

virtu<sup>HOT</sup>

Same space, more energy

Virtu<sup>HOT</sup> Specification Sheet 2025\_v1.2

Solar  
Redefined



Naked Energy.

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Certified products:  
Virtu<sup>HOT</sup>: 011-7S2980 R  
Virtu<sup>HOT</sup> HD: 011-7S2981 R

## Unrivalled performance in any environment

- > Reduce **scope 1** emissions using 100% renewable **solar heat**
- > 3 x **CO<sub>2</sub> savings** per m<sup>2</sup> compared to PV panels
- > Higher **energy-density** compared to market-leading solar thermal panels

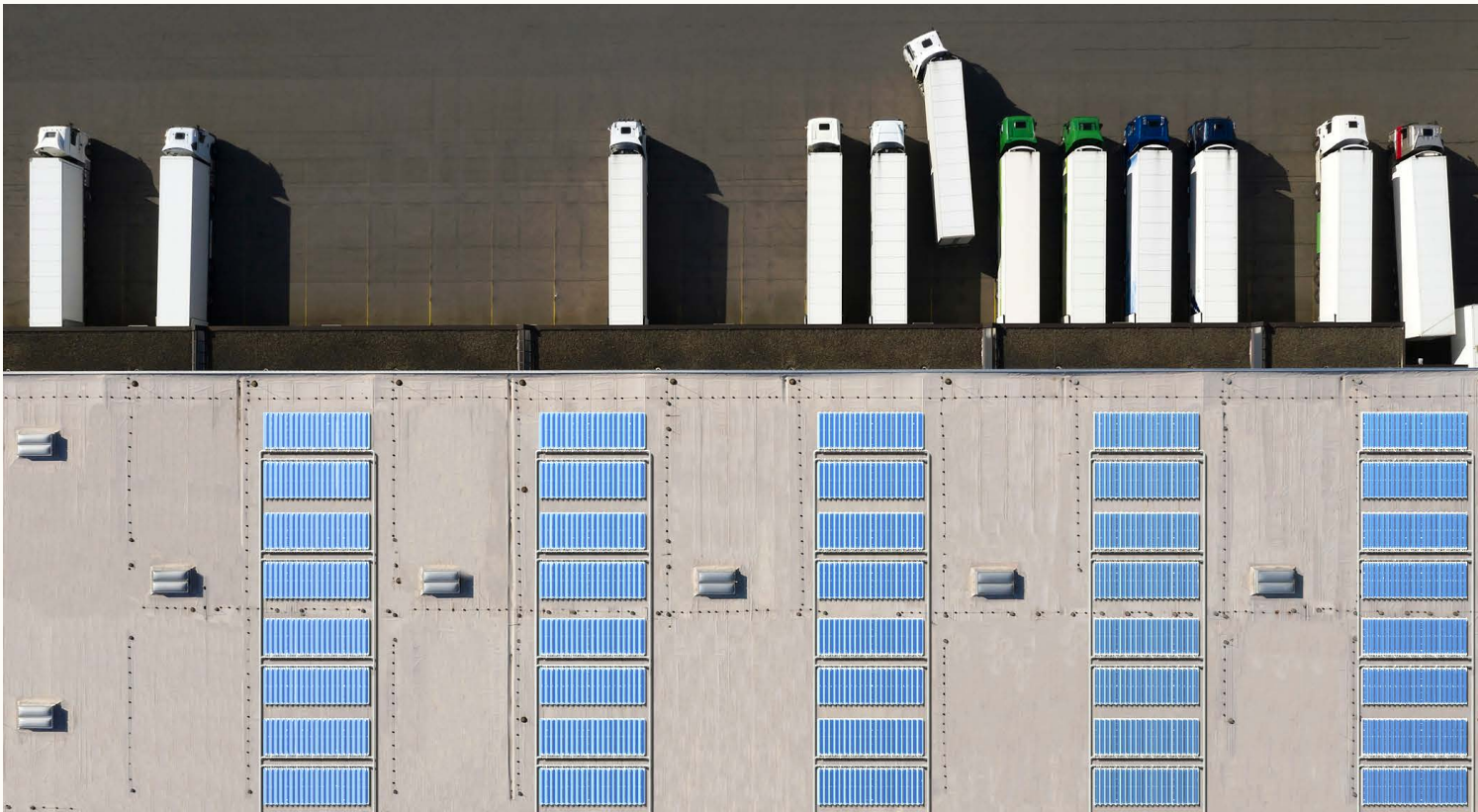
## Versatile and easy to install

- > Simple **modular** assembly
- > Integrated mounting with **self ballasting**: no need for roof penetration
- > **Compatible** with any roof type
- > **Low profile**: 26.5 cm installed height

