Insight

Déjà vu All Over Again…

Two things that are obvious…
It is ok for things to get wet if they dry….

Water sensitive materials are…wait for it…water sensitive…

We are reducing the ability of things to dry….and we are using more things that are water sensitive…

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This is all about the current ongoing disasters in Great Britain, New Zealand and Australia that are due to bad insulation and mechanical system retrofits and bad new construction….they are repeating what we did in Canada in the early 1970's through the mid 1990's…then what we did in the US in the 1990's to the 2000's….and still now in some places...

All of the US stuff could have been avoided but it wasn't….it is still a problem….and clearly all of the Great Britain, New Zealand and Australia stuff happening now could have been avoided…

We had an energy crisis in the 1970's…cheap oil went away because of a war in the Middle East. In Canada we introduced the CHIP and COSP programs. CHIP was the Canadian Home Insulation Program and COSP was the Canadian Oil Substitution Program. Folks got cash from the Canadian government to insulate attics and walls. They also got cash to go off oil heating and onto gas heating.

Photograph 1: Attic rot in a Canadian attic – thank you CHIP

So what was the problem? Ah, the insulation worked and reduced energy flow. Drying requires an energy exchange. We blew a lot of insulation into attics and into walls and that reduced drying potentials. Attics would get wet from air leakage from the house below. That moisture would be removed by attic ventilation in the old days. The air outside was cold but when it moved into a poorly insulated attic the escaping heat would warm up that cold dry air and give it the capacity to pick up moisture and keep the attic dry. With lots of insulation the attics stayed wet because there was insufficient heat loss from the house below to dry out the attic. Yup attics rotted (**Photograph 1**).

Photograph 2: Interior surface mold in a Canadian home – thank you CHIP and COSP

So what to do? Air seal the attic ceiling to keep the house moisture from getting into the attic. It worked….but…the air sealing made the occupied part of the house wetter and we got interior surface mold if we were lucky

(**Photograph 2**). If we were unlucky the oil and gas furnace chimneys would not work and we would get spillage and back drafting of products of combustion and folks would get sick and a bunch died. The problem was made worse by replacing oil furnaces with gas furnaces and connecting them to the existing chimneys designed for oil furnaces. The venting of products of combustion was made worse…condensation would occur in the chimney flues and sometimes even freeze over.

Photograph 3: Retrofit wall insulation -thank you CHIP…that is what I looked like when I was 28…

It got worse….we also insulated walls that were previously uninsulated (**Photograph 3**)….and caused the walls to rot and paint to fail (**Photograph 4**).

Photograph 4: Rotting moldy siding -thank you CHIP

We eventually figured it out in Canada….sealed combustion appliances, controlled ventilation systems to control interior moisture and contaminants…water control layers, air control layers and vapor control layers for walls and roof assemblies….but it was ugly and painful until we did.

The US began to repeat the mistakes the Canadians made…but got onto fixing the issues faster…the DOE Weatherization Program handled the spillage and backdrafting issues of combustion appliances pretty effectively…but it took a fair bit of time to handle the attic rot, wall rot and paint issues. We still have them in the United States…but nowhere to the levels we had in the 1990's. In the United States we also got the controlled ventilation pretty much figured out. Yes, yes, we are still arguing about rates but considering where we were we are in a good place.

What else could go wrong? Hah. Let's stop building with wood from old trees and build with manufactured wood, composite wood and get rid of plaster and line our buildings with paper. We are still sorting that out…but I think we are close to making all the material stuff work….before we screw it up again with the carbon stuff….yup carbon is going to be fun….it is already fun…

Think about what happened. Canada screwed up first and figured things out. The US did not learn the lessons the Canadians learned…the US had to screw it up themselves and then fix it themselves. Notice the pattern….knowledge and experience seem to have trouble crossing borders…. It gets even worse when knowledge and experience that comes from doing stupid things…has to cross the Atlantic Ocean and the Pacific Ocean.

