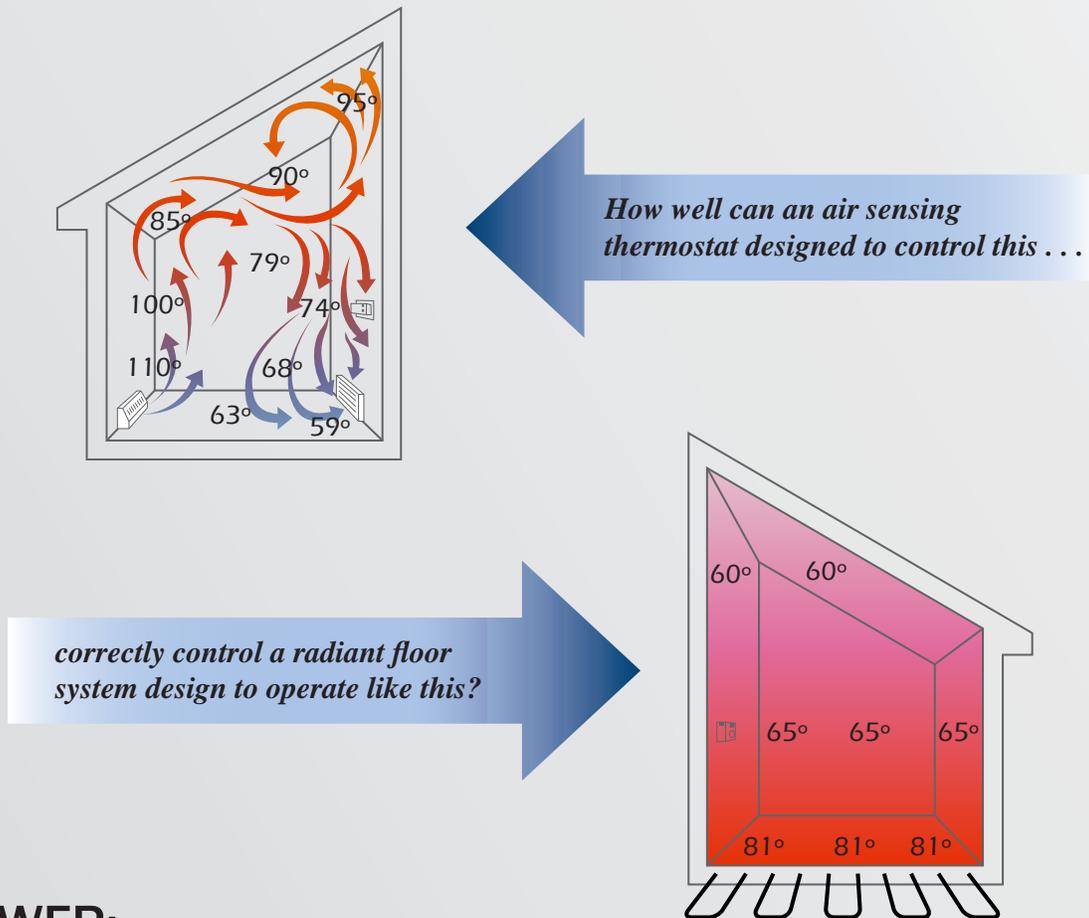


Slab Temperature Sensing Thermostats

- Important item for hydronics under-floor heating
- Slab stat assures optimum radiant floor heating & comfort

QUESTION:



ANSWER:

It can, but not very well. An air sensing thermostat is designed to control your heating system based upon air temperature (forced air). Radiation becomes heat when it is absorbed by an object, meaning in a radiant in-floor heating application air is not heated, only objects. Thus an air sensing thermostat used in a radiant in-floor heating system may cause you to “lose control” of your heating system.

One common example of how an air thermostat, used with an in-floor radiant heating system, can cause you to “lose control” of your system is **Solar Gain**.