## Designed for Commercial Scale

Ideal for:

- ✓ Multi-dwelling residential
- ✓ Manufacturing
- ✓ Food & beverage
- ✓ Hospitality & leisure



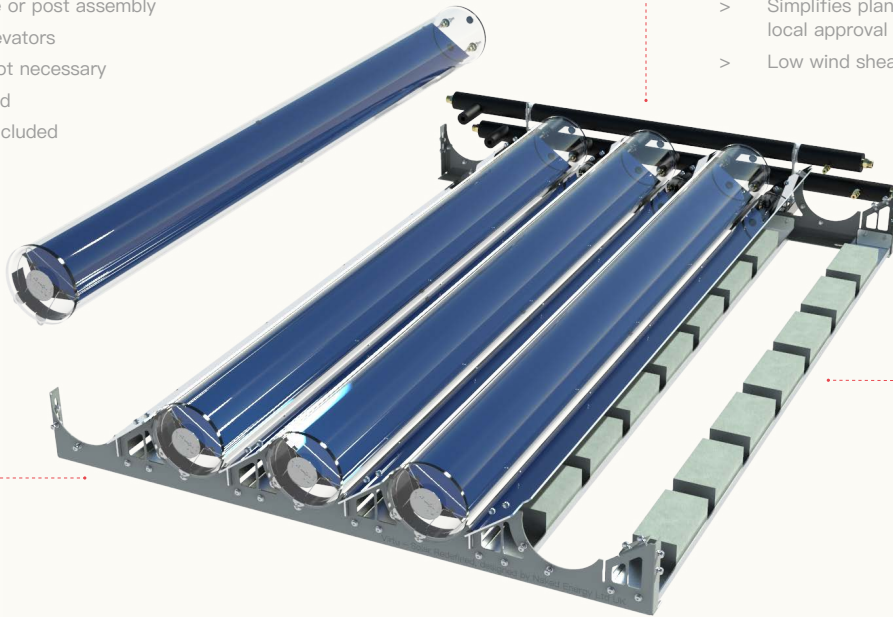


### Low install cost

- > Simple modular assembly
- > Lifted to roof pre or post assembly
- > Fits in service elevators
- > Use of a crane not necessary
- > Mounting included
- > Pipe manifolds included

### Low Profile

- > 26.5 cm height from roof/façade
- > Simplifies planning permission/ local approval
- > Low wind shear



### Compatible with any roof type

6 X M8 mounting slots provide compatibility with, for example, clamp and rail systems

- > Suitable for:
  - ✓ Raised seamed roofs
  - ✓ Trapezoidal roofs
  - ✓ Sarnafil roofs
  - ✓ Nicholson fittings
  - ✓ Pitched roofs
  - ✓ Façade mounting

### Self ballasting

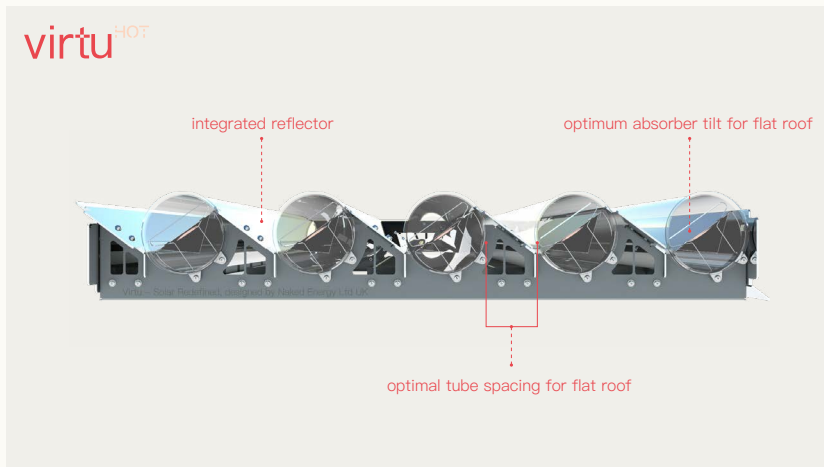
In-built ballast trays can be loaded with concrete blocks.

