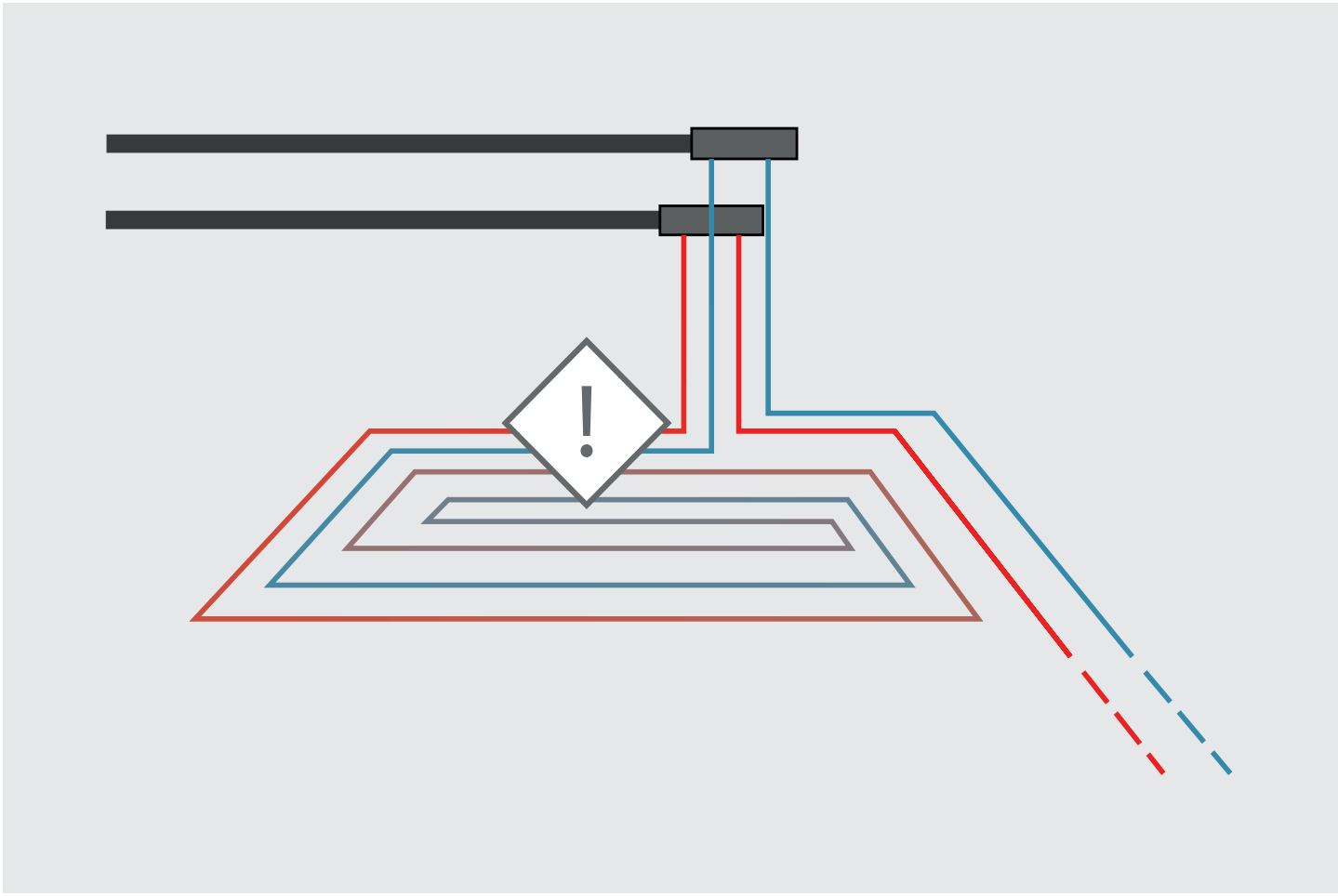
risycard

RICA 07 - oxygen diffusion through plastics



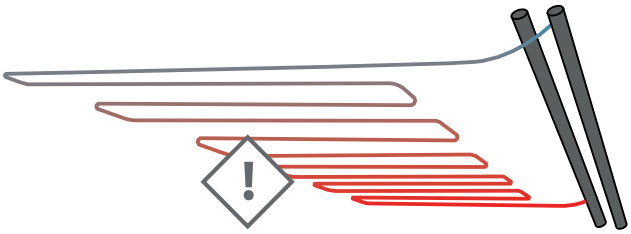
RISK OF OXYGEN ENTRY

Most plastics and rubbers are waterproof, but not gastight. Despite the fact that the installation is pressurised relative to the atmosphere, oxygen can still enter due to the difference in partial pressure.

