

# HOW DOES INSPIRE WORK?

With other solar systems such as photovoltaic (PV), solar hot water or wind power, we can see, hear or feel the end result. **Inspire's** aluminum panels are passive with no moving parts or visual indication that something is happening. To the uninformed, it is just another metal wall.

In fact, on a sunny day, **Inspire** not only is performing as a metal building envelop but also is silently converting up to 85% of the absorbed solar energy from the south wall into useable heat. This compares to 16 – 18% efficiency for PV's. **Inspire's** success lies not in absorbing and storing the solar energy in its metal mass, but in its effective method of transferring this stored energy into a building with minimal loss.

Most conventional metal siding heats up in the sun and can reach temperatures that can blister the skin. Eventually an equilibrium temperature is reached when the metal wall radiates the solar heat back to the surrounding air as fast as it is absorbed.

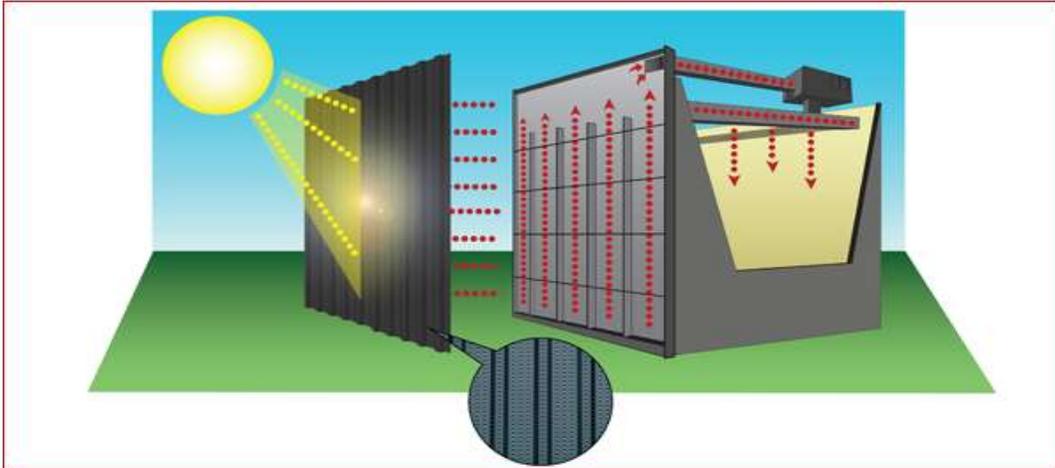
The **Inspire** design captures this absorbed solar energy in two ways before it can escape:

- a) First and most important, by drawing in the outside adjacent surface layer of heated air through its engineered perforations as fast as possible, lowering the surface temperature.
- b) Second, **Inspire** aluminum panels conduct heat faster than steel to the back surface and then radiate into the wall cavity.

If it were possible to draw in the outside layer of air as fast as it was absorbing the heat radiating from the wall, one could reach 100% efficiency. However, at air intakes of 7+ CFM/sq.ft. of **Inspire**, we can achieve up to 85% heat removal with a 20 degree F. temperature rise.

Higher temperature rises can be achieved by drawing in the outside air layer at a slower pace to allow it to absorb more heat radiated from the **Inspire** surface. Temperature rises of 50 degree F. can be achieved at 1.5 – 2.5 CFM/sq.ft. but at less efficiency.

