Building Drying Services

BEQUIP LIMITED

www.bequip.com

Bequip Ltd has been at the forefront of building drying following groundwater flooding and incidental water damage for over 30 years. We stock a comprehensive range of specialist drying equipment including pressure fans, air movers, dehumidifiers and specialist injection/extraction drying equipment.

Incidental water damage, caused by leaking pipes or defective sanitary fittings, is commonplace and isn't always evident to the naked eye. Using the latest damp testing technology, we have the expertise to undertake structural damp surveys to confirm the cause, extent and levels of possible water impact.

Residual damp in new build construction, as a by-product of wet trades such as plasterers and floor screeders, can also be a recurring problem for housebuilders. Condensation, arising from excess moisture, can still cause damage to a building's fabric long after completion.

Using a range of specialist moisture detection equipment we are often asked to provide easy to understand condition reports and practical recommendations for drying. Moisture meters can't diagnose the cause of damp but they can provide an indicative measurement which might pinpoint areas worthy of further investigation.

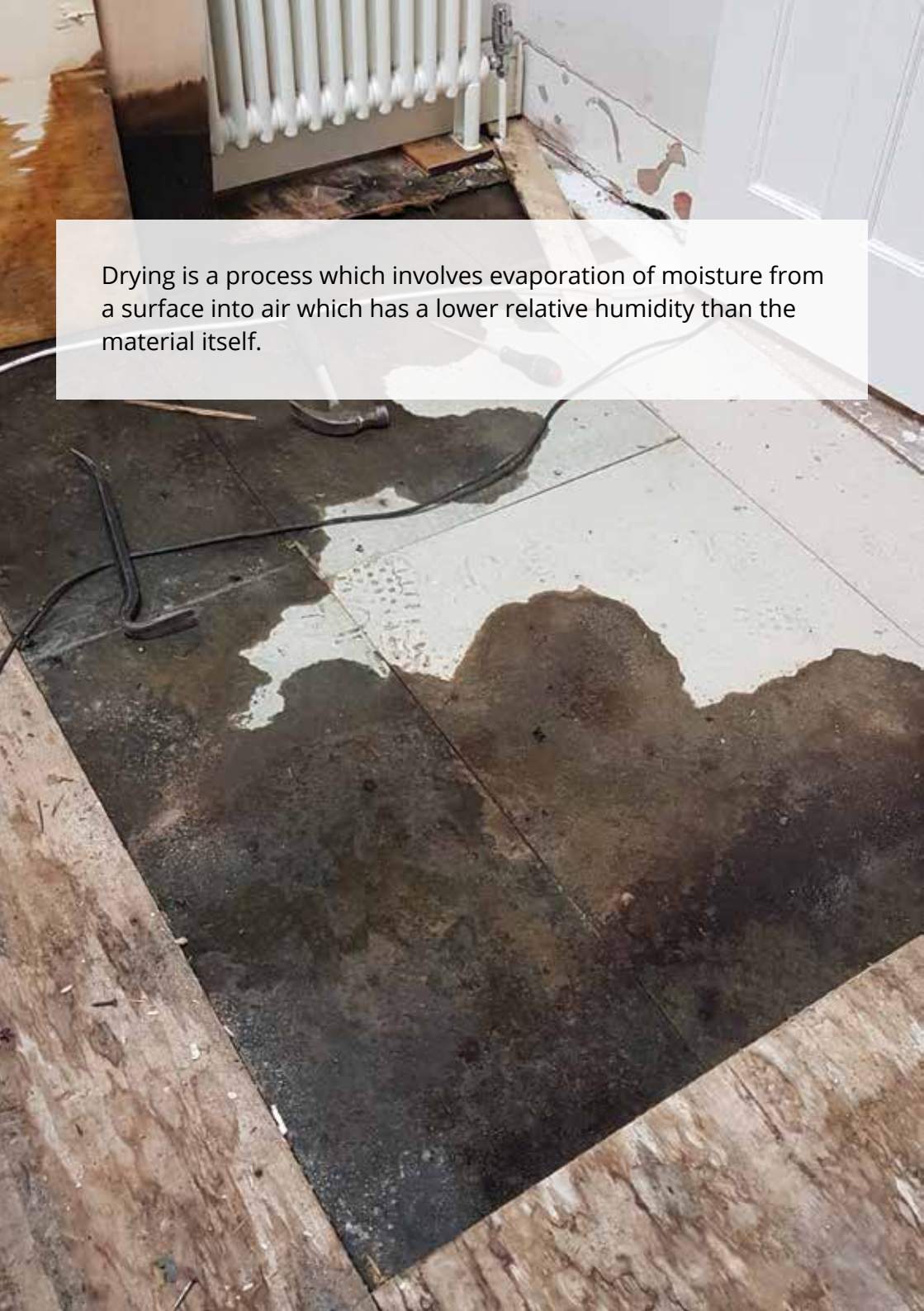
Damp surveys

Non-invasive moisture meters are not adversely affected by the presence of surface moisture. They can detect moisture within a substrate up to 3/4in (25.4 mm) below the surface.

