

## CASE STUDY

Randolph Hotel By Graduate Hotels, Oxford, UK

### Overview

This 151 bedroom hotel is in a hard water area and historically had not implemented any solution to resolve the resulting problems. As a consequence, the water systems were badly scaled up, which was impacting on the operation and running costs of essential pieces of equipment.

### Key Problems

During a site survey and initial inspection, the following areas of concern were raised by the Maintenance Manager:

- Dishwashers and ice machine were badly scaled
- Rational steam ovens were badly scaled and required callouts for a full descale every month
- Potential for increased waterborne bacteria, especially Legionella, due to scale build-up throughout the system
- General housekeeping issues due to scale such as showerheads, taps and other water fittings which were regularly scaled up
- Waste downpipes on the outside of the building were choked with limescale

### Water Analysis

A water analysis test carried out in October 2020 gave a result of 221.5mg/l hardness as CaCO<sub>3</sub>.

#### Detailed Results

Determinand	Value	Units	Determinand	Value	Units
pH	7.2		Conductivity	524	uS/cm
Nitrate-N	3.6	mg/l	Ammonia-N	0.7	mg/l
Chloride	35.7	mg/l	Sulphate as SO <sub>4</sub>	77.6	mg/l
Phosphorus as P	1.1	mg/l	Boron	0.06	mg/l
Potassium	5.6	mg/l	Copper	0.01	mg/l
Magnesium	5.36	mg/l	Manganese	< 0.01	mg/l
Calcium	79.9	mg/l	Zinc	< 0.01	mg/l
Sodium	25.1	mg/l	Iron	< 0.01	mg/l
Carbonate	< 10	mg/l	Alkalinity as HCO <sub>3</sub>	171	mg/l
Hardness as CaCO <sub>3</sub>	221.5	mg/l	Dissolved Silicon	1.7	mg/l

### Our Solution

In December 2020, after the site survey and discussion with the Maintenance Manager, an Integro™ 4 was installed on the mains water supply covering the cold-water tank and system. In addition, and for extra protection to the hot water system, an Integro™ 2 v3 was installed directly before the calorifier.



*Integro™ 4* on the mains water supply

*Integro™ 2* before the calorifier



## The Results

Immediately after installation, the Integro™ technology began to remove historical scale build-up as well as preventing further scale from forming. As confirmation of this, the following observational findings were evident within a matter of weeks and have been ongoing:

- No call-outs for Rational to descale the steam ovens (previously this would have been monthly)
- Showerheads, taps and other water fittings in the rooms were proving much easier to clean
- The ice machine that was serviced by the Integro™ was free from scale
- Dishwashers were keeping free from hard scale build-up
- Significant decrease in number of Legionella hits
- Water quality was felt to have improved
- Waste water downpipes have cleared

## Environmental Benefits

In addition to the quantifiable savings on energy consumption, labour/call-out charges, equipment downtime, cleaning and Legionella control, the hotel are enjoying the following additional benefits:

- Reduction in scale and corrosion to critical equipment, meaning decreased engineer visits and reduction in spare parts which would otherwise carry direct and indirect increases in the hotel's carbon footprint
- Extended life of all water related equipment and improved efficiency
- Improved water quality and efficiency of hot water equipment
- Reduced chemical use

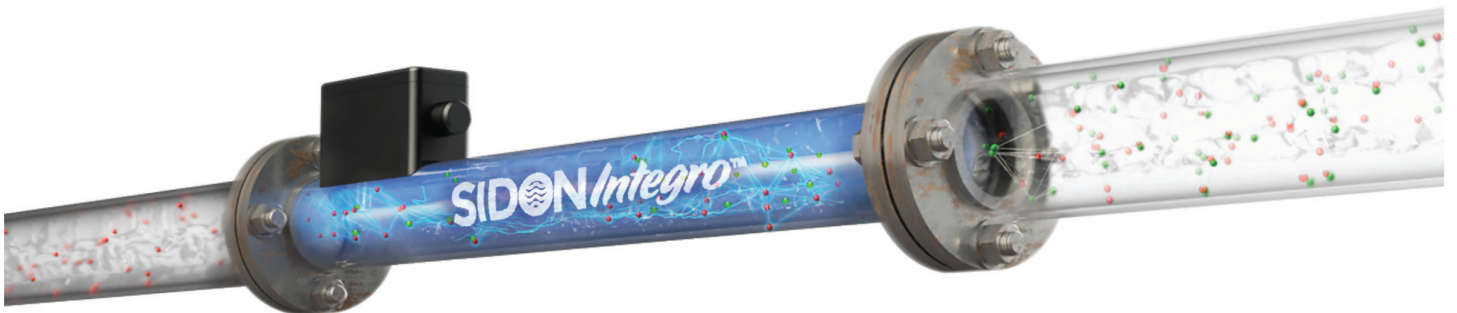
## Summary

Since installation in December 2020, the Integro technology has been reported to have been working really well throughout the hotel to eliminate existing scale and prevent any further build-up and the hotel are continuing to use the system to great effect.

## What the Hotel had to say:

*I haven't had Rational out to descale the steam ovens since we re-opened, we used to have to call them every month to do a full descale so the system is working really well. The dishwashers are also all keeping free from scale. I have noticed a difference in the limescale build up, it's virtually non-existent since installing the technology. They have caused a few leaks though, where the limescale has been eaten away round joins and valves, but that was to be expected and is a good thing because it identified issues we would never have seen and enabled us to repair them before they caused too much damage.*

**Lee Martin, Maintenance Manager**



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