

Heating with Solar Energy



An Investment for the Future

Finite fossil fuel reserves and the dangerous effects of climate change are two of the biggest challenges we face today. With the heating sector as one of the largest consumers of energy, it's time to rethink the way in which we consume energy.



A fully-integrated multi-fuel energy center based on the "Efficiency Plus" concept, has lowered energy consumption by 40% and cut CO₂ emissions by a third at our facility in Germany. It demonstrates that tomorrow's energy objectives can be met today with technology already on the market.

With home heating accounting for approx. 40% of our annual energy consumption, finding ways to conserve precious fossil fuels and substituting with renewable energies whenever possible is key for a sustainable energy policy and our future.

This is the basis of our **"Efficiency Plus"** program - an integrated energy concept that advocates reduced fossil fuel consumption through improved efficiency and the use of renewable energy.

With a complete line of high-efficiency fossil fuel and renewable energy systems, we provide the heating solutions today that meet the energy challenges of tomorrow, so that every home, business or community can now play an active role in protecting our future.

Heating with solar energy is an integral part of the "Efficiency Plus" program. Clean, abundant and still largely untapped, it's the perfect addition to any heating system - whether for domestic hot water, pool heating or to supplement your space heating or cooling loads.

Start with solar

As the cleanest, most abundant and easily accessible form of energy on earth, start your sustainable energy approach with solar energy.

Conquer your heating bill

Putting the sun to work, saves you as much as 60% on your hot water bill or up to 25% when using solar energy for hot water and space heating.

Future-proof your heating

You no longer have to fret over sky-rocketing energy prices. There's more than enough sunlight to go around, so sit back and enjoy your savings.

Boost your property value

A solar system not only showcases your commitment to the environment, it can increase your property value at the same time.

Show that you care

Plus, with a solar system on your roof you make a real statement. Show your neighbors that you care and take a lead role in protecting our tomorrow.



A Solar Program Unlike Any Other

You have decided to make a significant contribution towards essential energy savings and CO₂ reduction. Now choose a partner you can trust.

30+ years in the making

Excellence takes time. With over 30 years in the solar business, it's not surprising that our solar systems are unlike anything on the market: Time-tested, fine-tuned system technology built to perfection and backed by an extensive support network.

Built to outperform

Our solar systems are all about quality. Performance tests in Europe and North America have shown it. Manufactured with high-quality corrosion- and UV-resistant materials, our systems provide superior performance over a lifespan of 20+ years.

A system you can trust

Down to the last detail, all components of our solar systems have been carefully design-matched to ensure reliable performance and efficient energy harvest every step of the way. Experience the peace-of-mind only a fine-tuned system like ours can provide.

We stand behind you

From contractor seminars at the Viessmann Academy to our in-house technical support teams and network of in-field representatives across North America, we stand behind our products, from the design phase to the commissioning of your system, to make sure you get the best solar experience possible.

We've got what's right for you

With one of the most extensive solar thermal programs on the market, we have what's right for you and your budget. With our multi-level program of complete flat plate and vacuum tube solar thermal systems, you don't have to compromise on quality and reliability - no matter what your budget.



The Viessmann Acredal collector in the early 1980s. With 30+ years of experience, Viessmann offers one of the most advanced and trusted solar programs on the market.



The Complete System Approach

Our solar systems are designed to maximize your solar experience at every level. From the design stage right to the performance of your system, we work to provide you with the best possible solar experience.

1 Solar Thermal Collectors

High-performance vacuum tube and flat plate collectors for hot water, pool, space or process water heating and solar cooling applications. Exceptional construction with a highly-effective copper absorber and impact-resistant solar glass. CSA and SRCC certified. See pages 6-9.

2 Solar Storage Tanks

High-quality Viessmann made stainless steel or enamel-lined steel domestic hot water storage tanks from 42 to 120 USG; single- and dual-coil options available. Easy integration as DHW preheat systems to conventional hot water heaters, or utilizing heating boiler backup. See page 13.