Pin Type moisture meters are used to measure the moisture level at the surface and at incremental depth. The readings produced are precise and specific to the immediate area of contact of the electrodes. A range of auxiliary probes such as hammer electrodes and deep wall probes can be plugged in to establish the presence of moisture in different building materials which might otherwise go undetected.

Hygrometers are typically used to measure relative humidity at depth. Unlike pin type probes the readings given can't be misinterpreted and don't give a false-positive reading due to salt contamination or electrical conductance.

A hole is drilled to a suitable depth in the structure to be measured and covered with a plastic cap. The humidity of the air in the hole is left to equalize with the humidity in the structure. Readings below 75% (relative humidity) indicate that the structure is sufficiently dry for either floor coverings to be laid or decorative finishes to be applied.



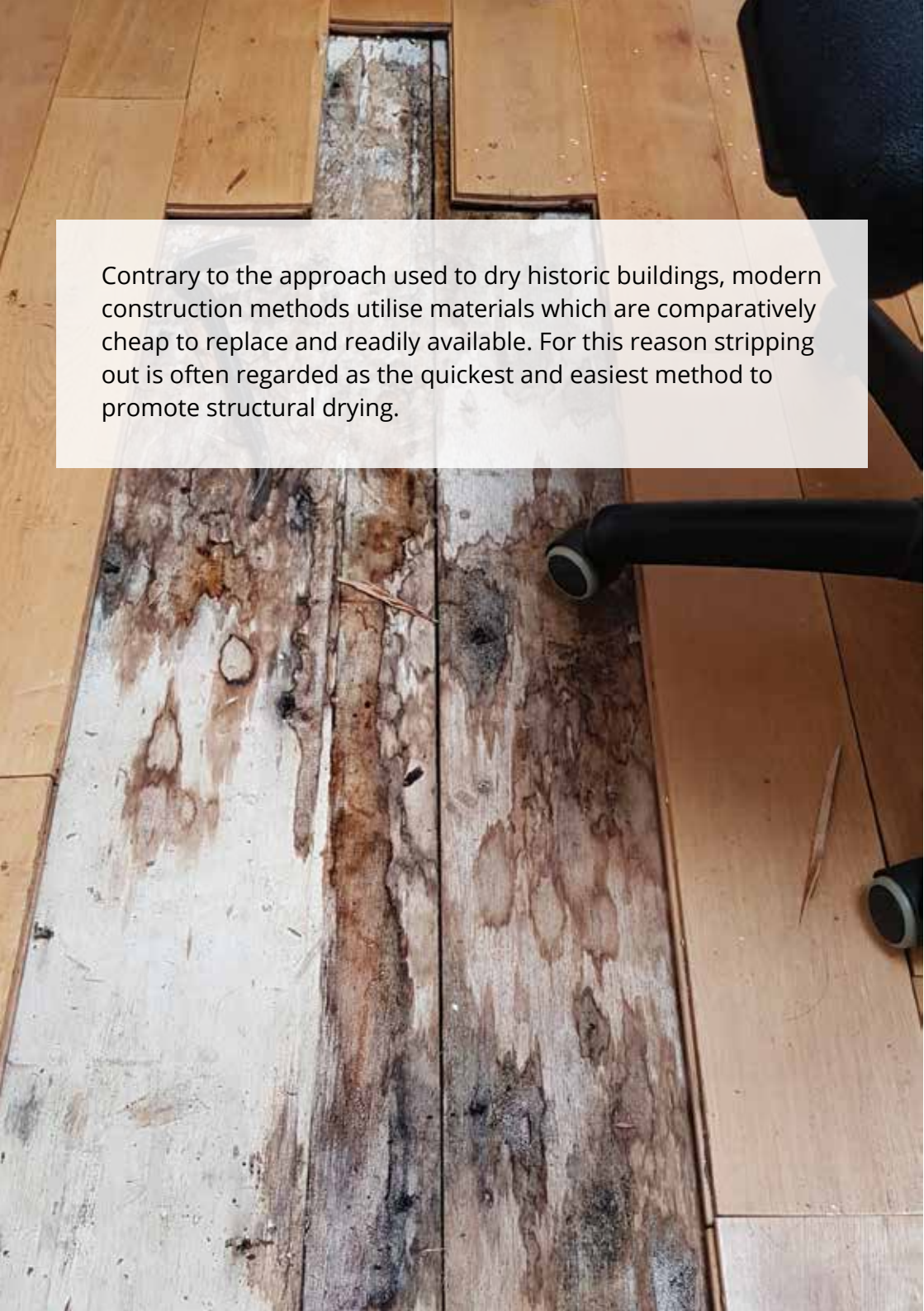
Drying is a process which involves evaporation of moisture from a surface into air which has a lower relative humidity than the material itself.

