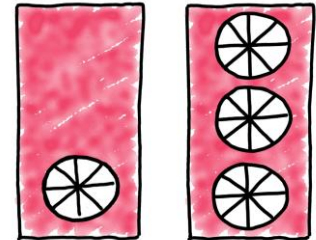


Air tightness measurement for damage analysis

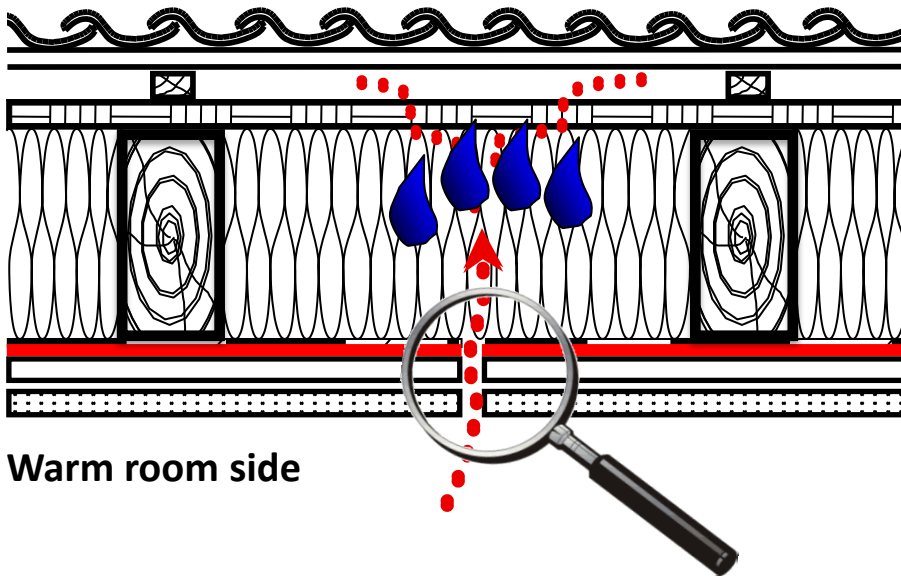


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Analysis of the building envelope in case of damage

If problems occur in an existing building, for example with moisture, such as condensation water in building components, one of the causes can also be an inadequate air-tightness level. By creating an artificial negative or positive pressure with the BlowerDoor measurement system, penetration openings and flow paths can be determined.