3 Solar Control Systems

Digital differential temperature controls for single- or multi-load solar systems and a complete set of communication accessories for system monitoring and data logging. See page 13.

4 Pumping & Heat Transfer Stations

Fast and professional installations with convenient pre-fabricated and fully-wired pumping stations. The Solar-Divicon model allows for easy connection to internal coil tanks, while the Solar-Divicon-HX incorporates an external heat exchanger for connection to any storage tank. The essential link between collectors and tank, it handles all hydraulic and safety functions of your system. See page 13.

5 Heating Boilers

A complete line of state-of-the-art high-efficiency condensing and non-condensing gas-, oil- and wood-fired boilers for use as primary space heating source and backup for solar DHW heating.



Design & Installation Support

Our complete system approach extends far beyond our system technology. From a pre-installation analysis to sizing and design support, an in-house support team assists designers and installers every step of the way. Plus, a network of representatives across North America provides in-field support.



In-house technical support team

Planning & Design Software

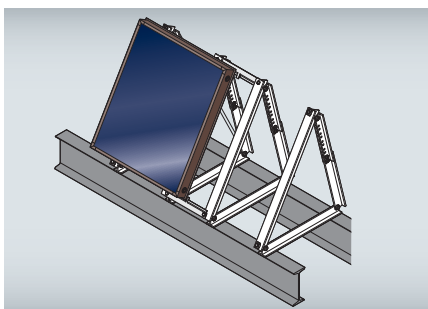
Our proprietary solar simulation program ESOP NA 4.0 for solar professionals performs system calculations of a specific design, including solar energy production, solar fraction and energy savings. Available for a nominal license fee; or ask us to run a free simulation of your project.



ESOP solar simulation program

Complete System Packages

Pre-designed solar DHW system packages available for various household sizes. Retrofit packages for integration with any hot water heater, or single-tank packages for solar hot water heating with heating boiler backup. CSA and SRCC certified system packages available.



Unique mounting hardware

Mounting Systems

Pre-engineered corrosion-resistant mounting systems for flat and sloped roof or wall installations provide maximum security over the entire lifetime of your system. Easy to assemble and designed specifically for Viessmann collectors.



Flexible pre-insulated piping systems

Pre-Insulated Piping

Reduce installation time and save money with our flexible pre-insulated piping systems. This all-in-one splittable twin-tube system comes in corrugated stainless steel or copper piping, c/w sensor wire and high R-value insulation.



Complete system accessories

System Accessories

From leak-proof quick-connect fittings to high-temperature solar expansion tanks and solar glycol, all of our system accessories have been carefully sourced to build the most reliable system on the market.

VITOSOL 100-F VITOSOL 200-F

High-performance flat plate solar collectors



Vitosol flat plate solar collectors are OG-100 certified by the Solar Rating and Certification Corporation (SRCC) and CSA energy performance verified.

Your money well spent

With the Vitosol flat plate collector series you can't go wrong. No matter if you select the premium 200-F or the entry-level 100-F series, you will love the performance, quality construction and value. Suitable for all types of solar thermal installations, get the best use out of your flat plate collectors in a solar hot water or pool heating application.

Rugged construction

Equipped with a high-efficiency selective surface coated one-piece absorber, impact-resistant solar glass and non-degrading thermal insulation, our flat plate collectors deliver solar energy efficiently and reliably year after year. High-quality materials such as copper, stainless steel and aluminum prevent corrosion and allow the collector to weather the elements.

A tightly sealed one-piece wrap-around aluminum frame provides excellent stability and durability. A clean, attractive look, with no screws or rivets visible.