The principles of drying

Building materials used in construction can be placed into one of two categories in terms of moisture absorption/ retention; permeable and non-permeable. Permeable building materials, such as brick and plaster and, to a lesser extent, timber can absorb and retain large quantities of water. Conversely they dry relatively quickly, aided by assisted drying techniques.

Non-permeable materials such as plastics and natural rubber used in flooring and vinyl polymers used in paint coatings are generally resistant to moisture ingress. The down side to this characteristic is that they prevent moisture evaporation when water is introduced unexpectedly. A damp wall that has been painted with vinyl paint or a concrete floor overlaid with carpet tiles may never dry naturally.

Unfortunately building construction is neither straightforward nor consistent. Invariably both material types are used in tandem which creates conflicting views of how best to approach the drying process. For this reason some form of assisted drying, as well as targeted stripping out, is normally required to dry the structural elements.



Contrary to the approach used to dry historic buildings, modern construction methods utilise materials which are comparatively cheap to replace and readily available. For this reason stripping out is often regarded as the quickest and easiest method to promote structural drying.

Stripping out

Most wood will expand and deform or warp when wet. Timber with a moisture content above 20% is susceptible to fungal attack; the longer it remains wet, the higher the risk of rot. Plasterwork is particularly susceptible to water damage. Soft, lime-based plasters (often found in older, heritage buildings) generally remain intact, whereas gypsum plasterboard tends to crumble and disintegrate.

Just as we have described the necessity for stripping out to allow the evaporation of moisture, the concept of removing impermeable floor coverings and residues very often gets overlooked. The floor is often the largest but also the last area of a building to dry following incidental impact.

Industrial surface grinders, incorporating Polycrystalline Diamond (PCD) segments can be used to remove old glue residues, levelling compounds and bitumen coatings from concrete floors quickly and efficiently. Larger, industrial areas can be prepared using captive shot blasting technology.

Different drying methods are not mutually exclusive. Accepted wisdom is that there isn't one correct approach for all situations. In many cases a combination of drying techniques may be appropriate, depending on a building's age, construction and level of occupation.

Conventional drying methods

Natural drying is the slowest method of drying a building and can be severely affected by the prevailing ambient conditions. Mould and fungal growth may develop more quickly, particularly if temperatures are above 18°C and there is insufficient air circulation.

Convection drying typically makes use of a building's own heating or ventilation system but may also include additional fan heaters or air movers. Increasing air movement creates turbulence which in-turn encourages evaporation of moisture.

