



## Chemical dosing system maintenance: a key to reducing risks and costs

**Reliable and efficient chemical dosing systems are vital to the regulatory compliance, safe management and cost-effectiveness of water and wastewater treatment operations. To optimise performance, avoid equipment failures and minimise related costs, these systems must be properly maintained. This white paper will summarise the potential impact of inadequate maintenance, outline the essentials of a planned preventative maintenance programme and highlight the help available.**

### Problems with nutrient levels

Finding the resources to service and maintain chemical dosing systems can be a major challenge for water companies and contractors, given the many other pressures they face. These include increasingly stringent regulation, restricted budgets and loss of both the capacity and the skills required for dosing system maintenance. As the following summary of risks and costs shows, lack of investment in this area could be an expensive mistake.

### Shortened asset life

Poorly maintained dosing equipment will not last as long, and its replacement will mean adding to the company's capital expenditure (CAPEX). Most other savings achieved through maintenance, as outlined below, relate to operating expenditure (OPEX). Considered holistically, the benefits of good servicing combine to enable effective planning and optimisation of total expenditure (TOTEX).



### Breakdowns

A system in poor condition may break down unexpectedly or even catastrophically, leading to unplanned downtime and loss of productivity. Repairs and replacement parts add to the expense. By contrast, a well-maintained system can be relied upon to keep working and to give greater resilience.

### Inefficiency

Without regular servicing, and recalibration where necessary, a dosing system can end up injecting much larger quantities of an expensive chemical than it should. Energy consumption may also increase in inefficiently functioning equipment.

### Injury

Spillage of hazardous chemicals due to a faulty or deteriorating dosing system can endanger employees and customers. Along with the human impacts, incidents of this kind can be costly in terms of sickness absence, compensation claims and reputational damage.

### Environmental harm

If the doses from a malfunctioning system are too low, insufficiently treated wastewater may be discharged into the environment. If doses are too high, the discharge may be toxic. In the event of a significant chemical leakage or untreated discharge due to faulty equipment, the effects on rivers, streams and other habitats may be devastating. Along with the cost of fines, enforcement undertakings and remedial works, the company will be facing a PR disaster.

### What maintenance is needed?

Particular attention must be paid to the condition and performance of the dosing pumps, but thorough servicing goes much further. Typical elements include:

- Checking pump calibration and recalibrating where appropriate
- Inspecting and replacing worn pump components
- Examining and clearing inline filters
- Cleaning and removing blockages from injection quills
- Flushing sludge or solids from chemical storage tanks
- Identifying leaks in any part of the system
- Assessing condition of all equipment
- Testing performance
- Confirming bund security (this crucial second line of defence against leakage is the focus of another WES white paper, 'The definitive guide to chemical bunding in the water industry')

In addition, the equipment's specification should be routinely reviewed to ensure it is still suitable for the application. Changes in operating conditions, such as the quantity and quality of wastewater received, or the types of chemicals used, may necessitate a different set-up. The WES white paper on 'Selecting the right chemical dosing system' offers further advice on this.



### How can WES help?

Specific maintenance needs vary between sites, applications and the nature of their existing equipment. To determine what is required in each case, WES offers a free, no-obligation, initial on-site survey. This includes an audit of the chemical dosing systems, regardless of their age or manufacturer, against current standards and best practice. An assessment of the equipment's general condition is produced, along with recommendations on any repair or upgrade work needed.

Based on those reports, WES will recommend a service package appropriate to the process, the operational regime and the company's needs. This will be accompanied by a fixed-price quotation for the package, which the client is free to accept or decline.

Bespoke packages can be created for businesses with very specialised requirements, but in most cases, there is a simple choice between WES **Bronze, Silver and Gold** options.

### Bronze – Scheduled Maintenance Package

This provides an annual scheduled maintenance visit, which includes planned servicing of all pumps and covers the price of service parts. Pump calibration is checked, along with the condition of all equipment. An operational and functional check of the system is also carried out, as far as the client's process constraints practically allow at the time of servicing. Observations and recommendations are included within a service report on the visit.

### Silver – Planned Preventative Maintenance Package

In addition to the Bronze package features, this covers three additional quarterly 'health check' visits. Components are cleaned, tested – again within the practical constraints of the client's process – and assessed as part of a condition report. Companies choosing the Silver package also have access to free technical assistance via a telephone helpline.

### Gold – Product Care Package

On top of the Bronze and Silver package benefits, Gold clients enjoy priority repair and breakdown call-out assistance. For this, WES holds and maintains immediately accessible stocks of service parts specific to the client.

Other maintenance-related services from WES include replacing components, upgrading or re-purposing systems, relocating equipment, modifying controls and training operators.

WES can also support operations through rapid delivery of hired dosing systems, in emergency situations or where planned shutdowns are scheduled. In short, whatever a business needs to keep its chemical dosing systems well maintained, WES provides the necessary equipment and expertise.





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