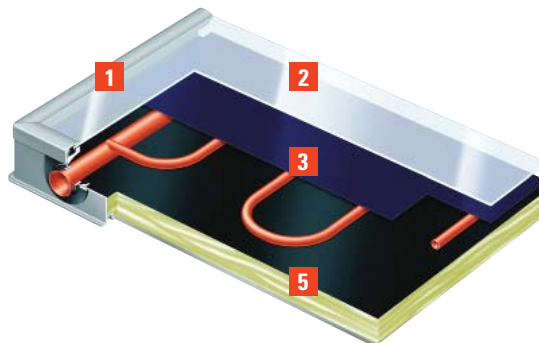
Versatile application

Vitosol flat plate collectors are available in vertical or horizontal versions and can be installed on sloped or flat roofs, as a free-standing installation or on walls. In commercial applications up to 12 collectors can easily be connected into an array with quick-connect fittings. Adaptable to virtually any requirement and application, Vitosol flat plate collectors are the best fit for solar hot water and pool heating applications.

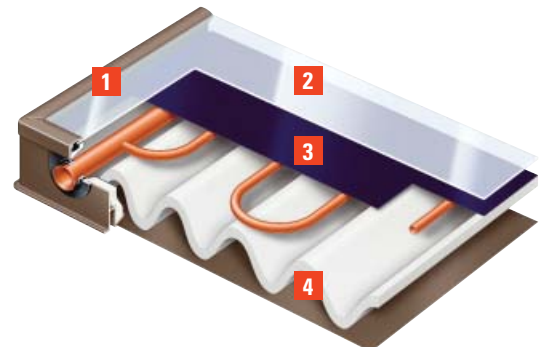
100 or 200 Series?

While performance levels between the 100 and 200 Series are comparable in warmer climates, the 200-F collector produces significantly higher output in colder climates due to additional insulation on the side and back. Plus, with a brown powder-coated one-piece frame, the 200 Series is more easily integrated into your building design. If budget is a key factor in your decision, the 100 Series is an economical way to add a high-quality Viessmann solar system to your home or building.

- 1 One-piece aluminum frame
- 2 Impact-resistant solar glass
- 3 Highly-selective blue surface coated absorber
- 4 Thick melamine resin foam thermal insulation
- 5 Low-profile frame design



VITOSOL 100-F



VITOSOL 200-F



Flexible connection pipes for fast connection of multiple flat plate collectors.

Features & Benefits at a Glance

- Viessmann made flat plate solar collector systems, 27 ft.² / 2.5 m², horizontal and vertical models
- Economy series 100-F and premium series 200-F; suitable for all applications, best choice for solar DHW and pool heating
- Outstanding performance year after year with high-efficiency selectively coated absorber and non-degrading insulation
- Excellent product life with rugged, high-quality, weather-tight and corrosion-resistant construction
- OG-100 certified by the Solar Rating and Certification Corporation (SRCC) and verified for energy performance by CSA
- Versatile installation options: Flat, sloped roof or free-standing, vertical or horizontal orientation, up to 12 collectors per array
- Clean, attractive product design for building design integration
- Maximum system performance with full range of design-matched system components
- Lower pump and piping costs due to low-flow design and low pressure drop
- Reduced piping cost with same-side piping connections for up to 10 collectors

VITOSOL 200-T VITOSOL 300-T

Premium vacuum tube solar collectors



Vitosol vacuum tube solar collectors are OG-100 certified by the Solar Rating and Certification Corporation (SRCC) and CSA energy performance verified.

High performance

Vacuum tube collectors achieve excellent results not just year-round, but particularly in cold and windy conditions. The collector's absorbers are located inside vacuum tubes, which, much like a thermos, have excellent insulating qualities and prevent heat loss. Although vacuum tube collectors can be used in any solar application, they provide best results in space heating supplement systems or high-temperature applications, such as solar cooling.

How they work

Solar energy is captured by a selective surface coated copper absorber sheet inside the evacuated glass tubes. With a direct-flow vacuum tube, like the Vitosol 200-T, this heat is transferred to a solar fluid circulating directly through the absorber pipes in the vacuum tubes. With heat pipe vacuum tubes, like the Vitosol 300-T, the captured heat evaporates water inside a heat pipe, which then rises to a condenser to transfer the heat to the solar fluid circulating through the header. In both cases, heat loss is significantly lower compared to flat plate collectors due to the excellent thermal insulation provided by the vacuum tubes.