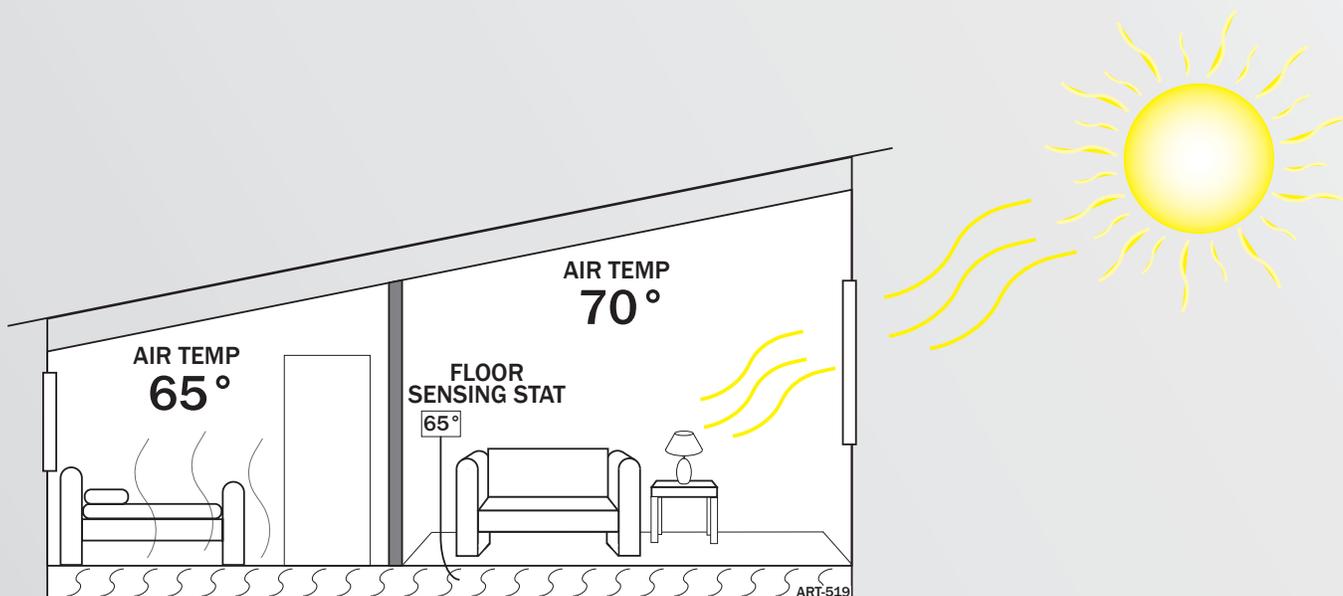
During the daytime hours, solar energy from the sun can satisfy your air sensing thermostat causing the boiler to remain off. With the boiler off, no heat is generated or transferred to the slab, causing the slab to lose the heat energy it needs to heat your building (or objects within) a few hours later. When solar energy is gone (sun goes down) the thermostat will then require heat signaling “heat call” to the boiler. Since the air stat has been satisfied all day, the boiler would have to start from square one and reheat the mass (which can take several days) meaning your boiler will be on non-stop trying to catch up. This is not efficient.

The principle of radiant heat or energy is a temperature differential between the floor's surface and the objects. The goal is to keep this temperature differential very small and the floor temperature constant. Then when solar heat energy (or any other internal heat energy) raises the temperature of the objects or the internal air it can only go up to the point where it becomes closer and closer to the floor surface temperature. If the floor surface temperature is constant, comfort and stability is achieved. If the floor temperature bounces all over the place (air sensing thermostat), comfort is lost and energy efficiency is lost.

Another example is ETS (thermal storage) designed installations where the water tubes or coils are in a sand bed. You **must** use a slab stat to prevent large temperature swings or temperature overshoots.

WHAT IS THE SOLUTION?

A thermostat that uses a sensor installed within the slab to control a boiler is the solution.



SLAB SENSING THERMOSTAT COUNTERS THE EFFECTS OF SOLAR GAIN



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