Gassing problems with heating systems after power flushing

Problem:

After the power flushing routine has been carried out, the heating system seems fine, but subsequently the engineer receives a call, sometimes within 24 hours, to say that the system has air or gas in it. The system is bled, only to find that within a short time the customer is complaining of the same problem again.

Possible reasons for gas problems may be:

1. The engineer has been operating the Clearflow pump with the water level in the tank too low, and the pump has been pulling in air.

   This happens when the water intake is barely covered by the water. Apart from reducing the (desired) high flow rate, the water can become so aerated that, even though radiators have been bled after the power flush, for several days after the aerated water gradually releases the remaining air, and this accumulates in the top of radiators. We always recommend at least 6" (15 cm) of water in the Clearflow tank.

2. If the engineer has used an acidic power flushing chemical such as PowerFlush FX2, but hasn't also carried out the precautionary circulation through the system of Neutralising Crystals afterwards, there may be a small residue of acidic flushing material in the system.

   This can lead to corrosion of radiators, and will liberate gas. However, the gas won't be air, it will be hydrogen. Take a sample of gas from a radiator bleed valve. Hold a plastic jug / beaker upside down over the bleed valve during the bleeding. If hydrogen is present, then as it is lighter than air, it rises and displaces the air in the beaker, leaving a pocket of hydrogen trapped in the upside down beaker. Hold a cigarette lighter under the beaker, and if it pops, then the gas is hydrogen.

   If hydrogen is present, then corrosion is occurring, so suspect the above reason.

   N.B. Don't hold a cigarette lighter direct to a bleed valve to test for hydrogen – you could end up with scorched curtains or wallpaper!

Solution:

Check the pH of the heating system water - it should be very close to 7 (even with Systemsafe DM inhibitor in, as this is a neutral formulation). If the water has a pH lower than 6 to 6.5, then this is probably the cause of the gassing. Briefly flush the system with fresh water (with all radiator and lock shield valves wide open) and then circulate a solution of Neutralising Crystals through the system for ten minutes at standard dosage.

3. If the gas produced is not hydrogen, but is air, then it HAS to come from somewhere. Air is not a by-product of corrosion, but will be being pulled into the system, probably on the negative side of the circulator pump, and this should be checked.

© Kamco Ltd 2011

It is possible that air is being introduced by a vented system ‘pumping over’ the expansion tank (ejecting water from the expansion pipe back into the f & e tank), but we would expect that this would have been found and corrected at the time of the power flush. The presence of red rust colouration of the system water is a clue.

Causes for pumping over may be:

- A partial blockage causing a restriction in or around the cold feed and open vent connections.
- The cold feed and open vent connections may be piped wrongly, in which case the pipe work will need altering.
- The circulator pump may be incorrectly sited.
- The pump may be oversized.

Finally:

Occasionally we hear of a system which continues to gas after every thing else has been tried, and for no plausible reason. Chemists term this ‘runaway’ corrosion and fortunately it is rare.

In such cases, we can formulate for the engineer a special version of Systemsafe DM inhibitor, with a much higher than normal level of "yellow metal inhibitor", and this often stops the unusual corrosion by filming out on copper, brass and bronze, and effectively suppressing any galvanic corrosion.

© Kamco Ltd 2011