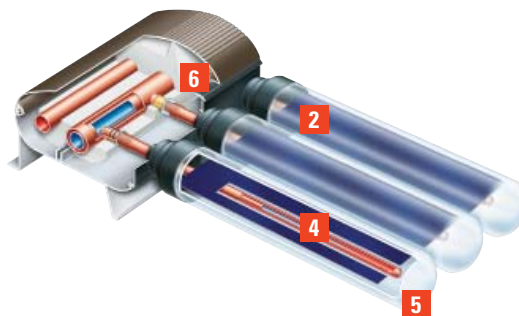
Serviceability

While the Vitosol 200-T and 300-T collectors are comparable from a performance perspective, one advantage of the Vitosol 300-T is the "dry" connection between tubes and header, allowing individual tubes to be installed after the system is filled and under pressure; tubes are easily replaced if required. Plus, the much lower collector fluid volume and stagnation temperature of the 300-T collector help protect the solar fluid from overheating.

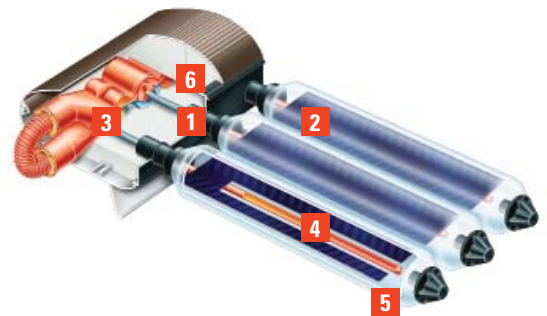
Versatility

No other collector offers as many mounting options as the Vitosol 200-T: vertical or horizontal installation on sloped or flat roofs, facade or ground mounted, it is ideal for architectural integration and a design element for any building. In commercial applications up to 150 tubes of both the Vitosol 200-T or 300-T can easily be connected in series with quick-connect fittings and easy-to-use pre-engineered mounting systems.

- 1 "Dry" connection between heat pipe and solar fluid (300-T)
- 2 Highly-selective blue surface coated copper absorber
- 3 Duotec patented heat exchanger (300-T)
- 4 Heat pipe (300-T)
Coaxial distribution pipe (200-T)
- 5 Impact-resistant solar glass
- 6 Highly effective thermal insulation



VITOSOL 200-T

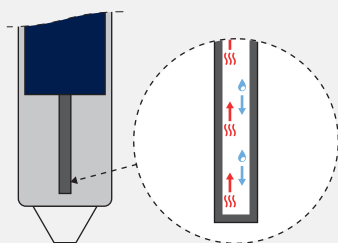


VITOSOL 300-T



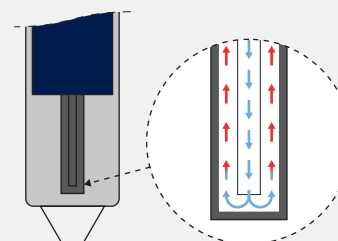
Features & Benefits at a Glance

- Direct-flow (200-T) and heat pipe (300-T) premium vacuum tube collector systems
- Available in two sizes: 20 or 30 tubes
- Suitable for all applications, best choice for applications in cold climates and supplemental space heating systems
- Outstanding performance with selectively coated copper absorber, vacuum tube design and patented Duotec heat exchanger (300-T)
- High-quality construction with impact-resistant borosilicate glass, vacuum sealed glass-metal joints, copper and stainless steel
- OG-100 certified by the Solar Rating and Certification Corporation (SRCC) and verified for energy performance by CSA
- Versatile mounting options: Horizontal (200-T) or vertical, on flat or sloped roofs, ground or facade mounted (200-T). Ideal as design element in architectural integration (200-T)
- Maximum system performance with full range of design-matched system components
- Fast installation with flexible connection pipes, quick-connect fittings and pre-engineered mounting hardware
- Easy tube replacement with “dry” connection between tubes and header (300-T)



Heat pipe

In a heat pipe vacuum tube, heat captured by the absorber evaporates the water in the heat pipe, which rises to the condenser and transfers heat to the solar fluid circulating through the header where it condenses.

