

TopTechnology



Vitosol 200-FM

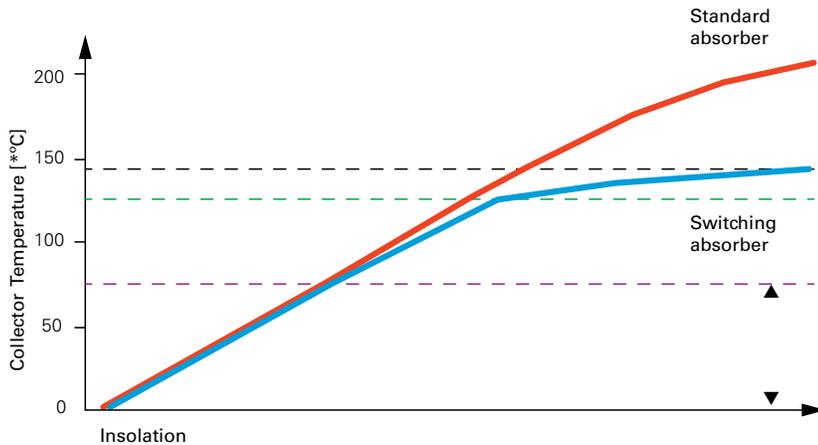
ThermProtect temperature dependent shutdown for simplified design and high operational reliability

Generously sized collector surface areas lead to high levels of solar coverage and impressive energy savings. However, such large collector surfaces can also result in long periods of stagnation, and thus to the formation of steam, because the available heat cannot be used. This is particularly the case in summer.

The innovative absorber coating in the Vitosol 200-FM flat-plate collector means that a self-regulating collector is now available. The FM product reliably prevents overheating and the formation of steam by reducing the stagnation temperature.

Viessmann solar collector with innovative, automatic ThermProtect collector shutdown that interrupts the absorption of energy in the event of stagnation.

Reliable prevention of steam formation



In standard collector mode, the new absorber coating of the Vitosol 200-FM flat-plate collector acts like any standard absorber coating on Viessmann flat-plate collectors. At collector temperatures of 167°F and above, heat transfer increases many times over, thus reliably preventing overheating and the formation of steam in the event of stagnation.

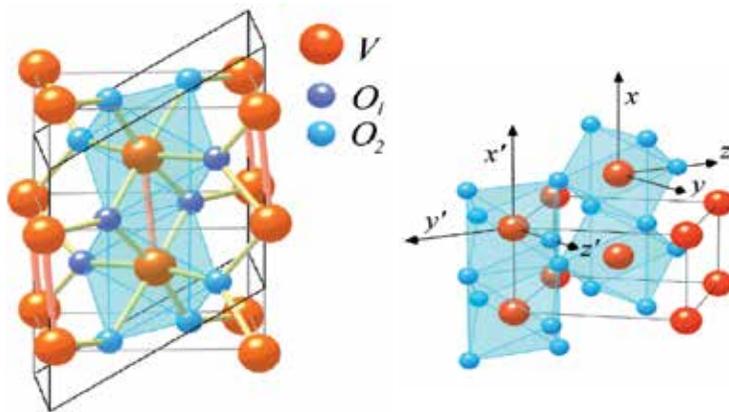
A solar collector generates heat whenever sunlight falls on the absorber – even at times when no heat is required. This may, for example, be the case in summer when residents are on holiday. If heat transfer, through the DHW cylinder or heating water buffer cylinder, is no longer possible because either is already fully heated, the circulation pump switches off and the solar thermal system goes into stagnation.

If further insolation falls on the collector, its temperature will rise until the heat transfer medium evaporates, causing high thermal stresses on system components such as seals, pumps, valves and the heat transfer medium itself. In systems with ThermProtect temperature-dependent shutdown, the formation of steam is reliably prevented.

Flat-plate collector with switching absorber layer

For the first time, a flat-plate collector has been developed and patented that prevents further energy absorption once a certain temperature has been reached. The absorber coating of the Vitosol 200-FM is based upon the principle of “switching layers”.

Change to the optical properties of the absorber

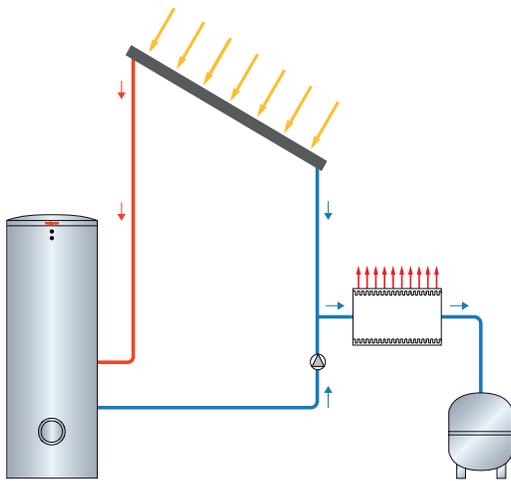


The new absorber coating comprises several layers. One of these is vanadium dioxide (VO₂). From a temperature of around 167°F and above, the optical properties of vanadium dioxide change. It heats up, thus increasing heat radiation. Increased emissivity reduces the stagnation temperature of the collector. The more the absorber heats up, the higher the radiation level. This effect is particularly marked at absorber temperatures above 212°F.