Cold outside



Warm room side



Condensed water on the cold side of the insulation



Airtight barrier

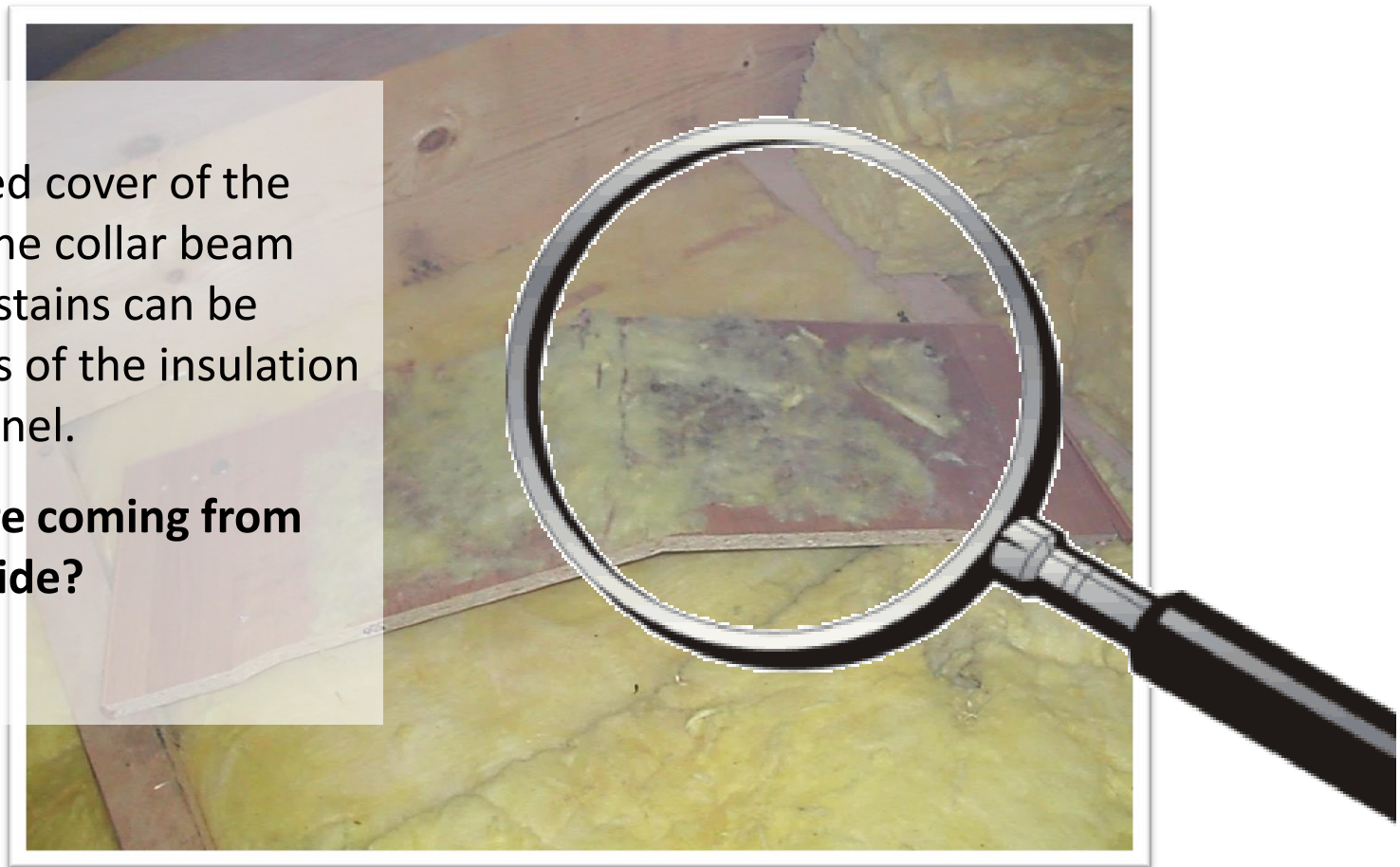


Flow path of warm room air enriched with moisture

Case of damage: Moist insulation in collar beam position

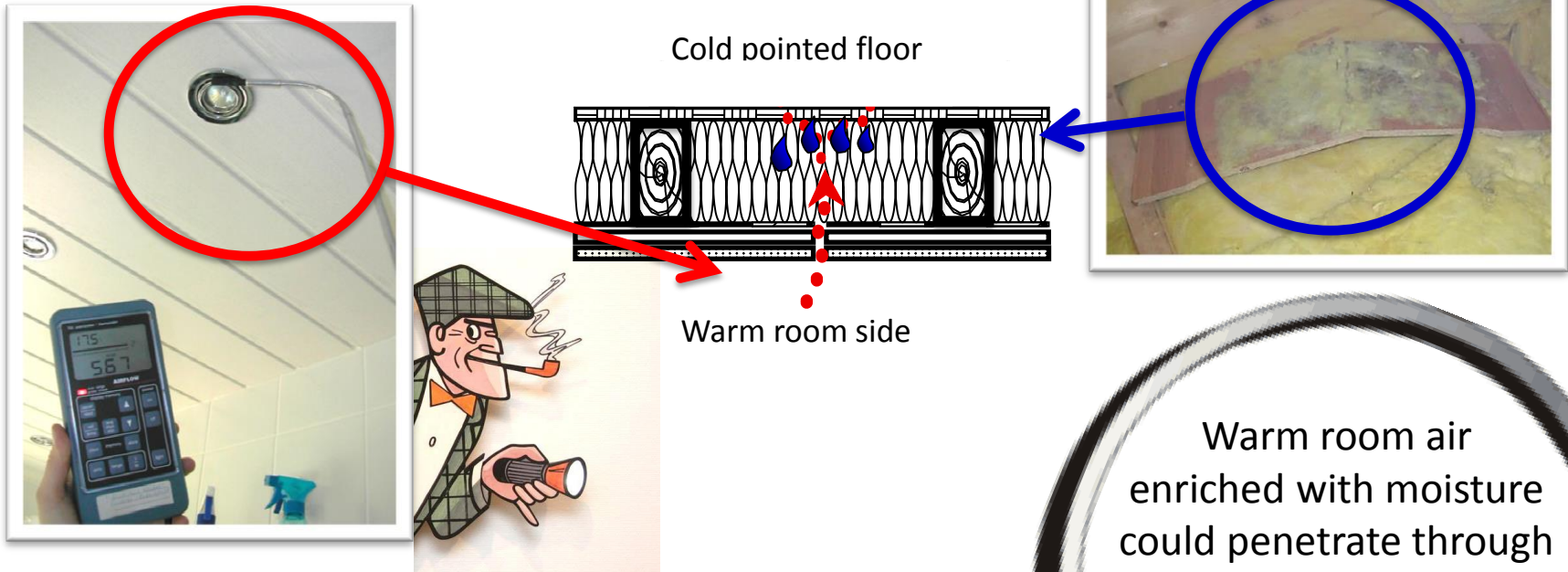
On the inverted cover of the insulation in the collar beam layer, mildew stains can be seen and parts of the insulation stick to the panel.

Is the moisture coming from outside or inside?