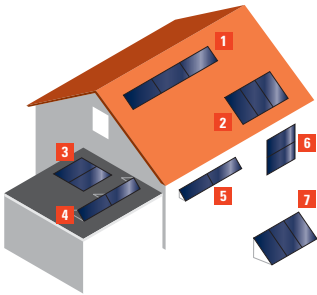


Direct flow

In a direct-flow vacuum tube the heat captured by the absorber is directly transferred to the solar fluid circulating through the absorber pipe in the vacuum tube.

Collector Selection Guide

Choosing the right collector is key for the performance of your solar system. The guidelines below will help determine the best option for your application.



- 1** Sloped Roof, Horizontal (100-F, 200-F, 200-T)
- 2** Sloped Roof, Vertical (100-F, 200-F, 300-T)
- 3** Flat Roof, Flush (200-T)
- 4** Flat Roof, on Racks (100-F, 200-F, 300-T)
- 5** Facade Mounting, on Racks (200-T)
- 6** Facade Mounting, Flush (200-T)
- 7** Free-standing (100-F, 200-F, 300-T)

System Type

While all Viessmann collectors can be used for essentially any application, it is the temperature requirements of your application and heat loss characteristics of a specific collector that typically determine which collector is most suitable.

In solar applications with low system temperatures, such as high-volume DHW or indoor pool heating, flat plate and vacuum tube collectors have comparable performance levels. A flat plate system is typically recommended based on the lower investment cost.

In medium-temperature applications (residential DHW and combination space heating), either collector type can be used. While vacuum tubes provide a higher output they also have a higher investment cost. In process heat or solar cooling applications requiring high system temperatures, vacuum tubes provide significantly higher performance and are the collector of choice.

Price & Performance

In most DHW and pool heating applications, flat plates will yield the best bang for the buck. For larger systems, a multiple flat plate system is a cost-saving option. However, in systems that require operation with low ambient air temperatures or high solar fluid temperatures, vacuum tube collectors may be worth the investment. When minimal roof space is available, vacuum tube collectors may be the best choice.











Wind & Snow

In areas with high snow loads, flat plate collectors are often a good fit as the higher surface heat loss melts away snow or ice build-up on the collector. If high winds are a concern and a sloped roof installation is not possible, consider horizontal flat plate collectors on a flat roof or a facade, or facade-mounted Vitosol 200-T collectors.

Mounting & Aesthetics

If you are looking to make a statement, Vitosol 200-T vacuum tube collectors offer not only a multitude of mounting options, but are a perfect design element as well. For less conspicuous installations, horizontal flat plate or Vitosol 200-T collectors flush on a flat roof are a low-profile solution.



Type of Application	Temperature Operating Range	Vitosol 100/200-F Flat Plate Collectors	Vitosol 200/300-T Vacuum Tube Collectors
High-volume domestic hot water system with low solar coverage [†]	Low		
Residential domestic hot water system with high solar coverage [†]	Medium		
Indoor pool heating system	Low		
Combination DHW and space heating system	Medium-High		
Process heat and solar cooling	High		

[†] Percentage of energy covered by solar system. Low: 40 - 60%, typical commercial application. High: 60 - 80%, typical residential application.

Your Partner for Large-Scale Systems

Large-scale solar applications can be complex projects. With the right product portfolio and expert support services, we make sure your project is successful from start to finish.

Products geared to your needs

With up to eight different collector configurations, multiple piping options, advanced connection systems, pre-engineered mounting hardware and commercial-size pumping stations, our product portfolio is designed to adapt to the requirements of the most unique large-scale applications. Viessmann commercial solar systems are commonly used in high-volume domestic hot water, indoor pool heating, process water heating or solar cooling systems.

