SolarVenti Industrial Model

Background
When the SolarVenti founder and owner Hans Jorgen Christensen 12 years ago invented and patented our present solar air collector for the residential market he also designed it for the professional market aimed for industrial, commercial and public buildings.

Even though the principle behind our solar air collectors for both the private and the industrial market is the same there is a big difference in the benefits and final outcome.

On the residential market the benefits are primarily concentrated on ventilation, dehumidifying and creating a healthy indoor climate and secondly on the benefit of having dry air it gives a contribution to reduce the energy bill as dry air is easier to warm up than damp air, it reduces maintenance cost of the building.

On the professional market the benefits are primarily concentrated on reducing energy costs and secondly the indoor climate due to the fact that it preheats air and ventilates at the same time. The purpose is to heat the outdoor air and sent it into an existing ventilation system as preheated air or directly into the building for ventilation. The effect is obtained exclusively by solar power and will therefore be able to reduce energy consumption in a building.

The patent is unique within the professional market. As we are talking big scale there are no real competitors concerning efficiency and simplicity. The reason is the patented combination of the aluminum rear plate with all its small wholes which covers the rear of whole system and the black absorber felt on the inside of the plate. This makes the air flow highly efficient, the insulation effect high (it is cold on the outside of the rear plate even though we are talking a few centimeters), the maintenance cost more or less zero as the filter is not to be replaced for 10-15 years and production cost low.

This is also why one of the leading companies within solar air collectors for the professional market Enerconcept from Canada has chosen make a partnership with us and to use the SolarVenti patent in their popular roof solution product Luba and they also wish to attack the residential market in Canada with our SolarVenti residential product.

Principle behind operation
When the sun shines through the cover plate on the front of the solar air system:

1. It heats the air inside the collector on his way down to the absorber on the rear panel.
2. Will the absorber be heated by the rays of the sun. The absorber will then function as an efficient heating panel, which puts an additional boost to the heating of air inside the solar air collector.
3. Will the heated air put itself in motion while the fan pulls air through the entire system.
4. Fresh air is drawn in through the small holes in the rear panel further through the felt and into the solar air collector, where it is heated.

   The process continues as long as the sun shines.

Enerconcept has made a very good infomercial which describes the principle behind the SolarVenti patent and the concept in their solar air collector for roof mounting, Luba, to the professional market: http://www.youtube.com/watch?v=gmSQ8zz-38s.

Performance test
The SolarVenti Industrial Model has the same features and efficiency as Enerconcept's Luba system but we believe our product is simpler in its design and construction and therefore more cost efficient to produce, transport, assemble and mount.

The conclusion, in our mind, is that the SolarVenti Industrial Model is the most cost efficient product on the market. This is more or less confirmed in a test made by Enerconcept where their Luba collector with the SolarVenti patent is compared to their old Luba models and the German product Grammar. Here are their conclusions and results:

> TECHNICAL CONSIDERATIONS
> The Luba GL as such with our licence from you has achieved a performance factor on CSA of 1,06, which is better than the Grammer GLK (0,95) for 1/2 of the price, better than our old large-plenum Luba Solar (0,56) and almost as good as the perforated glazing design (1,10) for 40% less cost. We chose to adapt your design over ours because of substantial cost reductions in spite of a small, insignificant drop in thermal efficiency.
> So in a nutshell, here is the positioning in terms of performance over pricing:

Collector model	CSA Perf. Factor	Price Index/ collector	CSA Perf/ price
Luba GL Solar Venti design	1,06	1,00	1,060
Luba GL old Enerconcept	1,10	1,25	0,880
Grammer Solar GLK	0,95	2,15	0,442
Luba Solar	0,56	1,45	0,386

Performance data - SolarVenti Industrial Model

Air flow: Approx 100 m^3 air per m^2 per hour.

Energy supply: At an average sun radiation at approximately 800kWh/m^2/year and an efficiency of approx 70 %, the theoretical energy supply is approximately 550kWh/m^2/year.

At an average consumption pattern the energy supply is estimated to approximately 450kWh/m^2/year.

Rise in temperature: Approx 15 degrees Celsius compared to ambient temperature.

Based on the above mentioned conditions a system of 500 m^2 will produce an air flow of approx. 50.000 m^3 per hour and between 225,000 and 275,000kWh/year.

The SolarVenti Industrial Model is assembled on site.

Maintenance
The system has an extremely simple design with no moving parts and the estimated lifetime is at least 20 years. In addition, maintenance costs will be very low because the filter lifetime only needs to be replaced or cleaned once or not at all since the filter is cleaned by the sun's heat on a regular basis.

The materials are similar to those we use in our solar air collectors to the private market and are resistant to salt in the air.