- > No need for roof penetration
- > No need for additional mounting
- > Suitable for:
  - ✓ Felt roofs
  - ✓ EPDM roofs
  - ✓ Rubber roofs
  - ✓ Sarnafil roofs



## Flat roof performance

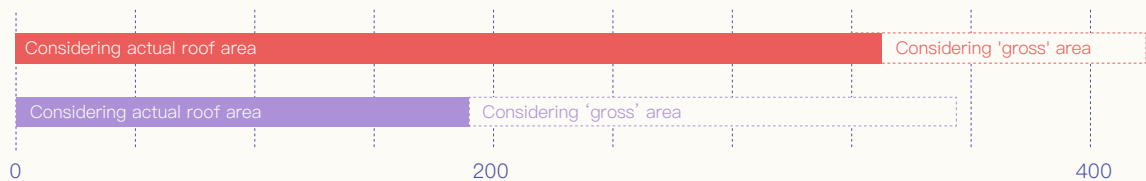
Virtu<sup>HOT</sup> maximises energy density on a flat roof



Annual kWh per m<sup>2</sup> roof area (Würzburg @50°C)\*

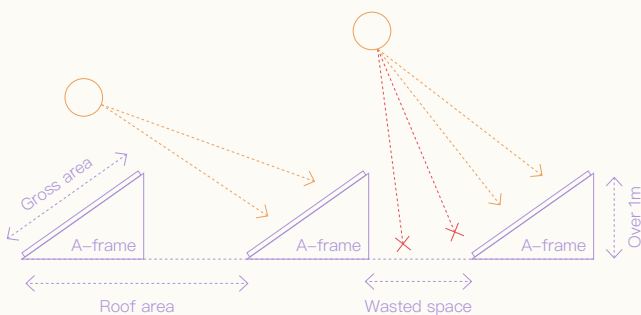
virtu<sup>HOT</sup>

Market leading flat panel



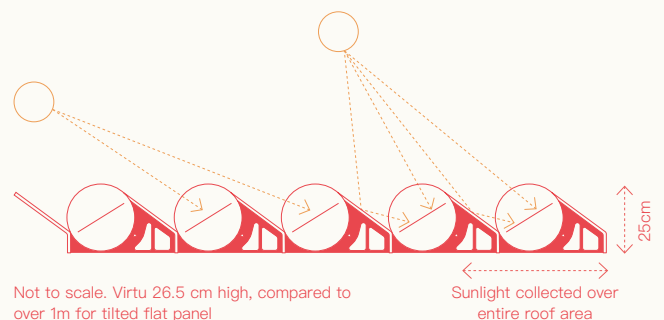
### Standard panels waste space

- > Panels/collectors tilted towards the sun on A-frames
- > Spaced to avoid self shading in winter
- > Roof area required is larger than panel gross area



### No wasted space with Virtu<sup>HOT</sup>

- > Absorber plates are tilted to optimum angle within tubes
- > Integrated reflector captures sunlight in space between tubes
- > More energy, less space