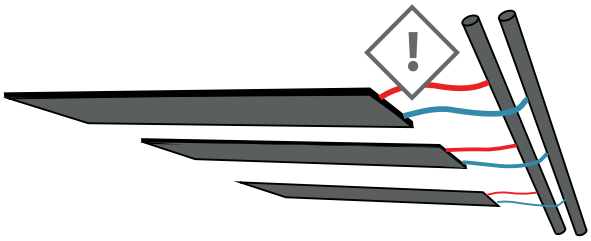
OPERATION

Plastics are increasingly being used in heating installations, for example in flexible connections, pipes and seals.

- not all components can be connected with rigid pipes because of their arrangement
- manufacturers use flexible pipes in their heat or cold generators
- the specialist trade supplies ready-to-use flexible connection sets
- flexible pipes in underfloor heating
- press fittings with rubber O-ring seals

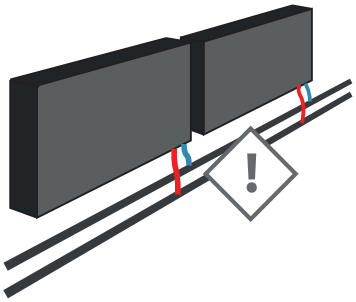


Climate ceilings

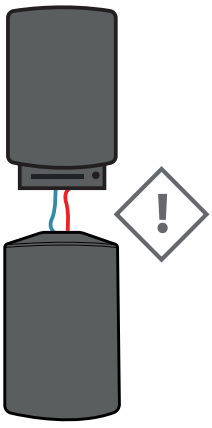


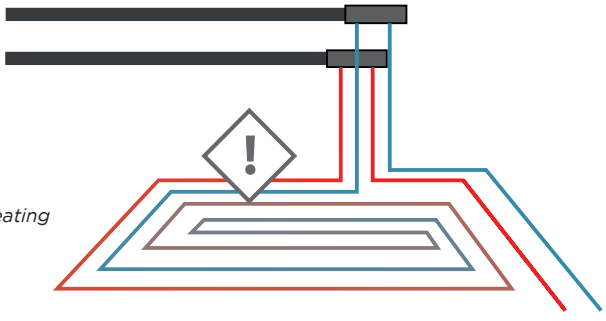
Cooling beams

Fan convectors



Boiler - boiler connections





Underfloor heating

RISK OF OXYGEN ENTRY

The oxygen entry (usually called oxygen diffusion) **results from permeation through non-oxygen-tight materials.** This migration is caused by the difference in the partial pressure for oxygen in the system water and outside it. Despite the higher total pressure in the installation, the partial pressure for oxygen IN the installation is much lower than on the outside. After all, the initial oxygen present in the system water has already been used up very effectively in the corrosion process. So oxygen is pushed in with disastrous consequences.

Well-known examples of non-oxygen-tight materials are: rubber, polyethylene, polybutene, polypropylene, PVC. In central heating and cooling installations we find these in flexible hoses, pipes and seals (e.g. O-rings).

