

WHAT ARE THE LIMITATIONS OF A HEAT PUMP?

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-- Air-source heat pumps derive their heat from a radically varying heat source -- outside air. The colder it gets outside the less efficient they get, declining rapidly from 0 degrees C and generally being unable to heat a house at minus 15 degrees C. Therefore, they require a backup heater that is large enough to heat the entire house on the coldest day of the year.-- Heat pumps in super-insulated buildings with good passive solar heating would not be called on except on exceptionally cold days -- just when they cannot perform. They are useless for super-insulated houses.-- Outdoor compressors can freeze up in the Canadian climate. Fancy demand system defrosters are complicated and subject to breakdown. Regular timer defrost systems waste more energy but are more reliable. Frozen compressors require a warm up period before turning on -- not always available when the compressor froze because of a power outage. Always demand an indoor compressor in Canada.-- Because of their inefficiency in colder climates, air-source heat pumps are not considered economical in the colder parts of Canada, unless there is a serious need for air conditioning in the summer. Above the 4,800 degree C degree-day line on the accompanying map it is probably more economical to have a regular heating system with a summer only air conditioner. At least you need to do your math on the relative merits of the different systems. Below this line, where much of the Canadian population does live, air source heat pumps can be a good buy.

Keywords:

Heat Pump