SolarVenti®


# Solar Air Collectors

## for auto repair shops etc.

*SolarVenti Professional*

*www.solarventi.com*

SolarVenti®

## *The purpose:*

To solve ventilation and dehumidifying tasks in an economically affordable way.

## *The present problem:*

1. Guidelines regarding indoor climate are difficult to handle for the owner of an auto repair shops or a small factory The need for ventilation depends of the type of working places, types of gasses from machinery, welding processes, the use of chemicals etc.
2. Following the rules for exhaust systems makes the fresh air supply a very expensive part of the budget. The cost for heating the supply air is often a significant part of the general heating expenses.
3. Rules that makes the use of heat recovery systems not allowed, makes focus on expenses for supply air event more critical.

## *The normal solution:*

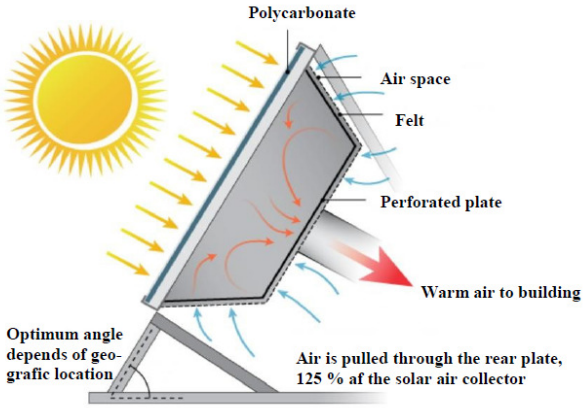
The normal solution is separate systems for fresh air supply and exhaust air
The fact that mixing the two air directions is not allowed, makes oil or gas based heating systems widespread solutions. The disadvantage of these is high running costs due to the lack of heat recovery units.

## *The optimized solution:*

Preheating the supply air before this enters the oil or gas boiler or the fresh air supply system limits the time, where the expensive heat source is active.
Installing a solar air collector, which preheats the outdoor air, before blowing it into the building, is a very cost effective way of decreasing the cost for oil or gas for heating.
A number of solar air panels on the ground, on the wall or on the roof will give a substantial contribution to the heating of the building.

### *Maintenance free:*

The filter (which is also the absorber) is automatically cleaned by the heat from the sun when the fan is turned off, and the temperature exceeds 80 degrees C.
The system is thus maintenance free.



SolarVenti®

## *Function:*

The air enters the collector through a patented double-perforated rear wall.

The air passes through the absorber, made of a black technical material, which is resistant to high temperatures. The material is also an effective air filter.
Unique to this collector is the conversion of solar energy to warm, fresh air. The air gap between the rear wall and the absorber provides sufficient thermal resistance to transfer heat energy to the incoming air, eliminating the need for insulation.

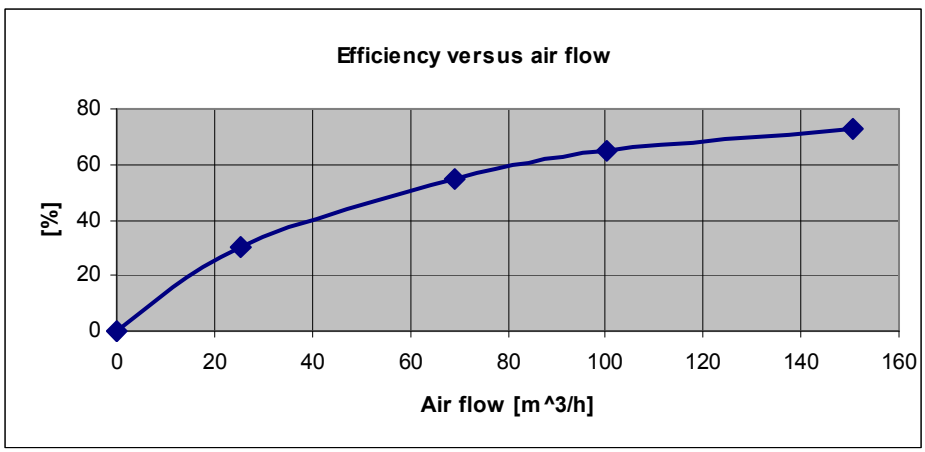
The recommended air volume is 80-150 $m^3/h/m^2$ collector area.

