



Mould and Moisture Control for Construction Materials

Do you know where all the moisture comes from?

Hidden moisture risks during adverse weather conditions and how to manage them.



INNOVATIVE CLIMATE SOLUTIONS INC.

Calgary

Edmonton

Fort McMurray

Processes that create moisture.

- Drywall and plastering processes
- Fire retardant coatings
- Concrete curing
- Gypcrete applications
- Frost removal

- Traditional temporary heating methods...?



INNOVATIVE CLIMATE SOLUTIONS INC.

Calgary

Edmonton

Fort McMurray

Processes that create moisture.

- Builders and designers know that certain processes introduce moisture into the building envelope.
- Did you know that many traditional climate control methods used to control moisture actually introduce moisture into the building envelope?
- Do you know how much water your processes are injecting into your building?



INNOVATIVE CLIMATE SOLUTIONS INC.

Calgary

Edmonton

Fort McMurray

Processes that create moisture

- As recently as five years ago the standard type of portable climate control during cold weather construction was traditional “direct fired heaters”.
- These combustion based heaters introduce significant amounts of moisture into a building as a byproduct of combustion.
 - Did you know:
 - Every 100,000 btu’s of propane burned creates 7.7 lbs of water?
 - Every 100,000 btu’s of natural gas burned creates 9.3 pounds of water?
 - Therefore a 1 million btu heater produces up to 93 pounds of water.....per hour! That is 2,232 lbs of water per day...every day.



INNOVATIVE CLIMATE SOLUTIONS INC.

Calgary

Edmonton

Fort McMurray

What does the industry say?

- *“Minimizing water intrusion during construction and developing a proactive plan to effectively deal with wet construction materials are also important considerations.”*
- *“By their very nature construction sites are prone to wetness or uncontrolled humidity.”*
- *“Construction contractors should consider the following to minimize the potential for mould growth:*
 - *Protecting stored materials from moisture;*
 - *Minimizing moisture accumulation within the building;*
 - *Achieving balanced control of thermal comfort and relative humidity in the building;”*
- *“The key to dealing with mould – and with the rising tide of public concern and adverse publicity that surround the issue – lies in prevention.”*
 - Taken from: *“mould guidelines for the Canadian construction industry”* Canadian Construction Association – 2004 copyright.



INNOVATIVE CLIMATE SOLUTIONS INC.

Calgary

Edmonton

Fort McMurray

Potential Challenges

- ***“Drying techniques using fans, natural ventilation, heaters, dehumidifiers, desiccant dehumidifiers, and the HVAC system if operational have unique limitations.”***
 - Taken from: *“mould guidelines for the Canadian construction industry”* Canadian Construction Association – 2004 copyright.
- **In the past this statement was true. The portable climate control industry is evolving and technology exists today that incorporates most, if not all, of the benefits of the processes mentioned above. These technologies are nearly a single source solution for moisture issues inside any building envelope.**
- ***“If water intrusion occurs, every reasonable effort should be made to dry out wet materials within 24 hours (48 hours maximum) from the time when it is reasonably practical to stop the water intrusion.”***
- ***“Where water is introduced as part of a construction process (e.g., forming drywall curvatures), every reasonable effort should be made to dry out wet materials within 24 hours (48 hours maximum).”***
 - Taken from: *“mould guidelines for the Canadian construction industry”* Canadian Construction Association – 2004 copyright.
- **Past experience teaches us that achieving acceptable levels of dryness within 24 to 48 hours is very, very challenging under many weather conditions.**



INNOVATIVE CLIMATE SOLUTIONS INC.

Calgary

Edmonton

Fort McMurray

What happens in the field?

- **You've got a large gypcrete pour to finish and the weather is cool and humid. There is a wood floor above this wet product. You need reduce your exposure to potential mould growth.**
 - Possible solutions:
 - Natural Ventilation – If it is cool and damp, this will be too slow.
 - Heaters – If you use traditional technology you will add water instead of removing it.
 - Dehumidifiers – If the ambient temperature is below 70 degrees F they don't work very well.
 - Hydronic Climate control.
- **It is mid winter and you need to complete the drywall stage of your project.**
 - Possible solutions:
 - Natural Ventilation – If it is cold out this is counter productive and costly.
 - Heaters – If you use traditional technology you will add water instead of removing it.
 - Dehumidifiers – If the ambient temperature is below 70 degrees F they don't work very well.
 - Hydronic Climate control.



INNOVATIVE CLIMATE SOLUTIONS INC.

Calgary

Edmonton

Fort McMurray

What happens in the field?

- **You have just completed a large concrete placement and need to manage the moisture in your envelope for your finishing processes.**
 - Possible solutions:
 - Natural Ventilation – If it is cool and damp, this will be too slow.
 - Heaters – If you use traditional technology you will add water instead of removing it. And you run the risk of oxidation on your slab.
 - Dehumidifiers – Concrete is a very difficult media to pull water from. You will want something more aggressive.
 - Hydronic Climate control.
- **It is June and your wood frame structure just got saturated in the rain. You need to dry the wood framework as fast as possible.**
 - Possible solutions:
 - Natural Ventilation – If it is damp, this will be too slow.
 - Heaters – If you use traditional technology you will add water instead of removing it.
 - Dehumidifiers – The scope of the project will be too large for dehumidifiers to hit the target dry within 24 to 48 hours.
 - Hydronic Climate control.



INNOVATIVE CLIMATE SOLUTIONS INC.

Calgary

Edmonton

Fort McMurray

Conclusion

- ***“The key to dealing with mould – and with the rising tide of public concern and adverse publicity that surround the issue – lies in prevention.”***
 - Taken from: *“mould guidelines for the Canadian construction industry”* Canadian Construction Association – 2004 copyright.
- **As builders, owners, designers you each affect the way moisture is controlled during different stages of construction in your buildings.**
- **Be aware that the portable climate control industry is changing rapidly to keep up with the demands created by the increased awareness surrounding moisture. There are solutions to your challenges you are not aware of yet.**
- **Portable hydronic climate control offers you a powerful, versatile tool to prevent the moist conditions moulds need to thrive.**



INNOVATIVE CLIMATE SOLUTIONS INC.

Calgary

Edmonton

Fort McMurray