## DESTRATIFICATION AND HEATING

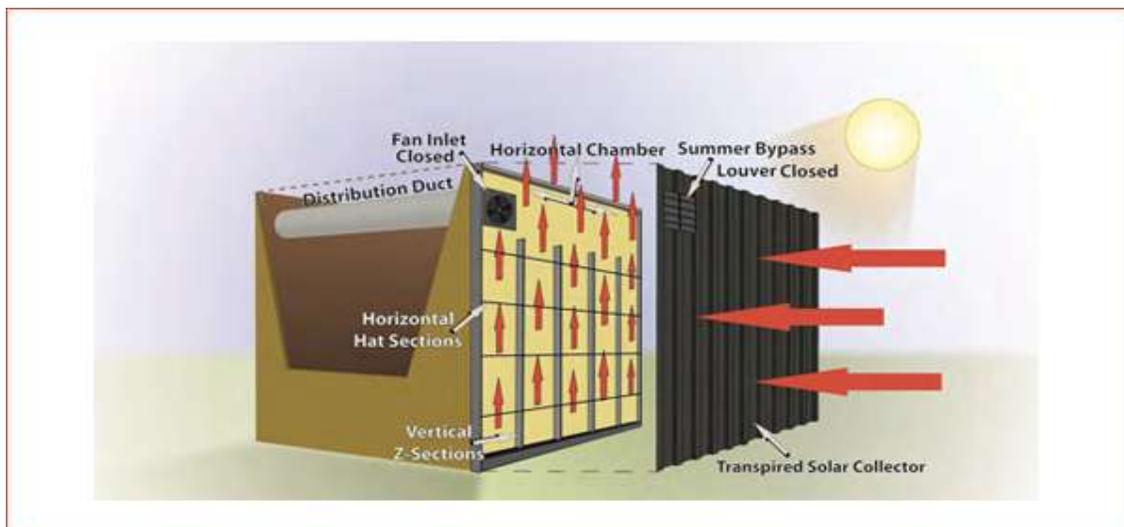


Sunlight hits the surface of the InSpire Wall panel, which is mounted a few inches from the building's wall. Solar heated air is drawn through perforations in the panel, into the chamber between panel and wall, and distributed through building's duct work

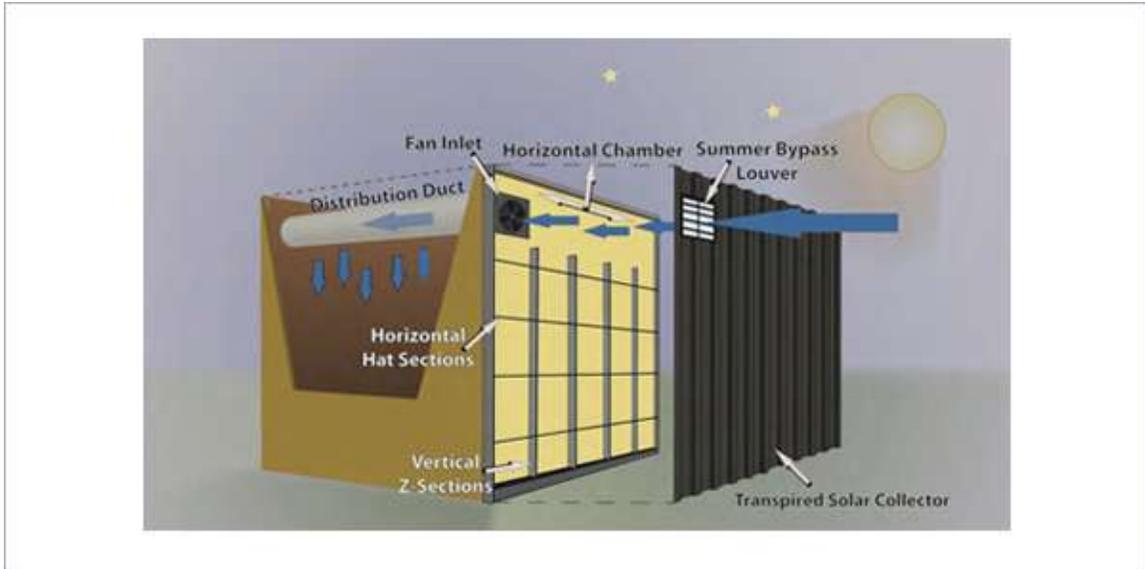
InSpire perforated aluminum panels are installed on light gauge framing mounted to a wall, creating several inches of airspace. Sunlight heats the aluminum causing a thin layer of warmed air to accumulate at the surface of the panel. Intake fans pull the solar heated air through the perforated aluminum panel and into the airspace. This preheated ventilation air is then distributed throughout the building via conventional HVAC systems or perforated ducts.