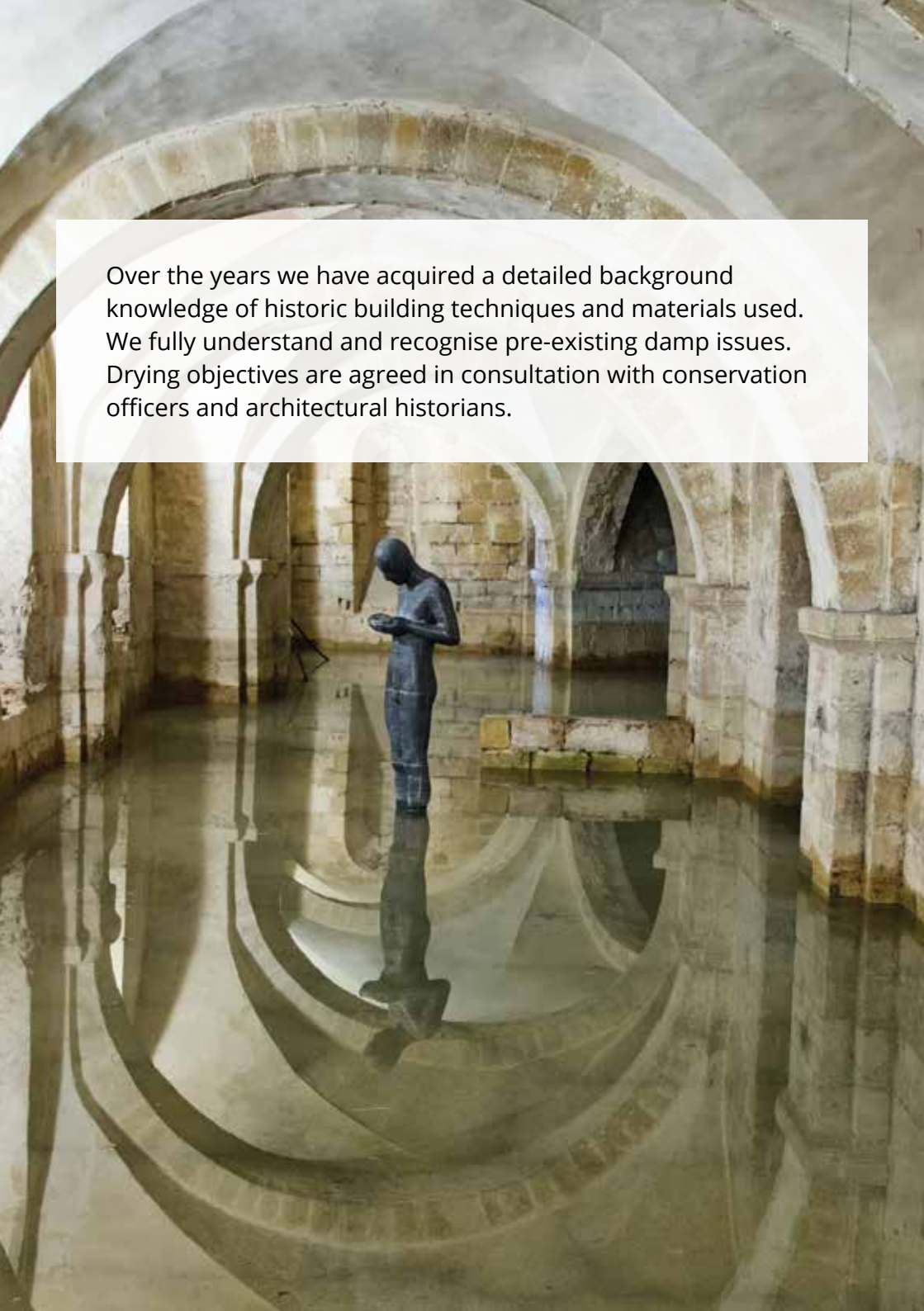
Dehumidification (using desiccant or refrigerant dehumidifiers) is typically the preferred method for "assisted" drying. The process works by removing moisture from the air. In so doing the air temperature in the room increases which encourages evaporation from the building fabric. It is possible to speed up the process by the introduction of air movers or fans.

Significant problems can arise when insulation gets wet, either from incidental impact or from a combination of incorrect installation coupled with extreme environmental conditions. Multi-layered floor installations can be successfully dried using a combination of high-pressure turbines and desiccant dehumidifiers installed to either extract damp air or inject pressurized, dry air.

Injection/ extraction drying

Extraction (suction) drying in the first instance is the preferred method for the removal of excess free water from construction layers, typically following groundwater flooding. Damp air is extracted via a water separator and filter before being expelled from the building through an exhaust pipe. At the same time dry air is forced into the structure which creates high negative pressure as dehumidifiers lower the relative humidity in the room.

Injection (pressure) drying is one of the most effective methods of drying layered constructions such as walls, floating floors and concrete slabs where water has leaked into floor cavities or insulation layers. Dry, pressurized air is forced into holes drilled at strategic points in the various construction layers via a network of inter-connected hoses. As the temperature rises wet air is expelled under pressure through a series of exhaust holes.



Over the years we have acquired a detailed background knowledge of historic building techniques and materials used. We fully understand and recognise pre-existing damp issues. Drying objectives are agreed in consultation with conservation officers and architectural historians.

Historic buildings

Opening-up to investigate potential damp issues should not be confused with 'stripping out'. Initial surveys are limited to non-destructive keyhole techniques using specialist equipment including endoscopes, borescopes and moisture meters with deep wall probes.

If stripping-out is required it is carefully targeted, planned and supervised to avoid needless removal of irreplaceable materials and features. In many cases the wholesale removal of floor boards and historic timbers isn't necessary; they can often be successfully treated, dried and restored in-situ.

If circumstances allow, natural ventilation is the preferred method of drying. This approach, however, should be balanced against the increased likelihood of mould growth and potential timber decay. Controlled mechanical ventilation, using fans or air movers coupled with modest background heat (preferably around 18–20°C) can speed up the process by focussing air movement in strategic areas.

For free advice, site surveys and quotations please contact us:

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