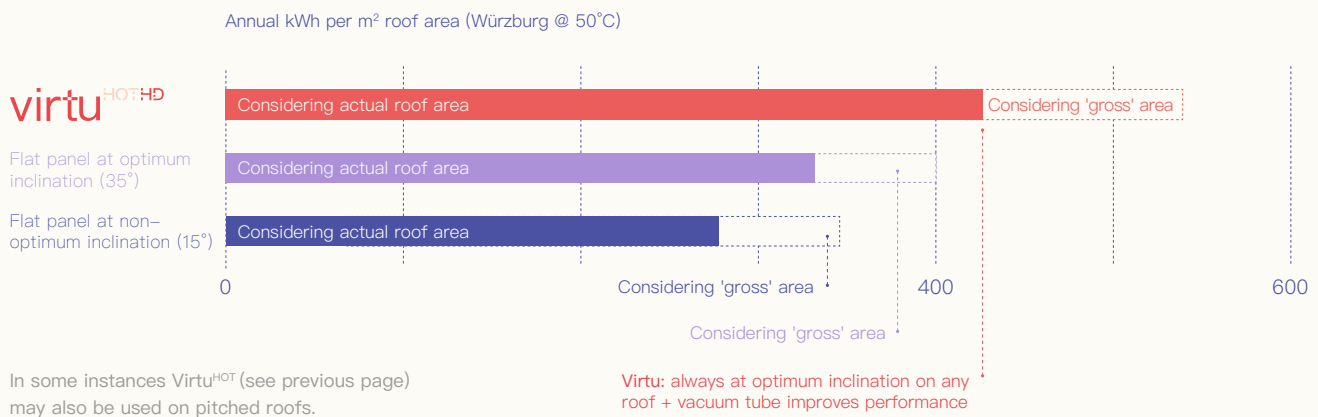
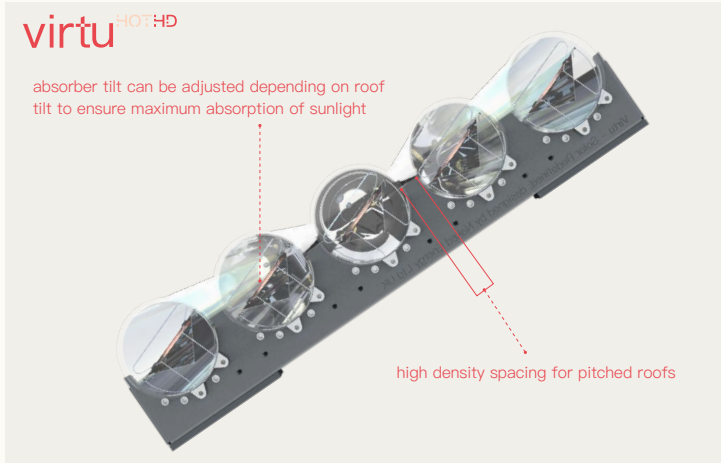


\*Chart notes

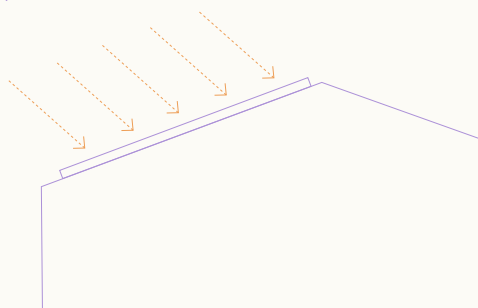
- > All annual kWh values are calculated using industry-standard Scenocalc tool, taking Würzburg as location, 50°C fluid temperature and 0° azimuth.
- > Virtu<sup>HOT</sup> kWh calculation takes parameters from the [Virtu<sup>HOT</sup> Solar Keymark certificate](#). Calculation is made at 0° inclination. Service corridor allowance is considered in roof area calculation (see layout on page 6).
- > Flat panel kWh calculation takes parameters from [Viessmann Vitosol 200 FM Solar Keymark certificate](#). Similar results are achieved by other best-in-class panels. Calculation is made at 15° inclination, by interpolating between 0° and 25° inclination. Space between panels is calculated using [Viessman Technical Guide – Solar Thermal Systems](#). The 15° inclination has been chosen to produce best trade off between gross area and roof area performance.

## Pitched roof performance

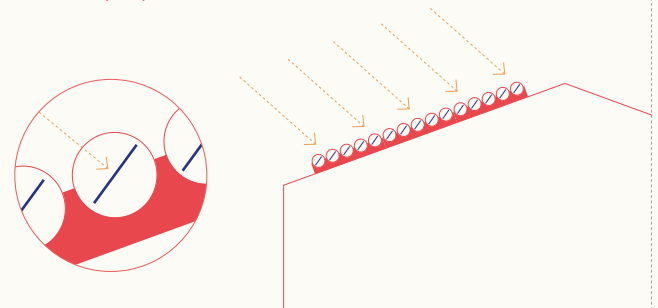
Sister product Virtu<sup>HOT HD</sup> is designed for pitched roofs. Very few roofs are optimally angled for solar collectors. Virtu<sup>HOT HD</sup> has the flexibility to tilt absorbers towards the sun, giving optimum performance on any roof inclination.



