EXANDAIR
TEXTILE AIR DUCT

TEXTILE AIRDUCT
REFERENCE MANUAL OF DESIGN

DAAL GROUP

EXANDAIR
TEXTILE AIR DUCT

OPERATIONAL PRINCIPLE

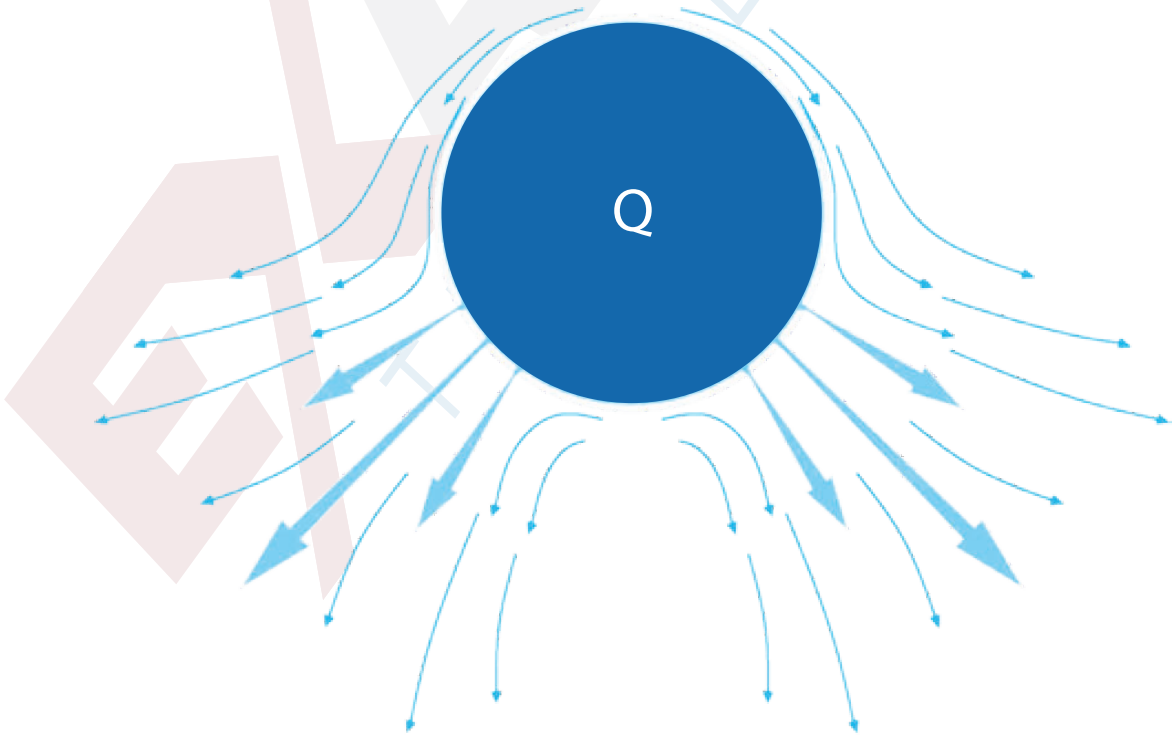
Operation of the EXANDAIR textile airduct is based on inductive air distribution of high pulse rate.

What does it mean? The phenomenon is similar to the turbulent motion. Our aim is to utilize stratification of the air flow which produces vacuum at a calculated speed. The suction enables blending of inside and outside air either in short or in continuous way, while ensuring high efficiency for the system. The high-speed outlet airflow shows the characteristics of a narrowed vein.

The vacuum, that originates from the speed increasing in the middle and at the end of the nozzle, will suck air from the atmosphere and blend it with the air stream so developed.

In effect the speed of outlet air in each nozzle causes decelerating motion of the air volume in order that an optimal blending would be produced at extreme low speed in the concerned area, so that the system can be regarded as comfortable.

This explains that why does our development search untiringly the best compromise between the speed/pressure and the material as a highest-level performance can be attained, namely the stratification of warm air would cease in winter, including accompanying economic benefits, or it should be mentioned that the air diffusion is so silent both in heating and in cooling mode.



Induction ratio (efficiency of the system) = airflow speed Q*K,
where „K" is between 20 and 40, that is, the moving mass of air is by 30-fold higher than at the inlet.

