

# Industrial cooling - Clean and disinfection services

Market leading provision of cleaning and inspection services to increase performance and ensure compliance with legislation

COSTAIN

The team has extensive knowledge and experience and can offer advice on modifications and upgrades to increase performance.

## How Costain can help

Costain offers thorough cooling tower inspections and tests that are conducted by experienced engineers. We can determine compliance with the Health and Safety Executive's Approved Code of Practice (ACoP) L8 document and we can also assess the integrity of structural and internal components and overall cooling tower performance. The team has extensive knowledge and experience and can offer advice on modifications and upgrades to increase performance, along with assurance that the tower is in full compliance with the latest legislation.

## Industry challenges

A cooling tower's internal and external structure and its critical components should be periodically inspected, maintained, repaired, or replaced, if necessary, to ensure optimal operation and the best possible performance. Legionella is more likely to thrive in water systems that are fouled with deposits and in biofilm that can protect the organisms from water treatments and provide nutrients for them to multiply. Maintaining cleanliness is crucial.

## Services

- Preliminary inspection
- Detailed inspection
- ACoP-L8 Legionnaires Disease inspection
- Condition monitoring
- Endoscope inspection

## Contact



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### Expertise:

- New or replacement cooling towers
- Complex programme delivery
- Air pollution control
- Decarbonisation of energy and industry
- Digital transformation of inspection and compliance documentation

## Benefits

- Adherence to legal requirement for regular system inspections
- Reduces organic slimes and biofilms that can cause long term damage
- Removes sludge and sediments to increase asset life
- Helps maintain optimum performance

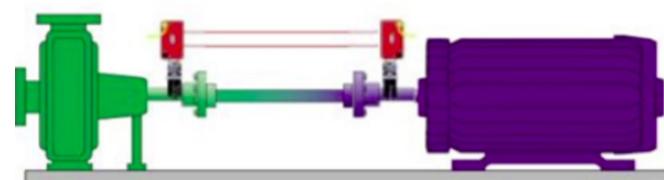
## Laser alignment

Misalignment of equipment can occur from vibration, thermal effects, poor foundations, equipment accidents or equipment overhauls. By using this laser alignment technique, problem analysis is simplified, and equipment can be accurately measured and aligned in a fraction of the time that it would take using other traditional methods.

Correctly aligned equipment will:

- Reduce vibration, stress, and extend bearing and coupling life
- Reduce motor amps, resulting in significant electricity savings
- Increase the mean time between failures (MTBF).

## Coupling alignment



## Cooling tower inspection

Evaporative cooling towers should be inspected by competent cooling tower engineers. Failed or deteriorating components compromise performance and can lead to an unexpected or catastrophic failure.

Our inspections cover all types of cooling towers and include all individual associated passive and mechanical parts. Inspections are followed by full written reports, including photographic evidence where permitted, highlighting any areas of concern or areas requiring further investigation.

### Preliminary inspection

A visual inspection can be conducted whilst the cooling tower is in operation or in shutdown. The inspection report would identify areas of concern and non-compliance.

## Detailed inspection

Detailed inspections covering the structural framework of the tower, internal components and fan machinery can be undertaken on an individual cell isolation basis with minimal impact on production or during total shutdown of the tower.

## ACoP-L8 Legionnaires Disease inspection

Specific ACoP-L8 audit on your tower to identify areas of concern and make recommendations to any changes and their urgency.

## Endoscope inspection

Our endoscope inspection has many potential applications, through its ability to provide detailed internal examinations and intelligent imaging of equipment or areas that cannot be accessed for normal visual examination. This includes cooling tower packs, piping, and gearboxes. The optical viewer can penetrate the gearbox, piping or pack in situ, and identify main areas of concern, such as pack contamination or blockages that may affect thermal performance and ACoP-L8 compliance.

A conventional method for determining the contamination rate of modular plastic cooling pack is to take the pack out of the tower and weigh it.



An endoscope inspection can be done in situ, saving valuable time and cost whilst avoiding any potential damage to the pack. After each condition monitoring activity, a fully detailed report is produced including expert recommendations to ensure the tower operates with optimum performance and is in compliance with ACoP-L8. This endoscope inspection method is cost-effective, technically superior and a safer alternative to traditional inspection methods.

## Benefits

- Low-cost solution compared to conventional methods
- Quick technique and limited downtime
- No damage to components, as in situ inspection
- Accurate results and visibility of inaccessible areas
- Conforms to legal requirements HSG274 Part 1
- Enhances performance
- L8 Legionella Compliance

## Case study

### Tata Steel

#### Requirement

Our client had a thermally underperforming cooling tower which placed additional pressure on the gas extraction process. We were asked to inspect the tower and conduct the following:

- Examine the condition of cooling tower packing, observing any physical defects within the tower which have decreased cooling efficiency
- Remove any scale and biofilm via a chemical clean
- Confirm a successful clean
- Neutralise chemical waste products for safe disposal.

#### How Costain helped

Ion deposits such as iron and calcium (commonly referred to as scale) on cooling tower packing, leads to decreased heat transfer efficiency within towers and increased biofilm formation. Biofilm formation is linked to Legionella pneumophila contamination and growth. As such, the Health and Safety Executive (HSE) recommends that cooling tower packing is removed at

least annually and preferably every six months. When this is not possible, alternative strategies must be put in place and the efficacy of the procedure must be verified.

Costain's Pack-Clean solution is designed to clean cooling tower packing in situ by dissolving scale deposits and disinfecting cooling tower surfaces. On lightly scaled and fouled systems it is used as a replacement for packing removal and as a method for lengthening packing lifespan.

#### Outcome

Costain's enhanced pack cleaning foam:

- Reduces pack damage during cleaning
- Increases cooling tower efficiency
- Reduces risk of legionella.

The clean was successful and the amount of calcium removed from the tower packing was approximately 3150 kg. The tower efficiency and overall operational performance was vastly improved due to the level of calcium removed.

Costain is the proud holder of the Royal Society for Prevention of Accidents (RoSPA) Order of Distinction. The Order of Distinction is achieved by maintaining a high safety standard and 15 consecutive gold awards.