Guidelines for air flow in auto repair shops are 15 $m^3/h/m^2$ (an air exchange rate of 3 times per hour).

| **Auto repair shops a.o.** | **Small** | | **Medium** | | **Large** | |
|---|---|---|---|---|---|---|
| **Size of solar air collector ($m^2$)** | 20 | | 40 | | 60 | |
| **Air flow ($m^3$/hour)** | 2.000 | | 4.000 | | 6.000 | |
| **City** | **Hamburg** | **Munich** | **Hamburg** | **Munich** | **Hamburg** | **Munich** |
| **Heat power in angle 60º (kWh) *** | 6.400 | 9.200 | 12.500 | 18.400 | 18.900 | 27.600 |
| **Reduction in heating costs - oil (Euros) **** | 843 | 1.211 | 1.646 | 2.423 | 2.489 | 3.634 |
| **Reduction in heating costs - gas (Euros) **** | 664 | 955 | 1.298 | 1.910 | 1.962 | 2.866 |
| **Reduction in heating costs - electricity (Euros) **** | 1.933 | 2.779 | 3.775 | 5.557 | 5.708 | 8.336 |
| **Size of auto repair shop ($m^2$)** | 135 | | 270 | | 200 | |
| **Height of room (m)** | 5 | | 5 | | 5 | |
| **Air change (times per hour)** | 3 | | 3 | | 3 | |
| **Investment in Euros (approx.)** | **€ 8.000** | | **€ 16.000** | | **€ 24.000** | |
| **City** | **Hamburg** | **Munich** | **Hamburg** | **Munich** | **Hamburg** | **Munich** |
| **ROI (pay back time) with oil in years *** | **9,5** | **6,6** | **9,7** | **6,6** | **9,6** | **6,6** |

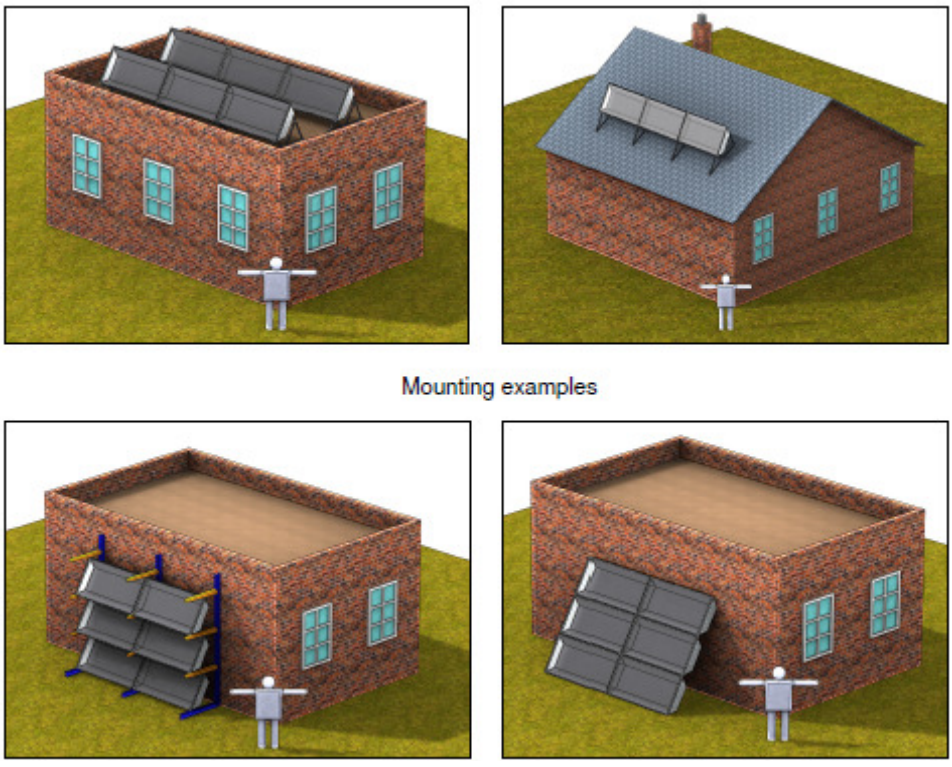
* Hamburg and Munich, Germany, Calculated in the software RetScreen, min. temperature inside: 16ºC, airflow: 15$m^3$/hour

** Prices August 2013, DK / Oil Eur 1,33/Liter and Energistyrelsen www.ens.dk



## Benefits:

- Short payback time.
- Powerful dehumidification, and free supplementary heated fresh air, resulting in lower energy consumption.
- Improves the operation of existing ventilation systems.



Mounting examples

## Economy:

The SolarVenti Professional ® Solar Air System significantly reduces running costs for heating and dehumidification of larger commercial and industrial buildings.

Installing a SolarVenti Professional ® Solar Air System in conjunction with an existing ventilation system (HVAC) saves costs for both heating and dehumidification.

Payback time is usually between 3 and 8 years.

Using the internationally recognized Canadian software RETScreen, based on climate data from NASA, significant savings can be shown.

SolarVenti A/S, Fabriksvej 8, DK-8881 Thorsø, Danmark
www.solarventi.com
tlf: +45 8696 6700