

# CASE STUDY

SLALEY HALL

DE VERE HOTELS



## Problem

This large, prestigious hotel was experiencing leaks from both the hot and cold water pipes, at numerous points throughout the building. Within an 18 month period over 100 leaks had occurred.

The hotel was using emergency plumbing services to replace pipes, or to make temporary repairs, as problems occurred. This was both expensive and caused considerable disruption. Once they realised it was a recurring problem increasing in frequency, they called in **Barnes & Sons**, the Salford based plumbing and heating contractor.

## Discovery

**Barnes & Sons** had used **Corrosion and Environmental Services Ltd** in the past and immediately called Dr Phillip Munn, the Managing Director. Dr Munn did a visual examination of pipe samples under microscope, noting the tell-tale signs of erosion corrosion and unusually coloured surface deposits, which were x-ray analysed.

Dr Munn also attended a meeting with John Barnes of **Barnes & Sons** and the Facilities Manager of Slaley Hall, to make further enquiries



Erosion corrosion at a 22mm elbow from Slaley Hall, showing removal of protective patina on copper and grooving of copper

about the history and frequency of problems and the age, size and design of the system.

Dr Munn's report showed that the cause of the leaks was erosion corrosion and that the unusually coloured deposits were found to include manganese and iron. The impurities in the surface scale reduced its protectiveness. Analysis of the supply water showed nothing unusual and the cause of the erosion corrosion was attributed to the design and operation of the system, which led to too high water velocities.

## Explanation

Erosion corrosion is caused by local water turbulence, which removes the protective copper carbonate scale, or patina, from the bore of the copper pipe. Erosion corrosion occurs predominantly at elbows, bends and t-pieces as well as downstream of localised imperfections such as burrs on cut ends of pipe work. Besides general flow rates, it is influenced by water quality, temperature and installation practices. At Slaley Hall, most of the leaks had occurred in the secondary return hot water pipework, where the flow rates were highest.

## Solution

Based on the recommendations in the report, **Barnes & Sons** successfully solved the problem by fitting a Honeywell pressure-reducing valve to the booster pump unit to reduce flow rates below the critical levels for the conditions existing at Slaley Hall. Dr Munn also recommended regularly regenerating a iron/manganese filter, which was already fitted to the incoming mains supply. This would mean that it would operate effectively to remove dissolved iron and manganese from the water.

## Reaction

The result was so successful that Honeywell themselves published the case in 'Heating, Ventilating and Plumbing' in October 2003.

"We have worked with Dr Munn of CESL on several cases and he has always provided a fast, cost-effective, site-specific solution." John Barnes, **Barnes & Sons**