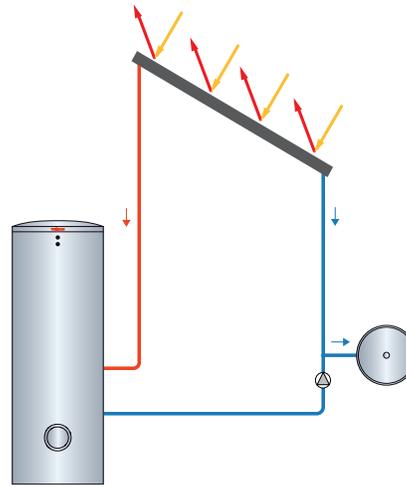
The crystalline structure, and therefore the collector’s output, changes depending on the collector temperature, thereby reducing the stagnation temperature. At absorber temperatures of 167°F and above, the crystalline structure of the coating changes, increasing the rate of heat radiation many times over. This reduces the collector output as the collector temperature rises, the stagnation temperature drops significantly and prevents the formation of steam

Once the temperature in the collector falls, the crystalline structure returns to its original state. More than 95 percent of the incoming solar energy can now be absorbed and converted into heat; only a tiny proportion (less than 5 percent) is irradiated back. This means that the yield of the new collector is higher than that of conventional flat-plate collectors, as the collector never enters the stagnation phase and can supply heat again at all times. There is no limit to the number of times the change in crystalline structure can be activated, meaning that this function is always available.

Standard absorber



ThermProtect switching absorber



Straightforward system engineering

The temperature-dependent shutdown of this collector is entirely independent of system configuration and control unit settings. Solar thermal systems are, therefore, completely fail-safe. The thermal loads on system components and the heat transfer medium always stay within their normal range. This increases service life and operational reliability compared to conventional solar thermal systems. In addition to robust operation, collectors with temperature-dependent shutdown are also more tolerant of incorrect sizing.

In systems with ThermProtect temperature-dependent shutdown, the formation of steam is reliably prevented.

Benefits for trade partners

- High operational reliability and long service life thanks to lower stagnation temperatures
- Independent of controller settings, power failures and mechanical devices (e.g. dampers)
- Significantly lower stress on system components
- Can easily be sized for large plants
- Immediate restart after system standstill
- Simplified component selection

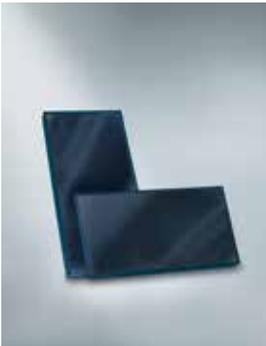
Benefits for the user

- No overheating problems in summer or when residents are away from home
- Higher solar coverage for central heating backup and DHW heating

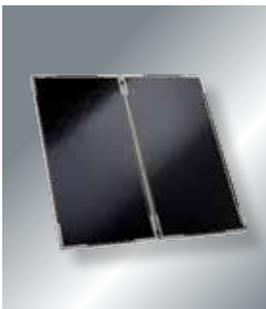


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Technical Data



Type	Vitosol 200-FM SV2F		Vitosol 200-FM SH2F
Model		SV2F	SH2F
Installation		Vertical	Horizontal
Gross area	ft ² / m ²	27 / 2.5	27 / 2.5
Absorber area	ft ² / m ²	25.1 / 2.33	25.1 / 2.33
Dimensions			
Width	in /mm	41.75 / 1056	93.75 / 2380
Height	in /mm	93.75 / 2380	41.75 / 1056
Depth	in /mm	3.5 / 90	3.5 / 90
Weight	lbs /kg	90.2 / 40.9	90.2 / 40.9



Type (one collector)	Vitosol 100-FM SVKF	
Absorber Area	ft ² / m ²	21.6 (2.01)
Gross area	ft ² / m ²	23.5 (2.18)
Aperture surface	ft ² / m ²	21.7 (2.02)
Dimensions (one collector)		
Width	in /mm	41.6 (1056)
Height	in /mm	81.6 (377)
Depth	in /mm	2.9 (73)
Weight	lbs /kg	81.6 (275)