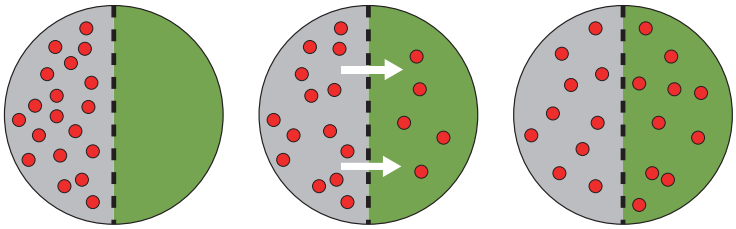
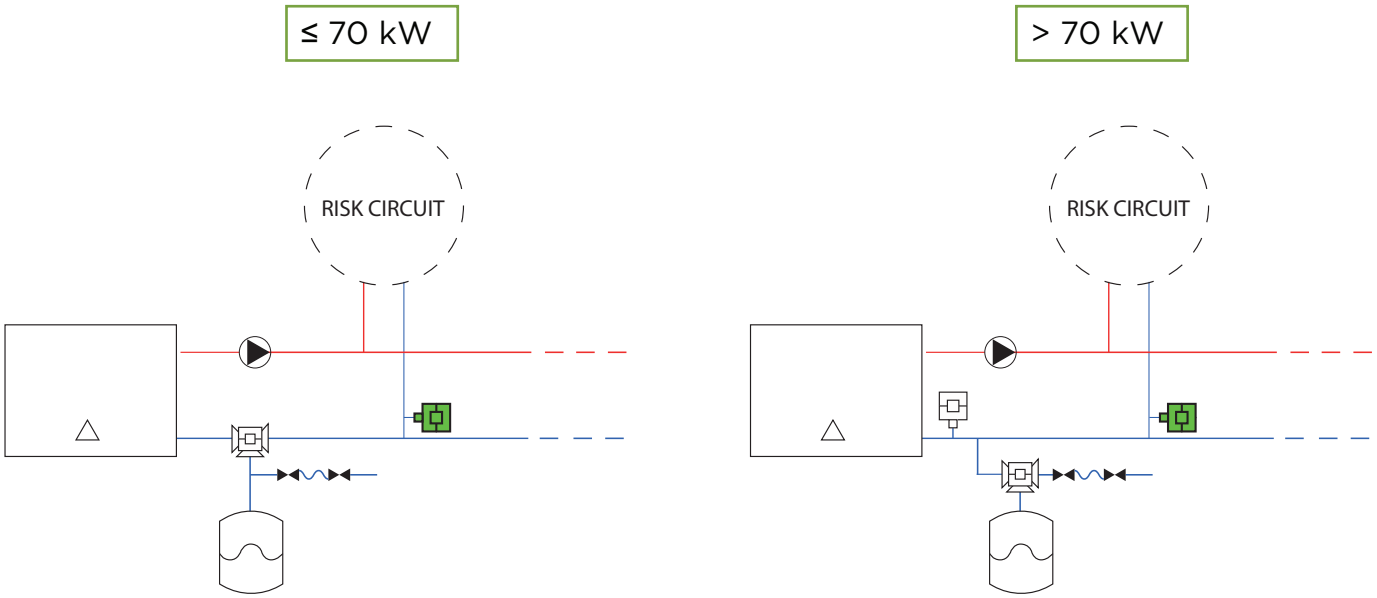


Fig.: difference in partial pressure for oxygen in non-oxygen-tight materials

There are several case studies available from Resus that illustrate the Risks covered in the Risycard series.

THE IMPORTANCE OF RISYCOR

In addition to the Risycor in the general return (see our application guideline), we recommend placing a Risycor on the return of the risk circuits, where oxygen-permeable materials could not be avoided. After all, the higher corrosion rate makes the oxygen entry there comparable to other locations in the installation. One then knows at least the “unavoidable” corrosion rate of the entire installation and the differences between parts where oxygen ingress could be avoided, which offers the possibility to intervene in time if the corrosion rate increases due to other ways of oxygen ingress.
For a good follow-up of the entire installation, the recorded data should be checked using the Resus dashboard at least once a year.



ABOUT US

Resus is the manufacturer of Risycor, a system for continuous corrosion monitoring in closed heating and cooling systems. Like a smoke detector, a Risycor is an early warning system that prevents problems by providing an early warning.

Corrosion is ALWAYS the result of oxygen ingress, which in 90% of the cases
Is the result of poor pressure control. The remainder of the cases are often the result of failing risk components. Read more about this in our Risycards and Risybasics.
The application of Risycor is explained in the Risycor Application Guidelines.

READ ALSO

RICA 01 - automatic air vents
RICA 02 - green zone
RICA 03 - neutral point
RICA 04 - failing air non return valve
RICA 05 - oxygen diffusion open bladder
RICA 06 - breakdown of PWH water
RICA 07 - oxygen diffusion
RICA 08 - content indication constant pressure
RICA 09 - clopen systems
RICA 10 - pre-pressure

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