Flat panel: non-optimum inclination



Virtu: always optimum

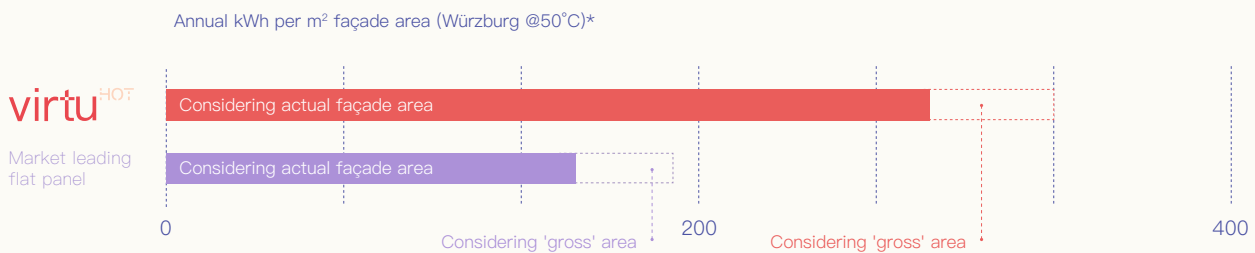
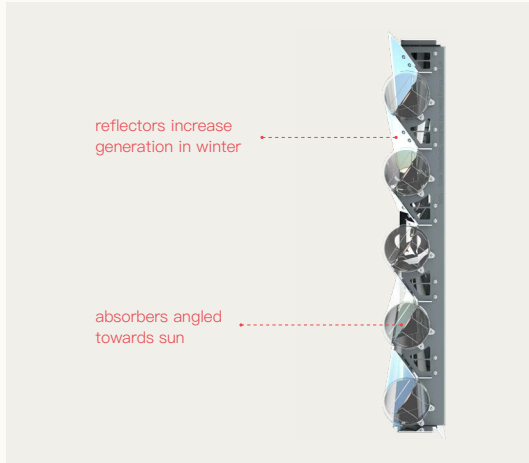


\*Chart notes

- > All annual kWh values are either taken directly from Solar Keymark datasheets, or calculated using the industry-standard Scenocalc tool, taking Würzburg as location, 50°C fluid temperature and 0° azimuth.
- > Virtu<sup>HOT HD</sup> kWh numbers are taken directly from Virtu<sup>HOT HD</sup> Solar Keymark certificate, since absorbers can be adjusted to produce optimal result on any roof inclination between 15° and 45°. Service corridor allowance is considered in roof area calculation (see layout on page 6).
- > Flat panel kWh calculation takes parameters from Viessmann Vitosol 200 FM Solar Keymark certificate. Similar results are achieved by other best-in-class panels. Values for 35° inclination are taken directly from Solar Keymark certificate. Values at 15° inclination are calculated using Scenocalc, interpolating between 0° and 25° inclination. For roof area calculation, similar clearance to Virtu<sup>HOT HD</sup> is assumed.

## Vertical façade performance

Ever think of using your façade to produce solar energy whilst introducing a unique architectural feature and broadcasting your green credentials? Virtu<sup>HOT</sup> unique design means it generates nearly as much energy on a south-facing façade as it does on a rooftop.

