The smartest way to keep critical equipment cool

ClimaSys™ Smart Ventilation System

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Keeping equipment cool in tough environments

The harsh reality for equipment

The temperature inside control panels and electrical distribution enclosures needs to be carefully controlled. Ventilation systems are essential to keeping conditions stable so that your critical automation and protection equipment runs smoothly. But, over time, ventilation filters collect dirt and can become blocked. If left unchecked, temperature rises, equipment fails, and production stops.

$22,000

Average cost of 1 minute of downtime for the US auto industry.

Source: ATS

€50,000

Average cost of 1 hour of downtime for metal foundries.

Estimated

70%

Percentage of installations facing performance issues due to dirty filters.

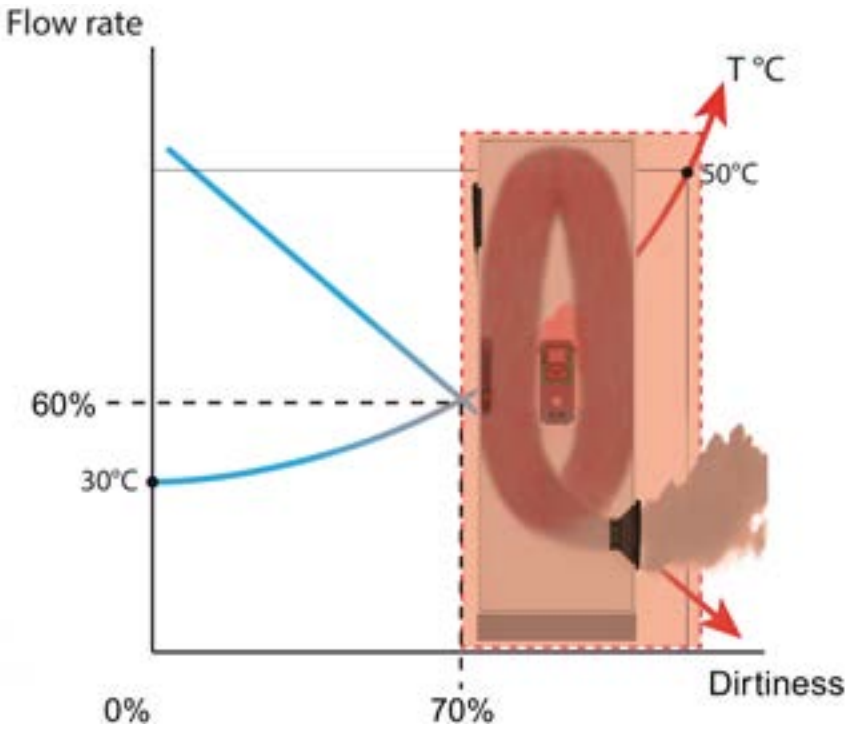
Estimated

Why do ventilation systems fail?

When filters are blocked by dust or dirt and are not immediately replaced, less cool air is able to enter the enclosure, eventually causing:

- **Inefficient fan operation**, moving less air and consuming more energy
- **Accumulated dust** affecting internal moving parts, reducing effectiveness of heat dissipators, and causing electrical conductivity across insulators
- **Increased internal temperature** that reduces lifespan of electronic-based PLCs, motor controllers, speed drives, etc. by up to half, as well as safety risks due to overheated surfaces
- **Failure of equipment, short-circuits, and faulty connections** that, in turn, cause downtime for entire production lines and continuous critical processes, leading to significant losses

Why do ventilation systems fail?



Equipment health is directly dependent on filter dust levels. Clogged filters cause fans to run inefficiently, airflow to slow or stop, and equipment lifespan to be cut in half.

Up to €5,000 per year

Wasted energy from 50 fans running at 20% efficiency due to having 100% clogged filters.

The digitized solution that tackles every ventilation challenge

Continuous, system-wide monitoring

Introducing the ClimaSys™ Smart Ventilation System (CSVS) from Schneider Electric. It's digitized, scalable thermal network that gives you real-time monitoring of all critical ventilation functions, across all of your automation or electrical distribution control panels. Stay connected with the health status of your entire thermal architecture at all times.