Expert sizing and design

Our in-house solar project team will assist you every step of the way - from a pre-installation solar software analysis to determine system size and required materials, to conceptual CAD drawings of your system design, roof layout and control sequence.

Fast and easy installs

In a multi-array system, with up to 12 flat plate collectors or 150 tubes per array, our flexible inter-connection pipes and easy-to-use racking systems for flat / sloped roofs, facade or ground mounting will drastically speed up the installation process.

Plus, with supply and return connections on the same or alternate sides of the array, get additional flexibility on your roof layout. Low-profile horizontal flat plate collectors are ideally suited for large-scale systems.

Commissioning support

During the commissioning phase, our network of in-field representatives provides assistance on-site, while our in-house team is available for additional technical support to make sure your solar project gets off the ground as smoothly as possible.

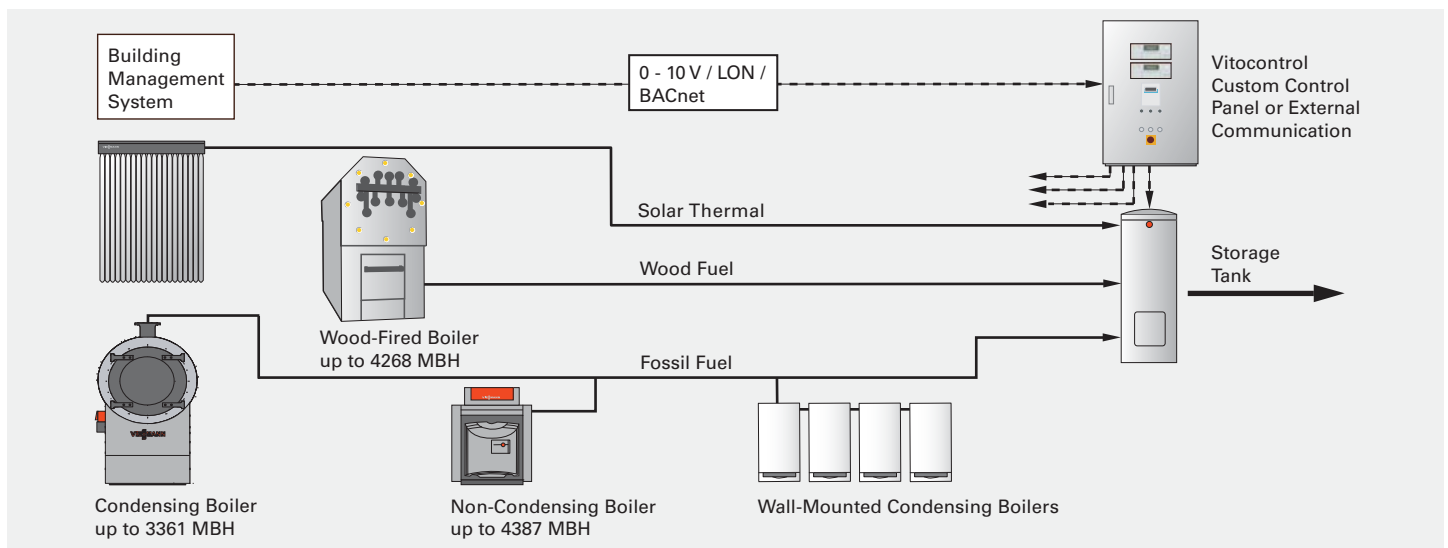
Complete system integration

A solar system is typically paired with an auxiliary energy source to ensure a reliable supply of energy. Depending on the application, a high-efficiency condensing boiler or renewable energy system, such as biomass or geothermal, is a perfect match. Tap into our full range of backup heating solutions and our team's extensive system integration knowledge to get the best possible results from your large-scale system.



Large-scale horizontal Vitosol 200-F installation

Complete system integration with Viessmann solar thermal, biomass and fossil fuel heating and control technology.



