

# Subordinate & Tertiary Loops - The Hidden Legionella Risk?

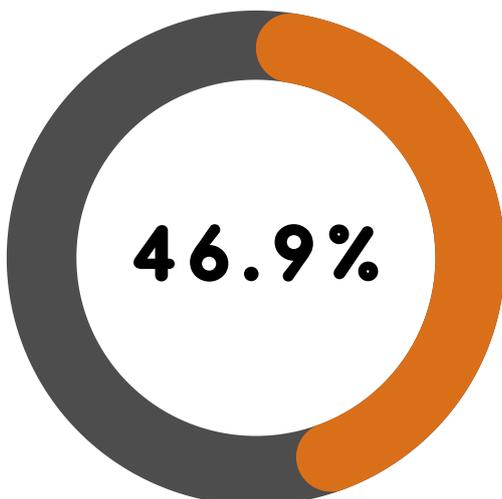
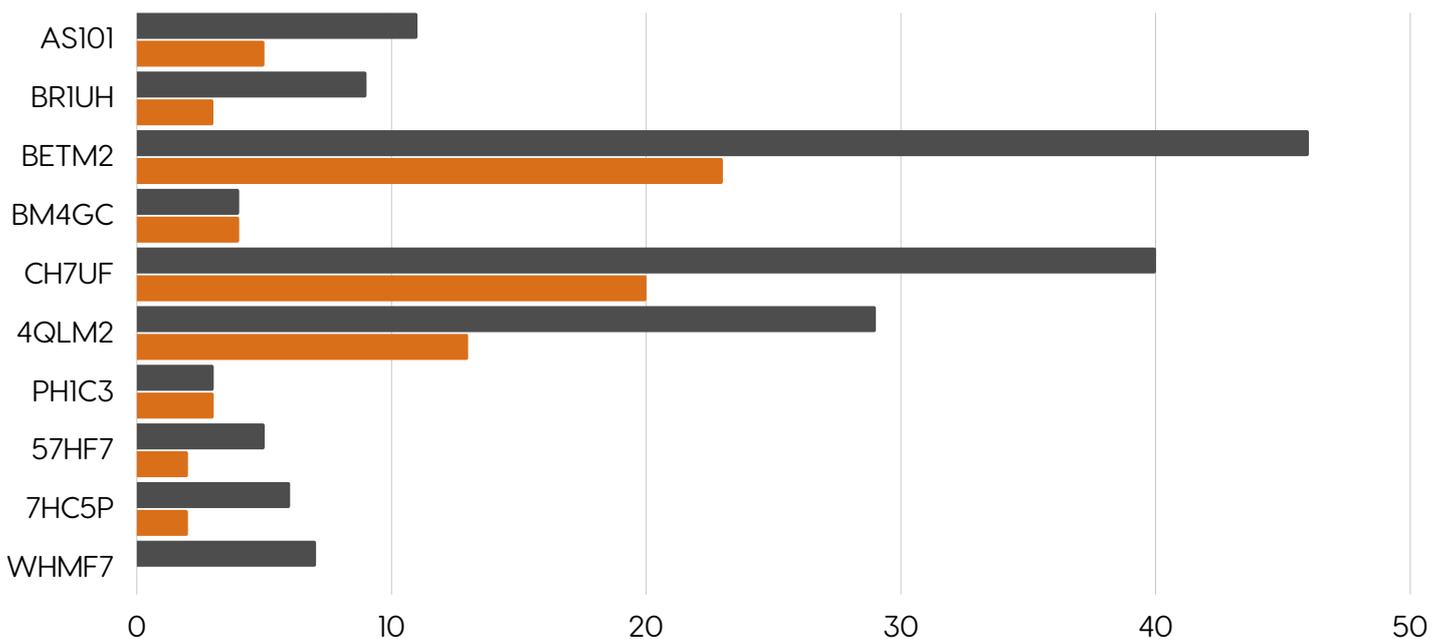
## A CASE STUDY

### Abstract

The study outlined in this report shows that on average 46.9% of subordinate and/or tertiary hot return loops were found to be faulty at the ten sites tested. The faulty returns are highly likely to create the conditions for biofilm growth and the proliferation of Legionella bacteria. The solution for remediating these issues can often be as simple as tracing the pipework to the localised valves that have been inadvertently left closed and reopening them.

### Introduction

Citritek has been installing remote monitoring systems for over two years and has done so across many sites. This study has been designed to investigate the prevalence of faulty hot return pipework within subordinate and tertiary loops. 10 sites were selected from a variety of industries and building type. From these buildings, wireless devices incorporating a minimum of three sensors were selected that monitor, as a minimum, the hot and cold feed to an outlet as well as the hot return.



Hot return temperatures on subordinate and tertiary loops should consistently maintain a minimum of 50°C (55°C in Healthcare premises) to ensure that Legionella bacteria is controlled within the circulating portions of the system. The remote monitoring sensors clearly identify when there is an issue with the hot return loops whereby the consistent data exhibits how the temperature will increase with the hot flow when the faucet is opened but fail to retain the temperature after the flushing event. Often declining completely to the original ambient temperature until the outlet is used again.

Following the study of subordinate and tertiary hot returns, site CH7UF was used to investigate possible causes of this issue and successful remedial actions.

