems
- Purified water treatment
- Neutralisation
- Effluent treatment
- Controlled chemical addition within wider plant systems

A clear, accessible and well-documented dosing arrangement supports the engineering discipline expected in regulated manufacturing environments.

6. Application examples by sector

Semiconductor and microelectronics manufacturing

In semiconductor and microelectronics manufacturing, chemical handling is closely linked to process reliability, uptime and contamination control.

Dosing may support:

- Ultra-pure water treatment
- Wastewater neutralisation
- Scrubber systems
- Controlled chemical addition within plant utilities

In high-value production environments, even small dosing issues can carry significant operational consequences.

6. Application examples by sector

Chemical processing and wider industrial manufacturing

In chemical processing and wider industrial manufacturing, chemical dosing often supports production, utilities, cleaning, treatment and process control.

Typical duties may include:

- Aggressive liquid dosing
- Additive dosing
- Inhibitor dosing
- Acid and alkali dosing
- Cleaning chemical dosing
- Treatment chemical dosing

In chemical processing and wider industrial manufacturing, cabinet-based dosing can help reduce exposure risk, improve maintenance access and support safer operation around critical dosing points.

7. Standard versus bespoke dosing cabinet options

Not every application requires a bespoke system.

For many chemical dosing duties, a standard Iwaki dosing cabinet configuration can provide the right balance of safety, performance, cost and project efficiency

Standard configurations are useful where:

- The duty is well understood
- The chemical compatibility requirements are clear
- The flow and pressure requirements fit an existing configuration
- Standard pipework and connection arrangements are suitable
- A quicker and more straightforward specification route is preferred

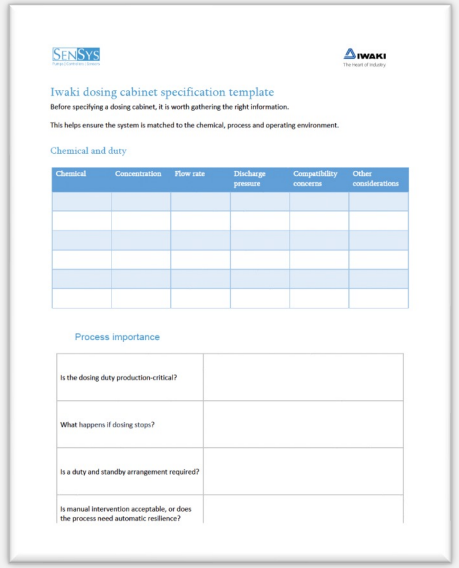
Bespoke configurations are useful where there are more specific requirements around:

- Chemical compatibility
- Pump type
- Capacity and pressure
- Duty and standby operation
- Pipework materials
- Connection sizes
- Control requirements
- Site layout
- Indoor or outdoor installation
- Access restrictions
- Documentation requirements
- Integration with wider process systems

Ready to specify a dosing cabinet?

For support with your application:

- Download our Dosing cabinet specification template
- Speak to Sensys about standard and bespoke options 01438 75 95 95 | sales@sensys.co.uk



Iwaki dosing cabinet specification template

Before specifying a dosing cabinet, it is worth gathering the right information.

This helps ensure the system is matched to the chemical, process and operating environment.

Chemical and duty

Chemical	Concentration	Flow rate	Discharge pressure	Compatibility concerns	Other considerations

Process importance

Is the dosing duty production-critical?	
What happens if dosing stops?	
Is a duty and standby arrangement required?	
Is manual intervention acceptable, or does the process need automatic resilience?	