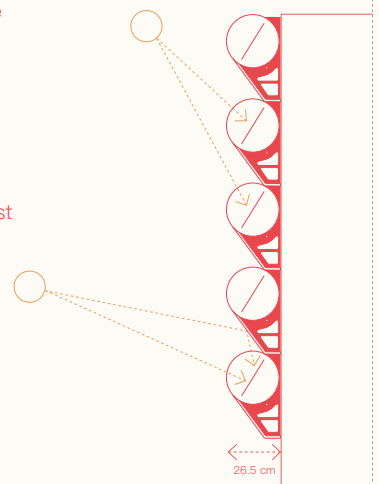


Flat panels are non-optimum in both summer and winter



Virtu: Absorbers tilted upwards for optimal summer performance

Virtu: Reflectors provide boost to winter output



\*Chart notes

- > All annual kWh values are calculated using industry-standard Scenocalc tool, taking Würzburg as location, 50°C fluid temperature and 0° azimuth.
- > Virtu<sup>HOT</sup> kWh calculation takes parameters from the [Virtu<sup>HOT</sup> Solar Keymark certificate](#). Calculation is made at 90° tilt. The IAMs have been inverted to account for the orientation of the collector on the façade. Service corridor allowance is considered in façade area calculation (see layout on page 6).
- > Flat panel kWh calculation takes parameters from [Viessmann Vitosol 200 FM Solar Keymark certificate](#). Similar results are achieved by other best-in-class panels. Calculation is made at 90° tilt. For roof area calculation, similar clearance to Virtu<sup>HOT</sup> is assumed.



virtu<sup>HOT</sup>

Includes integrated reflector. Suitable for:

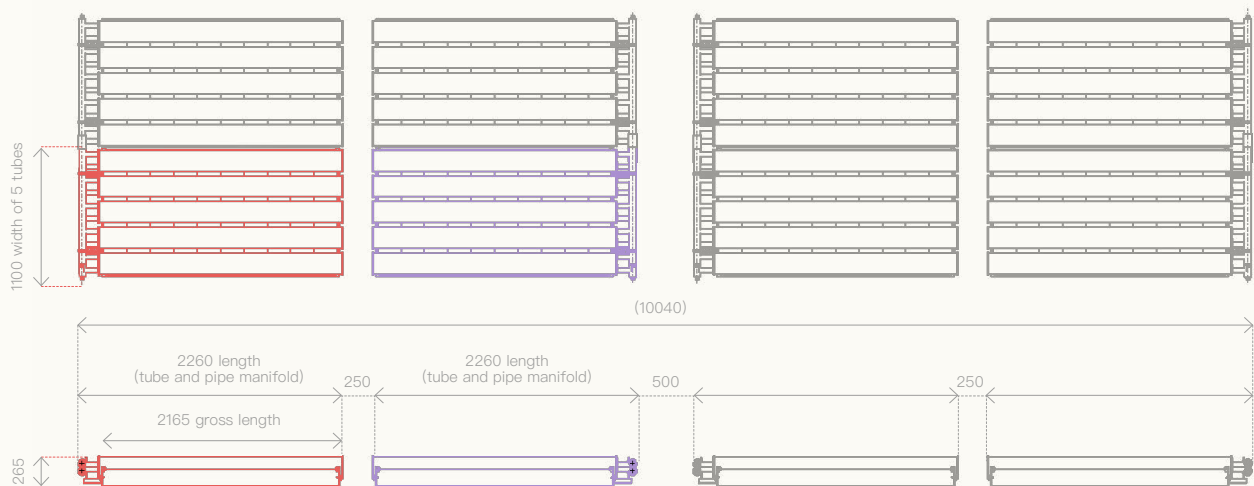
- > Flat roofs
- > Vertical façades
- > Low pitch roofs (< 15° tilt)
- > Installed in sets of 5 tubes
- > Sets connected together to form an array of any size
- > Can be configured with manifolds on **left** or **right** side

