



### Heat exchange for more sustainable cultivation

Because of the increasing emphasis that is being put on sustainability and energy savings, improvement of the greenhouse climate is playing an increasingly more important role in modern greenhouse horticulture. The Active Ventilation System (AVS) developed by Van Dijk heating ensures active ventilation of the greenhouse air with relatively dry outdoor air. Because the outdoor air contains less moisture than the air in the greenhouse, the greenhouse air is dehumidified in the process.

To realise an even more sustainable application, Van Dijk heating developed an AVS unit incorporating a heat exchanger. This AVS WTW unit warms the incoming outdoor air (cold) with the air leaving the greenhouse (warm). The inbuilt valve register makes it possible to opt for a number of different application modes.

The payback period is similar to that for a standard AVS unit, about 3-4 years.

## Active Ventilation System (AVS-WTW)

AVS with Heat Exchange

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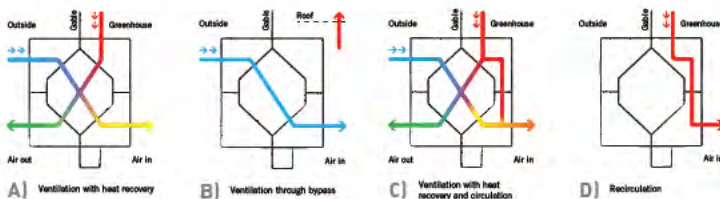
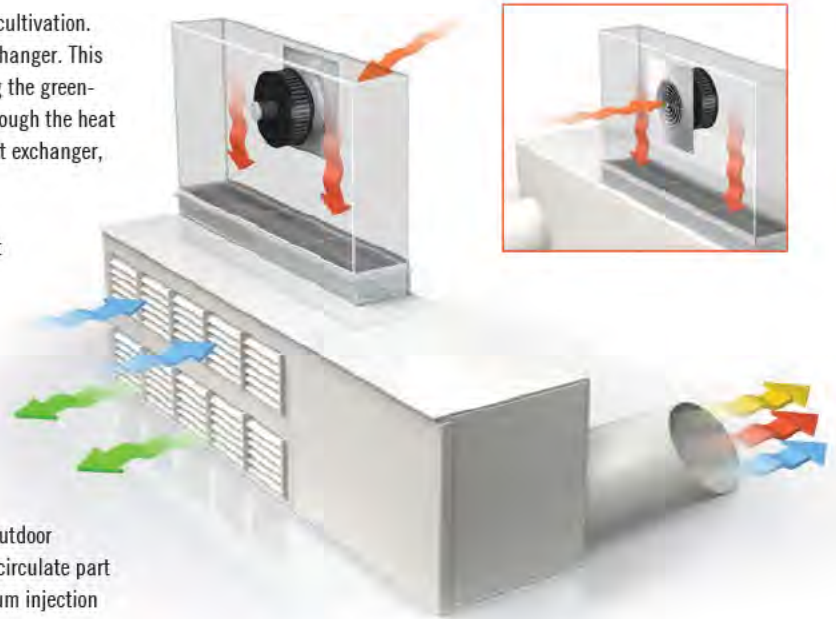
## AVS-WTW system

The AVS unit is fitted with a heat exchanger for even more sustainable cultivation. In this AVS WTW unit the CV element has been replaced with a heat exchanger. This warms the ventilation air drawn in from the outside with the air leaving the greenhouse. A ventilator sucks the greenhouse air in and blows it outside through the heat exchanger. A second ventilator sucks the outdoor air in through the heat exchanger, which warms it up, and blows the heated air into the air hoses.

An ingenious valve system in the AVS WTW unit makes it possible to opt for a number of different application modes.

- Ventilation with heat recovery
- Ventilation without heat recovery
- Ventilation with heat recovery and recirculation
- Only recirculation

With the heat exchanger engaged, it is simple to ventilate down to an outdoor temperature of 0°C. For lower outdoor temperatures it is essential to recirculate part of the greenhouse air to increase the injection temperature. The minimum injection temperature can be set.



## AVS-WTW format

The AVS WTW unit is designed to be fitted on outer greenhouse facades. Its casing is produced from 16-mm-thick, industrial-quality polypropylene plastic. This material has good thermal and acoustic insulating properties and can be used in temperatures ranging from -30 to +100°C.

The AVS WTW unit is available in different capacities. Because of our modular approach to design, an appropriate AVS system can be produced for virtually every situation. The design of the installation depends on the greenhouse facade, the cultivation system and the grower's specific wishes and requirements. We advise a minimum ventilation level of 5 m<sup>3</sup>/m<sup>2</sup> per hour for the injection volume. The ventilation air can be injected into the greenhouse using one or more hoses per unit as desired.

The AVS WTW unit is controlled by the climate computer and works with the MOD-bus communication system. Variations to this system can be supplied upon request.

### Benefits of the Active Ventilation System with Heat Exchange in commercial greenhouses

#### Energy saving by:

- dehumidifying greenhouse air without adding external heat plus heat exchange
- screens can stay closed longer
- a high COP value when used as a cooling system.

#### Climate improvement by:

- effect of active ventilation of the greenhouse air
- minimal differences in temperature with recirculation
- a vertical flow of fresh air through the crop
- improved microclimate around the plant.

#### Improved efficiency by:

- effective use of low value temperature systems
- energy savings through using heat exchange
- improved CO<sub>2</sub> distribution
- higher CO<sub>2</sub> concentration in the greenhouse
- reduction in disease pressure.