Technical Specifications



Vitosol 100-F Economy series flat plate collector

Model			SV1B	SH1B
Installation			Vertical	Horizontal
Gross area		ft. ² / m ²	27 / 2.5	27 / 2.5
Aperture area		ft. ² / m ²	25.1 / 2.33	25.1 / 2.33
Dimensions (overall)	Width	in / mm	41.75 / 1 056	93.75 / 2 380
	Height	in / mm	93.75 / 2 380	41.75 / 1 056
	Depth	in / mm	2.75 / 72	2.75 / 72
Weight (incl. thermal insulation)		lbs / kg	96.8 / 43.9	96.8 / 43.9



Vitosol 200-F Premium series flat plate collector

Model			SV2A	SH2A
Installation			Vertical	Horizontal
Gross area		ft. ² / m ²	27 / 2.5	27 / 2.5
Aperture area		ft. ² / m ²	25.1 / 2.33	25.1 / 2.33
Dimensions (overall)	Width	in / mm	41.75 / 1 056	93.75 / 2 380
	Height	in / mm	93.75 / 2 380	41.75 / 1 056
	Depth	in / mm	3.5 / 90	3.5 / 90
Weight (incl. thermal insulation)		lbs / kg	90.2 / 40.9	90.2 / 40.9



Vitosol 200-T Premium series direct-flow vacuum tube collector

Model			SD2A, 2 m ²	SD2A, 3 m ²
No. of tubes			20	30
Gross area		ft. ² / m ²	30.98 / 2.88	46.5 / 4.32
Aperture area		ft. ² / m ²	23 / 2.14	34.8 / 3.23
Dimensions (overall)	Width	in / mm	55.75 / 1 418	83.75 / 2 127
	Height	in / mm	80.5 / 2 043	80.5 / 2 043
	Depth	in / mm	5.5 / 143	5.5 / 143
Weight (incl. thermal insulation)		lbs / kg	134.5 / 61	208 / 94.6



Vitosol 300-T Premium series heat pipe vacuum tube collector

Model			SP3, 2 m ²	SP3, 3 m ²
No. of tubes			20	30
Gross area		ft. ² / m ²	31 / 2.88	46.5 / 4.32
Aperture area		ft. ² / m ²	22.7 / 2.11	34.1 / 3.17
Dimensions (overall)	Width	in / mm	55.75 / 1418	83.75 / 2127
	Height	in / mm	80 / 2031	80 / 2031
	Depth	in / mm	5.5 / 143	5.5 / 143
Weight (incl. thermal insulation)		lbs / kg	112 / 51	167 / 76

System Components

Solar-Divicon-HX Pumping and Heat Transfer Station

Complete with a large integrated double-wall stainless steel heat exchanger, 3-speed solar and DHW pumps, integrated solar control and all required safety devices, it connects your solar system to any standard storage tank. Pre-assembled, pre-wired and fully insulated. Two models: DN 20 > 4 USG/min, DN 25 > 6 USG/min



Model		DN 20	DN 25
Flow Meter (setting range)	USG/min ltr/min	0.1 to 4.0 1 to 15	0.1 to 6.0 1 to 23
Max. number of Vitosol-F collectors*		8	18
Max. number of Vitosol-T tubes*		150	270

**Actual number of collectors will depend on system layout, type of collector, length of piping run and size of pipe used.*

Solar-Divicon Pumping Station

Complete with 3-speed solar pump and all required safety devices, pre-assembled, pre-wired and fully insulated. Connects to a solar DHW storage tank with internal heat exchanger coil. For residential or commercial systems. Optional mounting bracket for SCU solar control. Two models: DN 20 > 5 USG/min, DN 25 > 10 USG/min



Model		DN 20	DN 25
Flow Meter (setting range)	USG/min ltr/min	0.5 to 5 1 to 20	1 to 10 5 to 40
Max. number of Vitosol-F collectors*		12	25
Max. number of Vitosol-T tubes*		180	360

**Actual number of collectors will depend on system layout, type of collector, length of piping run and size of pipe used.*

Differential Temperature Controls

Model SCU 124 for basic single-load and SCU 224 and Vitosolic 200 for multi-load solar systems. Up to 10 system layouts, including a 2-tank system, east-west collector system, solid fuel boiler system and a space heating supplement system. A control option for any residential or commercial solar system.