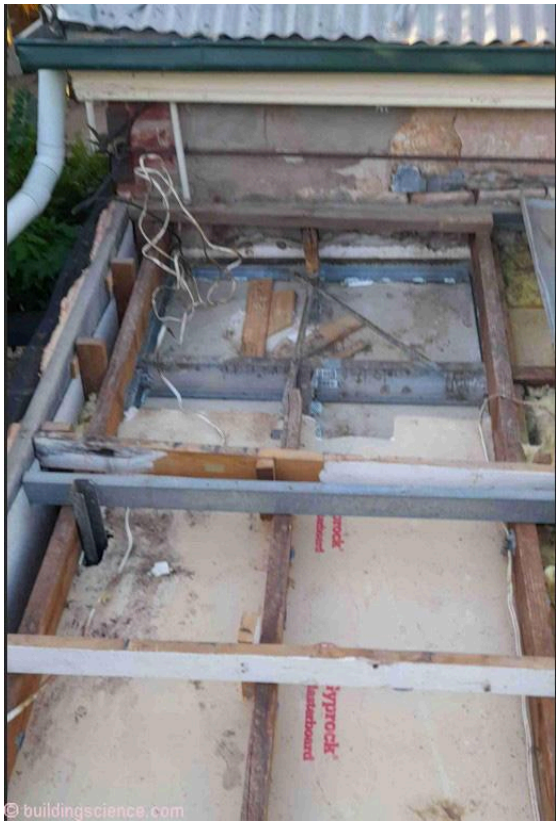
New Zealand and Australia are in the middle of a mess that could have been avoided. They are insulating buildings without understanding what happens when the energy flow is significantly reduced.

Photograph 5: New Zealand treated plantation grown wood worked just fine

It gets worse….of course it does…the New Zealander's have gone from using old growth wood to using plantation grown wood…. It worked at first because the plantation grown wood was treated to control decay (**Photograph 5**)…but you know where this is going…due to pressure from….I will be polite here….folks who did not like the treatment…wood stopped being treated. It got worse…of course it did…adding wall cavity insulation reduced the drying potential. There was no way untreated plantation grown wood stood a chance in an insulated wall or roof. And more…the drying potential of the exterior claddings also was reduced and lead to decay and mold (**Photograph 6**).

Photograph 6: The drying potential of the exterior claddings was reduced and lead to decay and mold

In Australia, not ever wanting to be second to New Zealand in anything, roofs have become a mess. Yup, insulating Australian roofs reduces drying potentials…Canada and the US exported the rot technology across the Pacific (**Photograph 7, 8 and 9**).



Photograph 7: Insulated deteriorating Australian roof (photo Courtesy Jessica Allen, Climasure, Australia)

Photograph 8: Soffit condensation damage (photo Courtesy Jessica Allen, Climasure, Australia)

Photograph 9: More soffit condensation damage (photo Courtesy Jessica Allen, Climasure, Australia)

So what is happening in the "mother country" to the United States? Great Britain is going through its own rot period…many centuries after its Medieval period. Great Britain needs an "Enlightenment period" to save its existing buildings from the bad energy conservation Net Zero approaches being pursued. Great Britain is targeting decarbonizing its economy and meeting Net Zero by 2050. For the record I have no issue with Net Zero and decarbonizing. I have an issue when approaches lead to the destruction of buildings and the endangerment of occupants.

Roofs in Great Britain leak. They have always leaked. They have leaked for hundreds of years. Here is the important point…and you have heard it before a gazillion times (gazillion is an English unit)…they dried. Yup, they leaked and then they dried. Been doing that before the Pilgrims did the Mayflower thing. They dry because they were not insulated or were very poorly insulated. Guess what happened? You already know it….they insulated leaking roofs…and they insulated pretty well. They just didn't deal with the water leakage first. Spray foam got unfairly singled out….but all the insulations used lead to rot and mold if the rainwater entry was not addressed first.

It got worse in the "mother country" …. they also got rid of chimneys and significantly reduced air change inside the houses which lead to elevated levels of interior moisture. Sound familiar? England meet Canada. At one time Canada was a colony of Great Britain…it became a Dominion in 1867…I think the last time the Maple Leafs won the Stanley Cup. Great Britain needs something like the DOE Weatherization Program. The only folks happy about Great Britain are the fire folks because the buildings are too wet to burn…

References

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