Infratech

Data Sheet No.3

District Heating

INTRODUCTION

There are many advantages in using District Heating for the supply of space heating and hot water to commercial, industrial and domestic premises. These include environmental factors, efficiency and the ability to utilise low-grade heat from C.H.P. schemes and other sources.

There is, however, on main disadvantage - the difficulty of maintaining the underground pipework. A typical scenario is when you know there is a leak on the system due to the quantity of make-up water that is being used - but you don't know where it is! The traditional method for locating leaks is to isolate one section of the system at a time until the general area of the leak is identified, and then dig several trial holes on a hit-and-miss basis and hope that you can find the leak. This procedure is undesirable for several reasons:

1. Time wasted on digging trial holes.
2. The cost of the trial holes - typically in excess of £500 per excavation.
3. A great deal of inconvenience to both tenants and maintenance staff.
4. Heat charge rebates to be paid to tenants.

HOW THERMOGRAPHY HELPS

There is an alternative! Infrared Thermography, or thermal imaging as it is sometimes known, provides a cost effective and accurate method of detecting the location of leaks and wet insulation within underground heating mains. It works because any leaks or defective insulation in the heating mains will cause a slight increase in the temperature of the ground above the mains (as shown in the diagram below). Our engineers are able to locate these 'hot-spots' using sophisticated thermal imaging equipment. Past experience has shown that leaks can be located to within 6 inches!

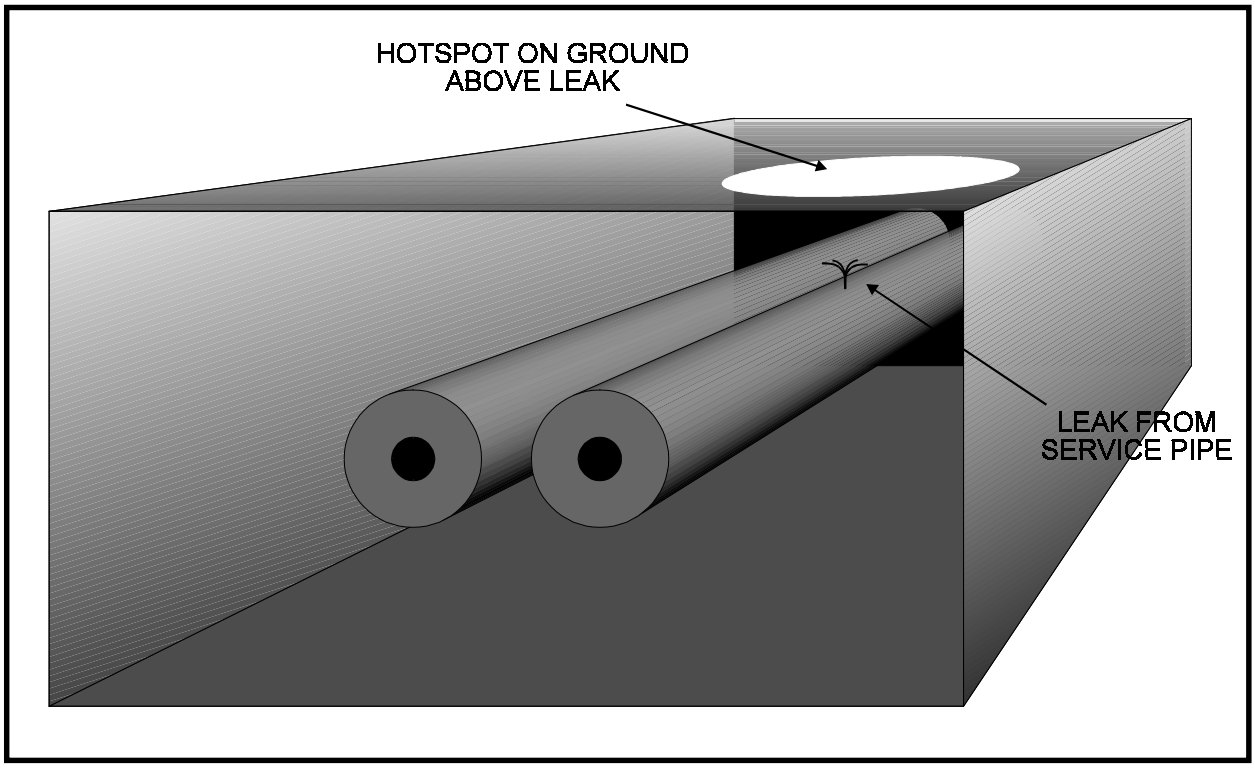

Figure 1 - A leak from an underground heating main.

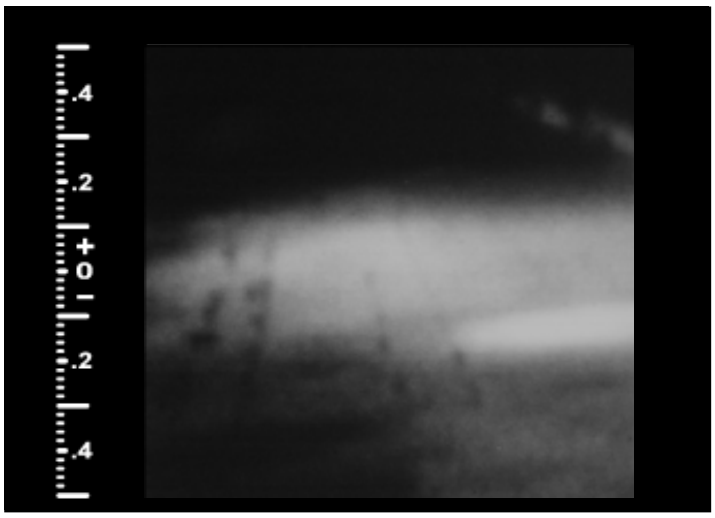

Figure 2 - Typical thermogram of leak on heating main.

Infratech offer a 24-hour call-out service for leak detection. Any faults that are located during the survey are physically marked on the ground and a verbal report is made to the client to enable repairs to be carried out immediately. A detailed written report will be produced within seven days to confirm the results of the survey and classify the priority with which each defect should be treated. The faults will be classified into one of the following categories:

Group 1: Faults which must be repaired immediately.

Group 2: Faults which should be repaired as soon as it is convenient.

Group 3: Faults which should be kept under observation during future surveys.

Group 4: Faults which require further on-site investigation.

Above all, the main reason for using Infratech's leak detection service is **cost-effectiveness**. The following cost analysis for a typical leak clearly shows this, with a pay-back period of less than 3 days.

Typical rate of water loss (medium size leak)	= 2000 litres/hr
Temperature of water being lost	= 90°C
Temperature of make-up water	= 10°C
If a boiler efficiency of 65% is assumed then:	
Heat input required to replace lost hot water	= 925.8 MJ/hr
Gas equivalent	= 8.78 Therms/hr
Cost of Gas used to heat make-up water @ 35.2p per Therm	= £3.09 per hr
Cost of water treatment	= £15 per hr
Total cost of leak	= £18.09 per hr
Cost of Thermographic Survey	= £1000.00
Pay-back period for Thermographic Survey	**= 2.3 days**

Notes: This cost analysis is based purely on the cost of energy and water treatment lost. If the thermographic method of leak detection is compared to the conventional "dig-a-hole" method, then the advantages become even more obvious as each unnecessary hole costs an average of £500.

For more information contact:

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