Smart Filters


Dust Sensor


Fan Sensor


FilterStat Controller


Thermal HUB


Smart Grids


Smart Fan

The digitized solution that tackles every ventilation challenge

Ventilation predictive maintenance

Get advance notifications if filters or other parts need servicing or replacement, or if ventilation failure is imminent. You'll anticipate and avoid shutdowns.

You'll also cut operational costs by correcting high risk conditions before they cause equipment failures.

CVCS helps you optimize the four critical aspects of your equipment performance:

2X

Extended equipment lifespan thanks to proper airflow from clean filters.

Higher reliability

- Longer lifespan
- Greater energy efficiency
- Enhanced safety

Efficient ventilation will keep surface temperatures under 70ºC, helping avoid risk of fire, risk of burns to people, and risk of insulation failure which can cause exposed conductors and short circuits.

A smart monitoring architecture

Connecting you to higher reliability, efficiency, and safety

Connecting to ultimate ventilation performance

The ClimaSys Smart Ventilation System is a smart, tightly integrated network that makes your life easier. The nucleus of the system is the ClimaSys FilterStat controller that collects information from filter and fan sensors across all of your enclosures. Intelligent algorithms analyze all data inputs, helping FilterStat to keep you informed about the thermal status of every enclosure.

Unique, accurate dust filter analysis

Each Smart Fan and Smart Grid in the ClimaSys Smart Ventilation System includes a Smart Filter with integrated Dust Sensor. These sensors work with patented infrared technology and advanced algorithms. The system lets you know, by percentage and in real time, how much dirt has been accumulated and when the filters need to be replaced.

Additionally, each sensor measures the air temperature passing through the filter, for inlet and outlet Smart Grid locations. The system will also provide the delta-T value of the enclosure.

Clear indicators help you take action

The ClimaSys Smart Ventilation System keeps you informed of ventilation system statuses in two very effective ways.

High-visibility LED indicators

Multi-colored LEDs on the front of each Smart Fan and Smart Grid give you clear indication of filter and fan status. The green light shows the system is working well, the orange light lets you know you may soon need to replace the filters, and the red light means the filters need to be replaced.

A purple light indicates that the Smart Fan has reached its end-of-life and needs to be replaced. For troubleshooting, the system also offers a ‘ping’ function to help you locate a selected enclosure by turning the LED blue.

Clear indicators help you take action

Detailed performance information

The FilterStat controller's screen displays useful measurements and alarms to help keep your ventilation system running efficiently. The controller can also connect to a PLC, speed drive, HMI, or other equipment via a dry contact alarm relay, and an analog output indicating 'dirtiest filter level'.

FILTER SENSOR DATA

FAN SENSOR DATA

ALARMS

Dust level	Level of filter dirtiness (from 0% to 100%)
Airflow temperature	Temperature of air that flows through each filter (bottom and top grilles)
Number of replacements	
Remaining time before next replacement	
Days since the last renewal of the filter	

Complete fan and airflow performance monitoring

Beyond its dust and air temperature sensors in its Smart Filter, each Smart Fan in the ClimaSys Smart Ventilation System uses additional fan sensors to measure RPM (revolutions per minute) as well as the current consumed by the fan in mA. In addition, the temperature of the ‘transported’ air around the fan is measured.

Together, these sensors enable you to check how efficiently the fan is using energy and when the temperature inside the panel is higher than the capacity of the fan.

The system can integrate sensors from intake fans, roof fans, and internal recirculating (brassage) fans.

Adaptable to any new or existing enclosures

For Greenfield applications, the ClimaSys Smart Ventilation System offer is composed by a FilterStat and Thermal Hub Controllers and complete Smart Fans and Smart Grids with integrated Smart Filters and sensors.

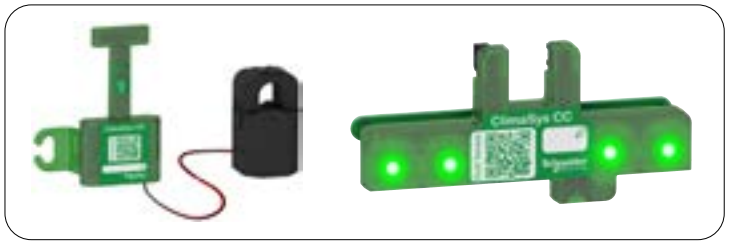
For Brownfield, a retrofit kit option lets you digitize your existing panels and ClimaSys components in a simple, safe way.

