

The QTF Method

One scientific and logical way to solve problems is to create a method. A method can be tested, changed and refined to perfection. The QTF Method and equipment is continuously refined and simplified, but the six steps remain.

1. INSPECTION

Inspection is always the first step. Without diagnosis no treatment. The inspection provides valuable knowledge and we never implement any measure without knowing exactly what is needed for your system to function optimally. Inspection should be performed regularly, especially if large changes have been made or a top-up carried out.

First, a visual inspection is carried out looking for weaknesses, rust-coloured leaks etc. We have seen most things and recognise early on the symptoms of fluid problems. The technical design is checked,

we have sold knowledge of systems and are used to identifying weaknesses, even in the system design. Fluid samples are assessed regarding appearance, smell, particles etc. Finally, total gas level, pH value, oxygen gas level and conductivity are measured. The fluid should be as clean and clear as when it was poured into the system, anything else forebodes problems. The inspection concludes with the provision of a detailed inspection report, including recommendations.

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2. SYSTEM CLEANING

If the inspection showed the system fluid contains particles, red rust, black rust, magnetite and/or environmentally hazardous substances, and is aggressive to the system, the fluid should be cleaned or, perhaps, even replaced.

Backwash

Backwashing is carried out alternately in both directions, to loosen particles that may have fastened. We do this using equipment we have developed, which reverses the direction of flow at intervals.

Filtration

The filter bags have a pore size of 1 µ, which is roughly equivalent to 40 times less than the visibility limit.

Additional filtration is carried out if needed, e.g.:

- Magnetic filtration to separate magnetite.
- Filtration for cleaning metal containing system fluid.
- Absorbent filtration to remove chemicals from a contaminated system fluid.

The filtration is only concluded once the fluid shows an acceptable conditions and fulfils REVAQ's regulations.

3. FLUID REPLACEMENT

QTF has a method for cleaning contaminated fluid during full operation. This cleaning process means that in many cases fluids do not need replacing and large amounts of money can be saved. The system is analysed to ensure the fluid meets REVAQ's requirements for fluids that can be released into the municipal sewer network. It is important to know the fluid's status, not least if a leak should occur.

If the fluid is a heating fluid or coolant mixture, e.g. glycol solution, all of the fluid is replaced. QTF takes care of the used fluid and sends it for destruction. The system is then refilled with new, clean fluid and degassed.

System fluids containing additives that lower the freezing point, e.g. glycol and saline solutions, are especially sensitive. The oxygen in the system fluid breaks down the inhibitor packet (corrosion protection substances) and then the glycol/saline solution. Such a system fluid becomes very aggressive to metals!

Environmentally friendly glycols are even more sensitive to oxygen-rich fluids. The glycol should decompose rapidly if it gets out into the natural world, where oxygen and humus bacteria do the job. The importance of an oxygen-free system fluid is obvious! In addition, cold fluid carries more oxygen than warm, and this is normal in cooling systems where glycol is used.

To remove precipitate residues that may remain from earlier flushing, the new coolant/heating solution needs post-filtration.

4. FAST DEGASSING

If gases are observed in the system fluid, fast degassing needs to be done. The sooner the liquid is treated the better. The oxygen in the liquid accelerates the corrosion process and the more the oxygen the faster the rate of corrosion. The best way to stop it is to remove the oxygen quickly. No oxygen, no corrosion!

At 6.0 mg/l oxygen, iron oxidises at a rate of 6.5 g/m² per day. High levels of oxygen gas are devastating for the service life of plumbing, heating and sanitation systems. The corrosion process starts immediately after filling. Low gas levels in the system fluid are also a condition for an efficient and lasting initial adjustment.

QTF fast degassers can reduce the gas level to acceptable levels in a very short time, i.e. less than 0.5 mg oxygen/litre for water and 0.8 mg oxygen/litre for glycol, saline solutions and ethanol. Carbon dioxide and other gases that take energy (nitrogen gas, hydrogen etc.) are evacuated. The unit continuously degasses large flow volumes. A flow of up to 11 m³/h (larger flows, if needed) through the unit are subjected to 96 % vacuum across a 60 m² surface. QTF's fast degassers 300 times more effective than other common commercially available degassers.

Filtration with 1 µ filter is performed as standard during fast degassing.

System fluids should be degassed no later than 7–10 days after filling.

5. MAINTENANCE DEGASSING

Once fast degassing has been completed, QTF maintenance degassers should be installed to guarantee continuing low gas levels in the energy carrying system fluid. Oxygen enters plumbing, heating and sanitation systems in different ways; dilution top-ups, valves, "diffusion-free" hoses, for example, in under floor heating systems, incorrectly placed automatic degassers or incorrectly adjusted expansion vessels, to name just a few we often bump into.

The safest and smartest thing to do is install a QTF maintenance degasser, which continuously keeps the system fluid effective.



6. FOLLOW-UP INSPECTION

Once fast degassing is completed, the need for any maintenance degasser and routine follow-up inspection is assessed, as well as whether new adjustment/balancing of the system is required.

The gas levels should be checked within 6 month of completed fast degassing, or sooner if a change has been made to the system. Renovations, expansions etc. that require topping-up with new system fluid lead to a need for fast degassing or continuous maintenance degassing.

Sometimes, the gas levels may have risen due to external factors, even if maintenance degassing is installed. In which case, during the follow-up inspection, QTF can supplement the maintenance degasser with a turbo unit for a while, to regain the low level of oxygen gas. The turbo degasser reinforces the effect of the maintenance degasser by a factor of 7. QTF offers agreements regarding fluids containing various levels, from regular control measurements to ensuring the quality of the fluid.

! On qtf.se, you can also watch films showing every step in the QTF Method.



"We transform water, from food to technical fluid for energy distribution"