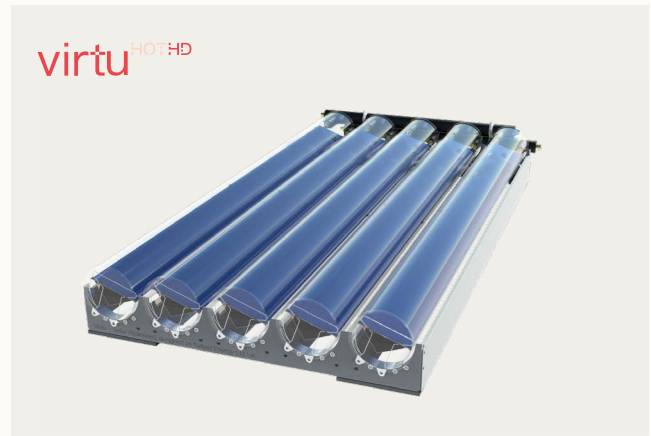
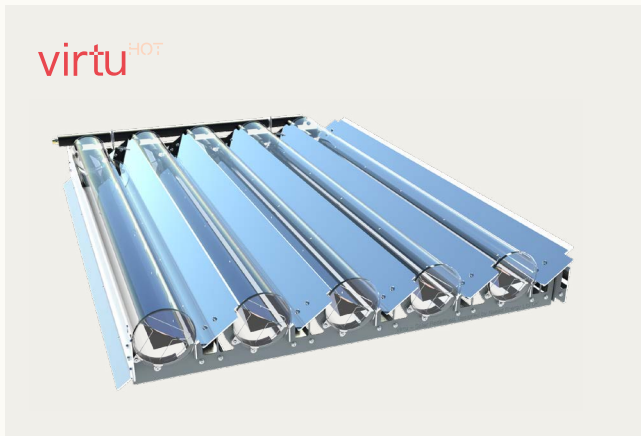


virtu<sup>HOT HD</sup>

Higher density tubes without reflector. Suitable for:

- > Pitched roofs
- > Flat roofs in very low latitudes (< 30° from equator)
- > Installed in sets of 5 tubes
- > Sets connected together to form an array of any size
- > Can be configured with manifolds on **left** or **right** side





Model	Virtu <sup>HOT</sup>	Virtu <sup>HOT HD</sup>
<b>SINGLE TUBE DIMENSIONS</b> (refer to drawing on previous page)		
Gross length	2165 mm	2165 mm
Gross width (single tube)	300 mm	220 mm
Gross height	265 mm	265 mm
Absorber area	0.324 m <sup>2</sup>	0.324 m <sup>2</sup>
Aperture area	0.64 m <sup>2</sup>	0.36 m <sup>2</sup>
Gross area	0.65 m <sup>2</sup>	0.47 m <sup>2</sup>
Roof area occupied (incl. pipe manifold and service corridor)	0.75 m <sup>2</sup>	0.55 m <sup>2</sup>
Total wet weight (unballasted)	19.3 kg	14.6 kg
Average roof loading (unballasted)	25.7 kg/m <sup>2</sup>	26.4 kg/m <sup>2</sup>
Additional ballast	Up to 21.7 kg (7 x 3.1 kg) of ballast blocks can be added per tube. Choose additional ballast based on wind loading calculations.	
Absorber plate angles	35°	Adjustable: 20°, 0° or -20°
<b>SET OF 5 CONNECTED TUBES DIMENSIONS</b> (refer to drawing on previous page)		
Gross width	1500 mm	1100 mm

<b>SINGLE TUBE HEAT OUTPUT</b> (see thermal parameters on next page)		
Peak thermal output	400 W	290 W
Stagnation temperature	260 °C	260 °C

<b>MATERIALS &amp; MOUNTING</b> (same for Virtu <sup>HOT</sup> and Virtu <sup>HOT HD</sup> )	
Absorber plate	Aluminium/copper
Pipes and manifolds	Copper
Glass	Borosilicate 3.3
Frame	Aluminium
Mounting slots	6 x M8 slots per set of 5 tubes

<b>HYDRONIC OPERATION AND CONNECTIONS</b> (same for Virtu <sup>HOT</sup> and Virtu <sup>HOT HD</sup> )	
Flow rate range	0.1–1 l/min
Maximum pressure	6 bar
Fluid outlet temperature range	10 – 90 (°C)
Heat transfer fluid	Water–Glycol Solution
Fluid volume (single tube)	150 ml
Fluid volume (set of 5 tubes with manifolds)	1.7 l
Manifold diameter (external)	22 mm
Manifold connections	BSPP 3/4" (G 3/4")

<b>PRESSURE DROP PER TUBE</b> (same for Virtu <sup>HOT</sup> and Virtu <sup>HOT HD</sup> )	
Flow rate (l/min)	Pressure drop (mbar)
0.1	3
0.2	6
0.4	12
0.6	19
0.8	25
1	31