## SUMMER USAGE

Hot air enters the space behind the panel and is vented at the top by natural convection.



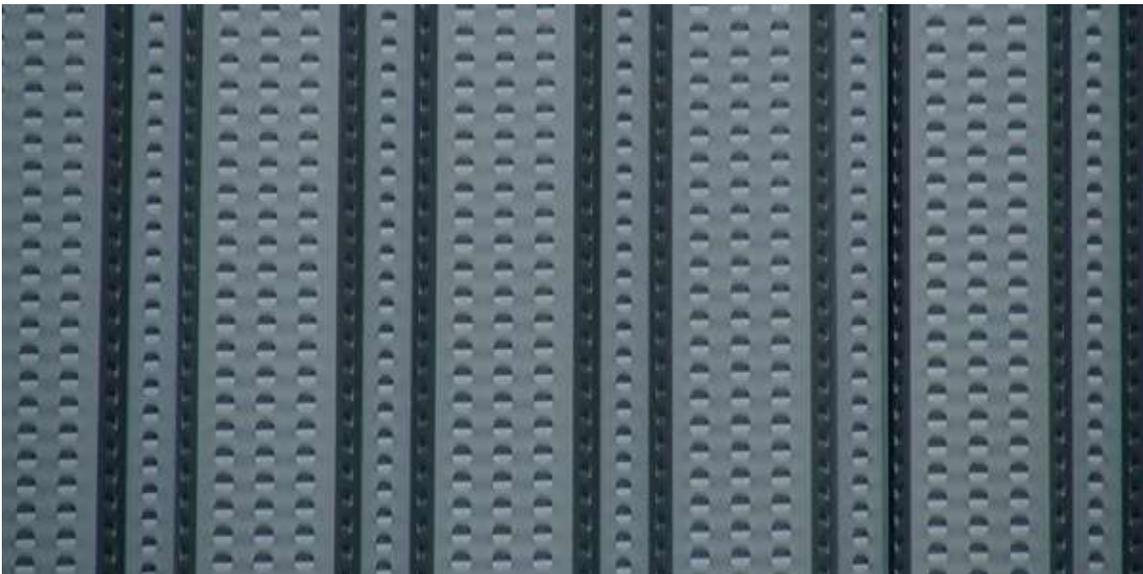
Panels act as a sunscreen preventing the sunshine from hitting the building wall, keeping the wall cooler.



During cool summer nights, cool outside air enters the bypass damper to provide cool fresh air indoors.

## DRYING

Solar heated air produced by the InSpire system is ducted directly to industrial or agricultural drying equipment requiring warm air.



## FOUR COMMONLY ASKED QUESTIONS:

1. What is the life expectancy of **Inspire**?  
**Inspire** should last 60 or more years, the same as any aluminum metal siding. **Inspire** is made from ATAS regular stock. It is kynar 500 painted aluminum with galvanic protective coating on the back.

2. Will rain, snow or dust penetrate the **Inspire** panels?  
To date there has been no evidence that rain, snow or dust has presented a problem. Under extreme conditions, some rain could penetrate but the design provides for drainage. Removal of transpired solar panels in northern Canada have shown no evidence of fine powder snow penetration and build up. Similarly, fine air born dust such as is found in the prairies, appears not to be a problem. Any penetration that occurs settles out and does not become an air quality issue.
3. Will wind affect the performance of **Inspire**?  
The effect of normal winds can be a factor but the superheated electrostatically held layer of air adjacent to the **Inspire** surface can be envisioned more or less as a thin solid blanket that is not easily broken up by the wind but tends to move as a unit across the **Inspire** surface.
4. Will biological substances grow inside the **Inspire**?  
Monitoring has shown no evidence of biological growth within the wall cavity. This is attributed to the pasteurizing and dehydration effect of the temperature and air movement within the wall.

**Inspire** is long-lived, has no moving parts, is virtually maintenance free, over 80% efficient and could be called the most practical and efficient solar product on the market today. It is the only wall envelope material that pays for itself.