Model	SCU 124	SCU 224	Vitosolic 200
Relay outputs	2	2	6
System configurations	3	10	15
Number of heat loads (tanks)	1	2	4

DHW Storage Tanks

Viessmann made stainless steel or enamel-lined steel domestic hot water storage tanks from 42 to 120 USG, make the ideal solar storage tank. Single- or dual-coil options, with thick thermal insulation, cleanout openings, and multiple sensor wells.



Model	CVA	CVB	EVI	EVB
Capacity (USG)	42-120	79, 120	53-120	79, 120
Number of models	4	2	3	2
Number of coils	1	2	1	2
Construction	Enamel-Coated Steel	Enamel-Coated Steel	Stainless Steel	Stainless Steel

Viessmann Solar Systems at Work

Viessmann solar systems contribute to essential energy savings in residential and commercial installations across North America and around the world.



Viessmann - The Company

Viessmann - climate of innovation

The Viessmann brand promise concisely expresses all that we hope to achieve. It is our key brand message and, together with our brand label, an identifying feature throughout the world. "Climate of innovation" is a promise on three levels: It is a commitment to a culture of innovation. It is a promise of high product utilization and, at the same time, an obligation to protect the environment.

Comprehensive range of products and services for all fuel types

Viessmann is one of the leading international manufacturers of heating systems and, with its comprehensive range of products and services, offers individual solutions of efficient systems for all applications and fuel types. As an environmental pioneer, the company has been supplying particularly efficient and clean heating systems for decades.

Acting in a sustainable manner

For Viessmann, to take responsibility, means a commitment to act in a sustainable way. This means bringing ecology, economy and social responsibility into harmony with each other, ensuring that current needs are satisfied without limiting the basis for life for the generations to come.

Efficiency Plus

With the sustainability project "Efficiency Plus" Viessmann shows at its Allendorf site, that the political goals set for 2020 with regard to climate and energy can already be achieved today with commercially available technology.

This project demonstrates:

- Environmental protection
- Efficiency with resources
- Securing manufacturing sites for the future

As a result, fossil fuels have been cut by 40 percent and CO₂ emissions reduced by a third.



Efficiency Plus



Deutscher Nachhaltigkeitspreis

Deutschlands nachhaltigste Produktion 2009

Viessmann won the German Sustainability Award 2009 for its commitment to climate protection and efficient use of resources.



For the particularly efficient utilization of energy through the innovative heat recovery center at the company's main site in Allendorf/Eder, Viessmann was rewarded with the Energy Efficiency Award 2010.

Viessmann Werke GmbH & Co. KG

Company details

- Established in: 1917
- Employees: 9000
- Group turnover: €1.7 billion
- Export share: 50 percent
- 16 factories in Germany, France, Canada, Poland, Hungary, Austria, Switzerland and China
- Sales organization in 37 countries
- 120 sales offices worldwide
- 3 service providers

Performance spectrum

- Condensing technology for oil and gas
- Solar thermal systems
- Heat pumps
- Wood combustion systems
- CHP modules
- Biogas plants
- Services



climate of innovation

North American and Canadian Head Office

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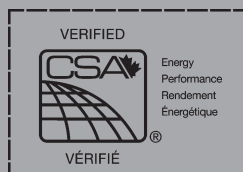
Sales Center

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Other Viessmann Group facilities in North America

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Tel. (608) 845-2193
www.bioferm-es.com



Viessmann Group

VIESSMANN

KWT

KOB

MAWERA

ESS

BIOFERM

Schmack

Carbotech