## Annual performance in Solar Keymark standard locations

Fluid temperature	ATHENS			DAVOS			STOCKHOLM			WÜRZBURG		
	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C

Flat roof (0° inclination) – Virtu<sup>HOT</sup>

kWh per tube	567	474	381	439	355	277	314	244	183	353	277	208
kWh per m <sup>2</sup> gross area	857	717	575	675	547	426	484	375	281	544	426	320
Annual efficiency (%)	54%	45%	36%	50%	41%	32%	49%	38%	29%	50%	39%	29%

Pitched roof (15° – 45° degree inclination, south facing) – Virtu<sup>HOT</sup> HD<sup>2</sup>

kWh per tube	492	391	295	417	326	245	300	224	159	325	243	171
kWh per m <sup>2</sup> gross area	1047	832	628	887	694	521	639	476	338	691	516	365
Annual efficiency (%)	59%	47%	36%	55%	43%	32%	56%	42%	30%	56%	42%	30%

Vertical Façade (90° degree inclination, south facing) – Virtu<sup>HOT</sup>3

kWh per tube	389	304	226	405	328	260	287	223	170	283	216	160
kWh per m <sup>2</sup> gross area	598	467	348	623	505	400	441	344	261	436	332	246
Annual efficiency (%)	55%	43%	32%	51%	41%	33%	51%	40%	30%	50%	38%	28%

### Table notes

1. Calculated using industry-standard Scenocalc tool, taking input parameters from Virtu<sup>HOT</sup> Solar Keymark datasheet
2. Values taken directly from Virtu<sup>HOT</sup> HD Solar Keymark datasheet
3. Calculated using industry-standard Scenocalc tool, taking input parameters from Virtu<sup>HOT</sup> Solar Keymark certificate. IAMs are inverted to account for collector orientation.

## Guide to calculations for building regulations / compliance, for example SBEM, FSAP, LEED

SBEM calculations should take the Solar Keymark values according to EN 12975-2 (table below). Tilt should be set to the roof inclination.

	virtu <sup>HOT</sup>	virtu <sup>HOT</sup> HD
Area	0.65 m <sup>2</sup> per tube	0.47 m <sup>2</sup> per tube
Zero-loss efficiency ( $\eta_0$ )	0.39	0.56
First-order coefficient ( $a_1$ )	1.3 W/(m <sup>2</sup> K)	2.06 W/(m <sup>2</sup> K)
Second-order coefficient ( $a_2$ )	0.006 W/(m <sup>2</sup> K <sup>2</sup> )	0.007 W/(m <sup>2</sup> K <sup>2</sup> )
Incidence angle modifier (IAM)	1.8	1.46

FSAP calculations should take a corrected zero-loss efficiency to account for the fact that Virtu<sup>HOT</sup> has been tested at a solar incidence angle that is not perpendicular to the absorber (table below). Corrected zero-loss efficiency has been calculated as  $\eta_0 \times \text{IAM} (35) \times \cos(35)$  for Virtu<sup>HOT</sup>, and  $\eta_0 \times \text{IAM} (20) \times \cos(20)$  for Virtu<sup>HOT</sup> HD. Tilt should be set to 35° for flat roofs, the roof inclination for pitched roofs, and 55° for vertical façades

	virtu <sup>HOT</sup>	virtu <sup>HOT</sup> HD
Area	0.65 m <sup>2</sup> per tube	0.47 m <sup>2</sup> per tube
Zero-loss efficiency ( $\eta_0$ )	0.582	0.605
First-order coefficient ( $a_1$ )	1.3 W/(m <sup>2</sup> K)	2.06 W/(m <sup>2</sup> K)

## Guide to inputting Virtu<sup>HOT</sup> into simulation software, e.g. Polysun, Tsol, EnergyPro, Scenalc

When using more sophisticated simulation software, be sure to use the full parameter set from the Solar Keymark datasheets **Virtu<sup>HOT</sup>** or **Virtu<sup>HOT</sup>HD**, and take the full IAM into account. **The collector tilt should be set to the roof inclination.** For vertical façades, the collector is rotated through 180 degrees.



# Solar Redefined

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