



### JUMBO SOLAR

SolarAir systems for heating and ventilation with solar energy for the edificial sector.

The characteristics are:

- Saving of operational costs
- Profitable in operation
- Fresh air supply
- Simple technology
- Fits every heating system

#### GLK-air collectors:

JUMBOSOLAR-collector packages consist of single GLK-air collectors.

GLK-air collectors of Grammer Solar stand for high performance, for high quality made in Germany including the best components to ensure durability. Over 30 years of experience and development are comprised in our GLK-Solar Air-collectors:

- ESG 4 mm safety glass cover
- Galvanised steel frame
- Laminar aluminium absorber
- 60 mm rock-wool plate for rear insulation
- Air filter
- Collector dimensions: 2,500 x 1,003 x 175mm
- Weight: 80 kg
- Single collectors are modular, can be assembled to collector series



#### Collector package JumboSolar 20

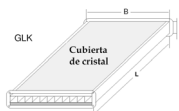
Standard system with 8 GLK collectors (gross surface.: 20 m<sup>2</sup>)



#### GLK-single collectors:

##### GLK-F

Filter collector with  $A_s = 2,5 \text{ m}^2$ , with integrated air filter.



##### GLK-M

Middle collector with  $A_s = 2,5 \text{ m}^2$ .

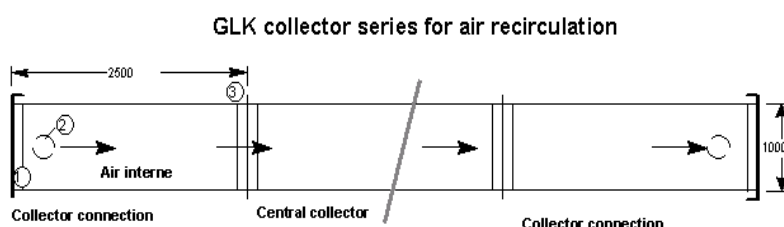
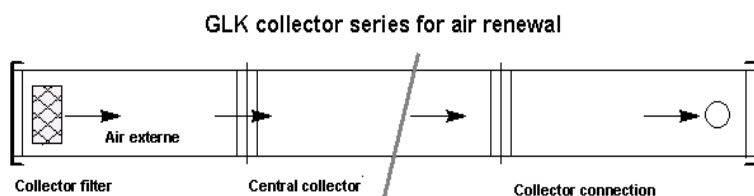


##### GLK-E

End collector,  $A_s = 2,5 \text{ m}^2$   
250 mm connection mouthpiece.

#### Collector series composed of GLK-single collectors

#### Dimensioning- and performance data:

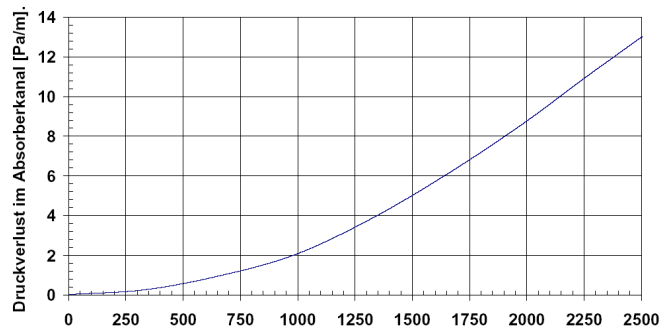
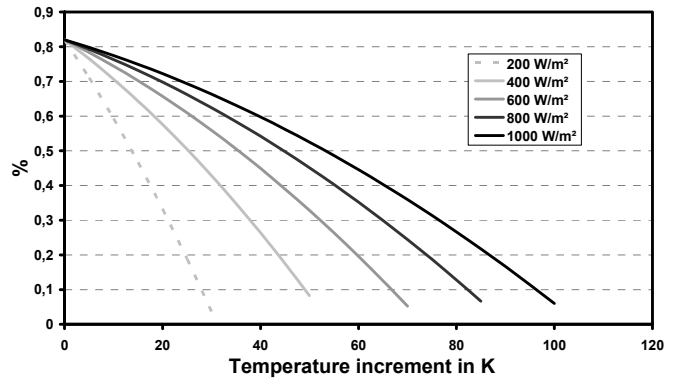


- Length of collector series: 20 to 40 m equals 8 to 16 GLK-collectors
- Parallel set-up of many collector series possible
- Air flow volume per collector series: 660 to 2000m<sup>3</sup>/h
- Air flow up to 1,100m<sup>3</sup>/h: connection duct DN 250mm
- Air flow up to 2.000 m<sup>3</sup>/h: connection duct DN 355 mm
- Thermal nominal power: 670Wp/m<sup>2</sup>
- Fresh air, recirculating indoor air and mixed air operation possible

**SLK Collector – characteristic values**  
(all data refer to aperture surfaces)

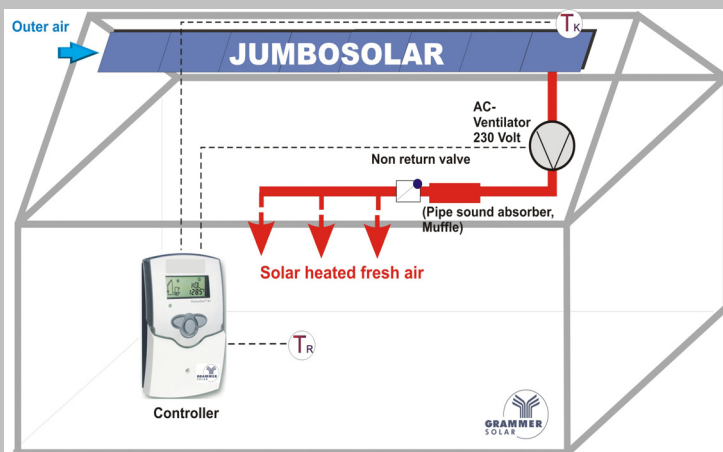
Magnitude	Symbol	Unit	Certified values
Conversion factor Temperature difference ( $t_m - t_a$ ) = 0	$\eta_0$		0,82
Linear loss coefficient	$A_1$	W/(m <sup>2</sup> x K)	4,2
Square loss coefficient	$A_2$	W/(m <sup>2</sup> x K <sup>2</sup> )	0,034
Angle factor	$K_{\theta}(50^\circ)$		0,96
Recommended flow range		m <sup>3</sup> /(h x m <sup>2</sup> )	30 bis 100
<b>Reference surface</b>			
Gross surface	$A_G$	m <sup>2</sup>	2,51
Aperture surface	$A_a$	m <sup>2</sup>	2,30
<b>Installation</b>			
Typs	On roof, integrated in roof, line-up installation, facade mounted,		

**JUMBOsOLAR efficiency against irradiance**



Volumenstrom im Absorberkanal GLK/JumboSolar [m<sup>3</sup>/h]  
Diagramm 2: Drop in pressure

**JUMBOsOLAR 20**



**JUMBOsOLAR 20.0 AU – Collector package for outdoor-air-operation, consists of:**

- 1 unit. GLK-F filter collector
- 6 units GLK-M middle collectors
- 1 units GLK-E end collector
- gross collector surface: 20.06 m<sup>2</sup>

**JUMBOsOLAR 20.0 UM – Collector package for recirculation air operation consists of:**

- 6 units GLK-M middle collectors
- 2 units GLK-E end collector E
- gross collector surface: 20.06 m<sup>2</sup>

Larger plants comprise accordingly more GLK-M middle collectors respectively consist of more collector series