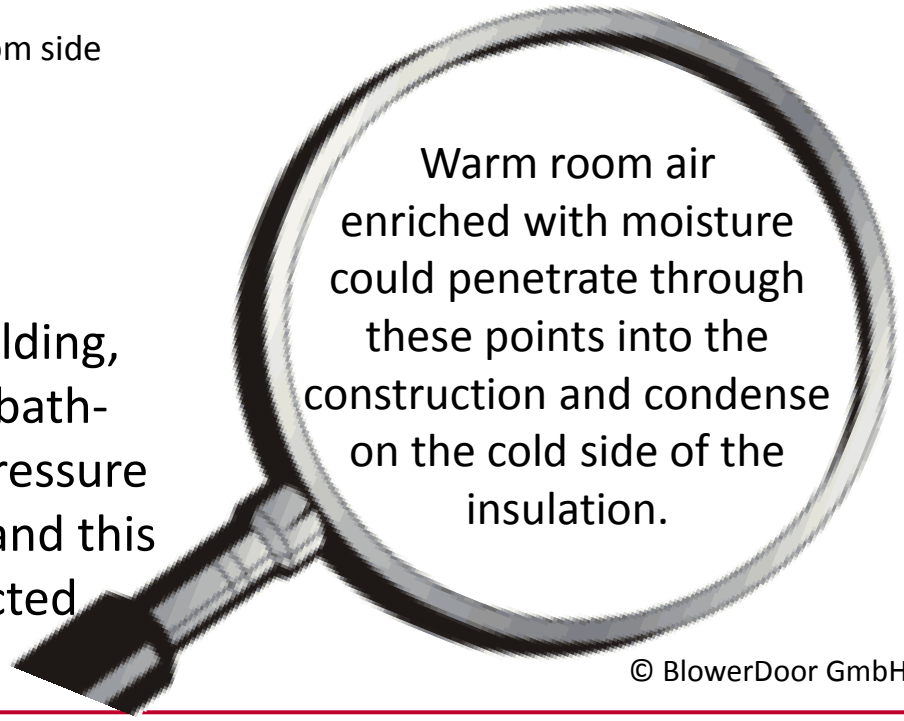


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Cause of damp insulation



At a negative pressure of 50 Pa in the building, leaks were detected in the ceiling of the bathroom with the anemometer. At an overpressure of 50 Pa, fog was applied to these areas and this was clearly visible in the area of the affected components in the pointed floor.



Warm room air enriched with moisture could penetrate through these points into the construction and condense on the cold side of the insulation.

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Case of damage: wet underlay and wet rafters

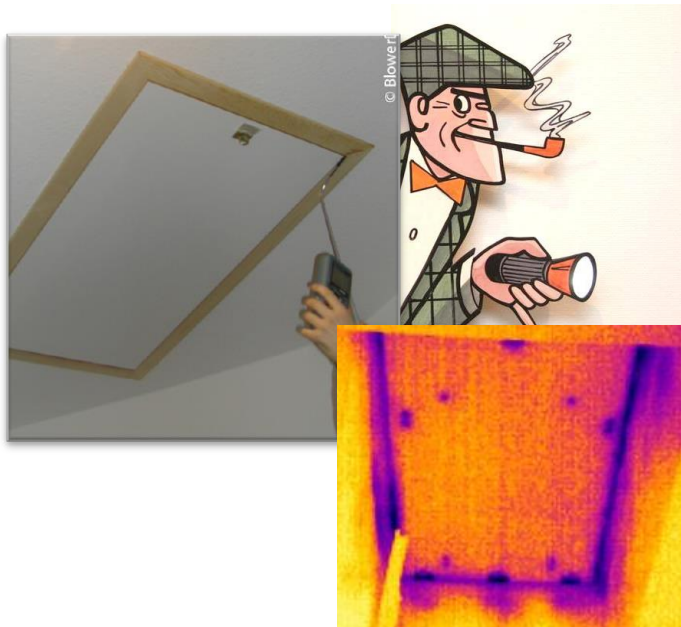


Water droplets have formed on the underside of the under-span track in the uninsulated pointed floor. The rafter is also wet in the area of the spanning web.

Does the moisture come from outside or inside?

Cause of drop formation

At a negative pressure of 50 Pa in the building, an anemometer and a thermographic camera detected leaks at the joints of the floor hatch and flap.

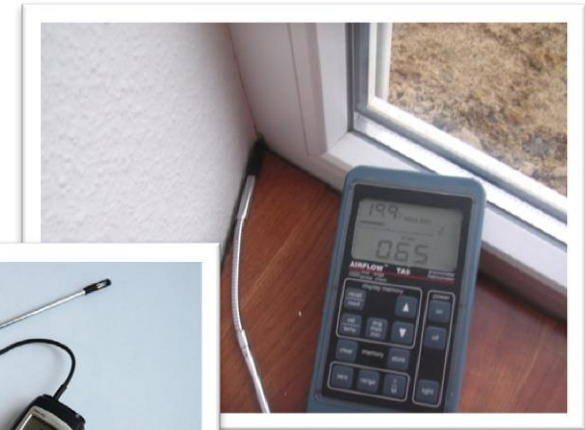


When the hatch was opened, it turned out that construction foam was used. This is not airtight. The warm room air, enriched with moisture, could flow in masses through these leaks into the pointed floor and condense on the cold underlay.

Measuring equipment



- Measuring system BlowerDoor Standard or BlowerDoor MiniFan with DG-1000 or DG-700
- Leak detection device, e.g. anemometer, fog machine, thermography camera ...



Literature and links

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- Fraunhofer Institut für Bauforschung IBP: www.ibp.fraunhofer.de