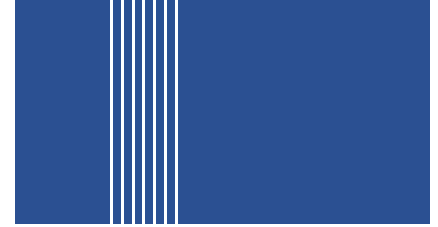


# “AIR RECYCLING”



## ECONOMY MEETS ENVIRONMENTAL PROTECTION



**VENTAFLEX®**

More efficiency in air guidance

Projects, in which the customer has the courage to realize new economical and ecological ideas, are the “favourite challenges” of the VENTAFLEX® Team. This was also done at one of the biggest wood processors in the Lower-Saxony city Goldstedt, where waste heat from the wood mill should be recycled into the drying system and continued to be used. In other words: Great amounts of air were supposed to be transported from A to B with the least possible thermal loss – and this with lowest energy consumption.

This exciting project was realized successfully with VENTAFLEX® air ducts oval.

>More about this project! Download Practice Report 52

### Comparable calculations helped to make the right choice

In advance upon request of the customer the performance of VENTAFLEX® air ducts oval was contrasted to the performance of classic metal ducts especially for this project. The result made the decision for VENTAFLEX® easy!

### Comparison: Thermal loss

VENTAFLEX® air duct oval	Square metal duct
<b>45 %</b> energy savings due to the insulation properties of PUR rigid foam	
<a href="#">Download the complete calculation</a>	

### Advantage insulation

VENTAFLEX® air ducts oval only lose half as much heat during continuous operation as conventional square ducts. The reason for this are the significantly better insulation properties of the PUR rigid foam compared to stone wool.



### Let numbers speak!

We would like to prove for your planned project that insulated VENTAFLEX® air ducts are the best choice.

**Contact us:**

+49 (0) 25 05 – 93 829 0

### Advantage form

Thanks to the even air flow of the oval form without any dead angles and the smooth surface of the GRP material – a clearly smaller dimensioned ventilator can be used here. An unbeatable argument for VENTAFLEX® air ducts oval.

### Comparison: Pressure loss

VENTAFLEX® air duct oval	Square metal duct
<b>50 %</b> less ventilator performance necessary	
<a href="#">Download the complete calculation</a>	

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On the following pages you will find differentiated calculations for the project.



# Thermal loss

The insulation value of the GRP material is significantly better than the effect, which is reached by insulation with stone wool

SAMPLE CALCULATION	VENTAFLEX® air ducts oval GFK coating/ PUR rigid foam	↔	conventional air duct square galvanized sheet steel/ stone wool
inner dimension	1270 x 2270 mm	↔	1200 x 2100 mm
insulation thickness	30 mm	↔	30 mm
thermal conductivity $\lambda$	<b>0,021 W/mK</b>	↔	<b>0,034 W/mK</b>
thermal resistance R	1,43 m <sup>2</sup> K/W	↔	0,88 m <sup>2</sup> K/W
thermal transition (U-Wert)	0,70 W/m <sup>2</sup> K	↔	1,13 W/m <sup>2</sup> K
inner cross section	2,54 m <sup>2</sup>	↔	2,52 m <sup>2</sup>
length	100,00 m	↔	100,00 m
inner perimeter	5,9 m <sup>2</sup>	↔	6,6 m <sup>2</sup>
(duct-) internal temperature	65 °C	↔	65 °C
outside temperaturer	23 °C	↔	23 °C
temperature difference	42 K	↔	42 K
thermal loss 1m VENTAFLEX®/ conventional duct	173,46 W	↔	314,16 W
thermal loss (total distance)	17346 W	↔	31416 W

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# Pressure loss

The dimension and the energy input of the ventilator is clearly lower with a smooth surface and an edge-clear form



More efficiency in air guidance

SAMPLE CALCULATION	VENTAFLEX® air ducts oval GRP coating/ PUR rigid foam	↔	conventional air duct square galvanized sheet steel/ stone wool
inner dimension	1270 x 2270 mm	↔	1200 x 2100 mm
inner cross section	2,54 m <sup>2</sup>	↔	2,52 m <sup>2</sup>
inner perimeter	5.9 m <sup>2</sup>	↔	6,6 m <sup>2</sup>
hydraulic (equal) diameter	1.694 mm	↔	1.527 mm
duct friction coefficient $\lambda$	<b>0,01</b>	↔	<b>0,07</b>
length	100,00 m	↔	100,00 m
air density $\rho$ (standard 1,2)	1,20 kg/m <sup>3</sup>	↔	1,20 kg/m <sup>3</sup>
volume flow	80.000,00 m <sup>3</sup> /h	↔	80.000,00 m <sup>3</sup> /h
flow velocity	8,76 m/s	↔	8,82 m/s
thermal loss 1m VENTAFLEX®/ conventional duct	35,33 Pa	↔	213,85 Pa
Zetta	3,10	↔	3,10
pressure loss by individual resistance (curve, T-piece, etc.)	142,73 Pa	↔	144,64 Pa
<b>total pressure loss</b>	<b>178,07 Pa</b>	↔	<b>358,49 Pa</b>

## Possible results with updated values

efficiency of the ventilator	55 %	↔	55 %
drive power of the ventilator	7,19 kW	↔	14,48 kW
annual useful life	7.200 h	↔	7.200 h
electricity price	0,29 €/kWh	↔	0,29 €/kWh
annual operating costs of the ventilator	15.022,35 €	↔	30.243,36 €

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