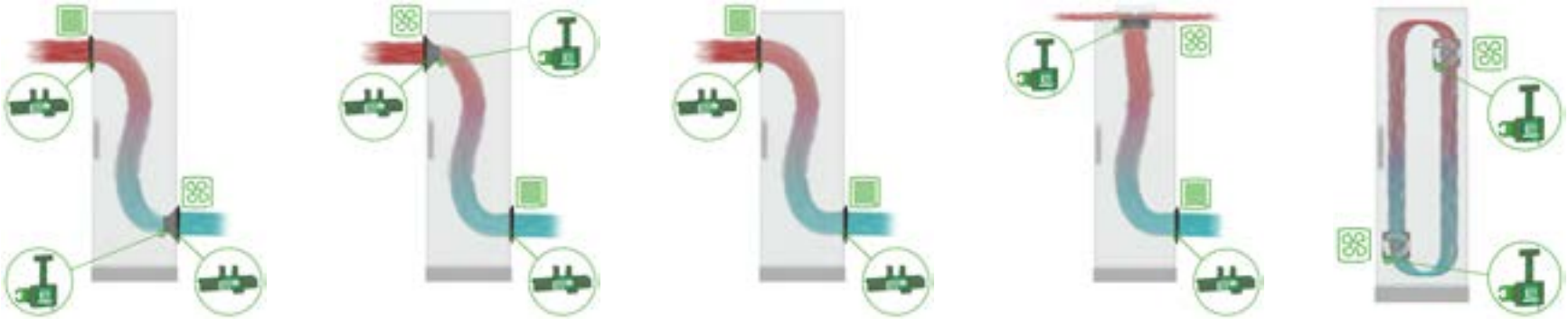
CSVS is also compatible with ClimaSys CV fans and ClimaSys CC control devices standard products.

Adaptable to any new or existing enclosures

5 architectures are available

The system works with all possible architectures. It will also work with extractor or ventilation type fans.





TOP	Airing (grid)	Ventilation (extraction)	Airing (grid)	Roof ventilation (extraction)	Brassage (internal fan)
BOTTOM	Ventilation (impulsion)	Airing (grid)	Airing (grid)	Airing (grid)	Brassage (internal fan)

Adaptable to any new or existing enclosures

Expand your network.

To support a large number of enclosures from a single FilterStat module, up to eight Thermal Hub devices can be used to extend network capacity to up to 256 sensors.

Choose the smart way to keep air flowing

Dependable ventilation performance for all of your **enclosures**

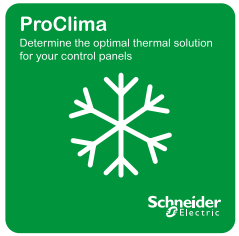
Next steps to building your solution

Determine your optimal thermal solution

ProClima™ thermal calculation software uses thermal data to propose the right thermal management choice to match the environment and electrical/electronic devices installed inside your control panel. The software takes into account variables such as: temperature, humidity, sun radiation, and indoor or outdoor settings. The program draws up a heat balance and defines the best ventilation, control, heating and cooling functions, while minimizing under- or over-sizing errors. Use ProClima to help design your ClimaSys Smart Ventilation System solution.

Select your ClimaSys Smart Ventilation System components

Refer to the CSVS online catalog pages for complete specifications on all CSVS components and to help define your solution for new or retrofit applications.



Reliable airflow for your equipment. Peace of mind for you.

The ClimaSys Smart Ventilation System is an enterprise-wide thermal solution that will help you track the health of ventilation across all of your enclosures.

You'll improve the maintenance and operation of your control panels and electrical cabinets, reducing CAPEX and OPEX by:

- Minimizing technical breakdowns
- Avoiding equipment failures and production downtime
- Increasing equipment lifespan
- Improving energy efficiency
- Replacing filters only when required

In fact, CSVS benefits every stage of an installation's life cycle.

Panel builders

- OEMs and system integrators
- Facility teams

- Ensure electronic equipment is protected against dust and thermal extremes.
- Support preventative maintenance with advance alerts.
- Help customers avoid technical breakdowns and disruptions.

90%

Potential annual savings on filters and filter maintenance for 20 enclosures.

Estimated

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