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CHARACTERISTICS OF TEXTILE AIRDUCTS

TYPE	FORM	MATERIAL	AVAILABLE COLOURS	FIRE-RESISTANCE	THICKNESS (MM)	WEIGHT (GR/MG)
STANDARD	Circular Semicircular Quarter-circular	100% polyester with acrylic coating	White Gray Yellow Blue Red Black Green	Not fire-resistant	0,18	160
CLASS1	Circular Semicircular Quarter-circular	100% polyester with polyurethane coating	White Gray Yellow Blue Red Black Green	Euroclass B s1 d0	0,18	160
CLASS0	Circular Semicircular Quarter-circular	Glass fibre with polyurethane / silicone coating	White Gray Yellow Blue Red Black	Euroclass A1	1	450

COLOUR CODES OF TEXTILE AIRDUCTS

RAL 9010

RAL 5010

RAL 7040

RAL 3000

RAL 1018

RAL 6005

RAL 9005

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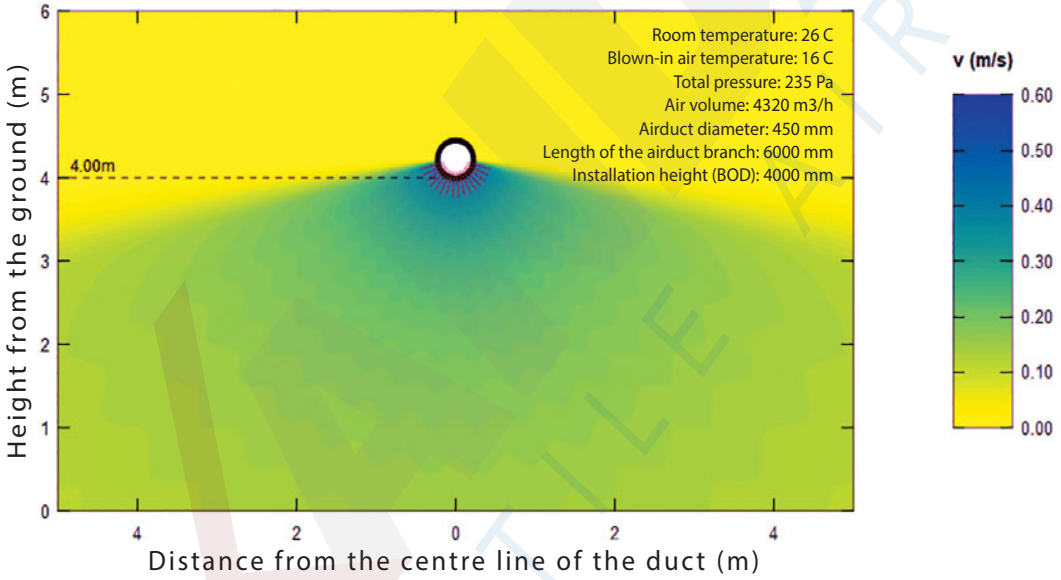
DESIGN OF TEXTILE AIRDUCTS

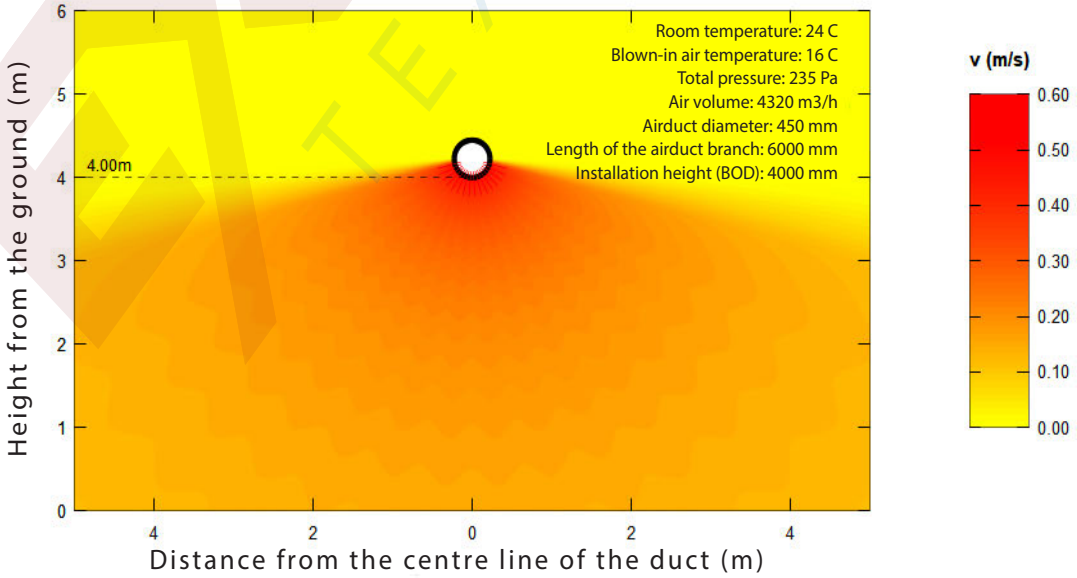
The textile airducts we dealt are produced in various forms, in several lengths and diameters, namely from 200mm up to 1600mm. As precondition for precise design a software is developed for this purpose by means of which we can obtain an accurate picture about the operation of the textile airduct prior to the actual production.

In the following pictures the flow diagrams created by this software can be seen. First picture models a summer function while the second picture does a winter function.

Flow Image – Cooling mode – Stage A



Flow Image – Heeting mode – Stage A



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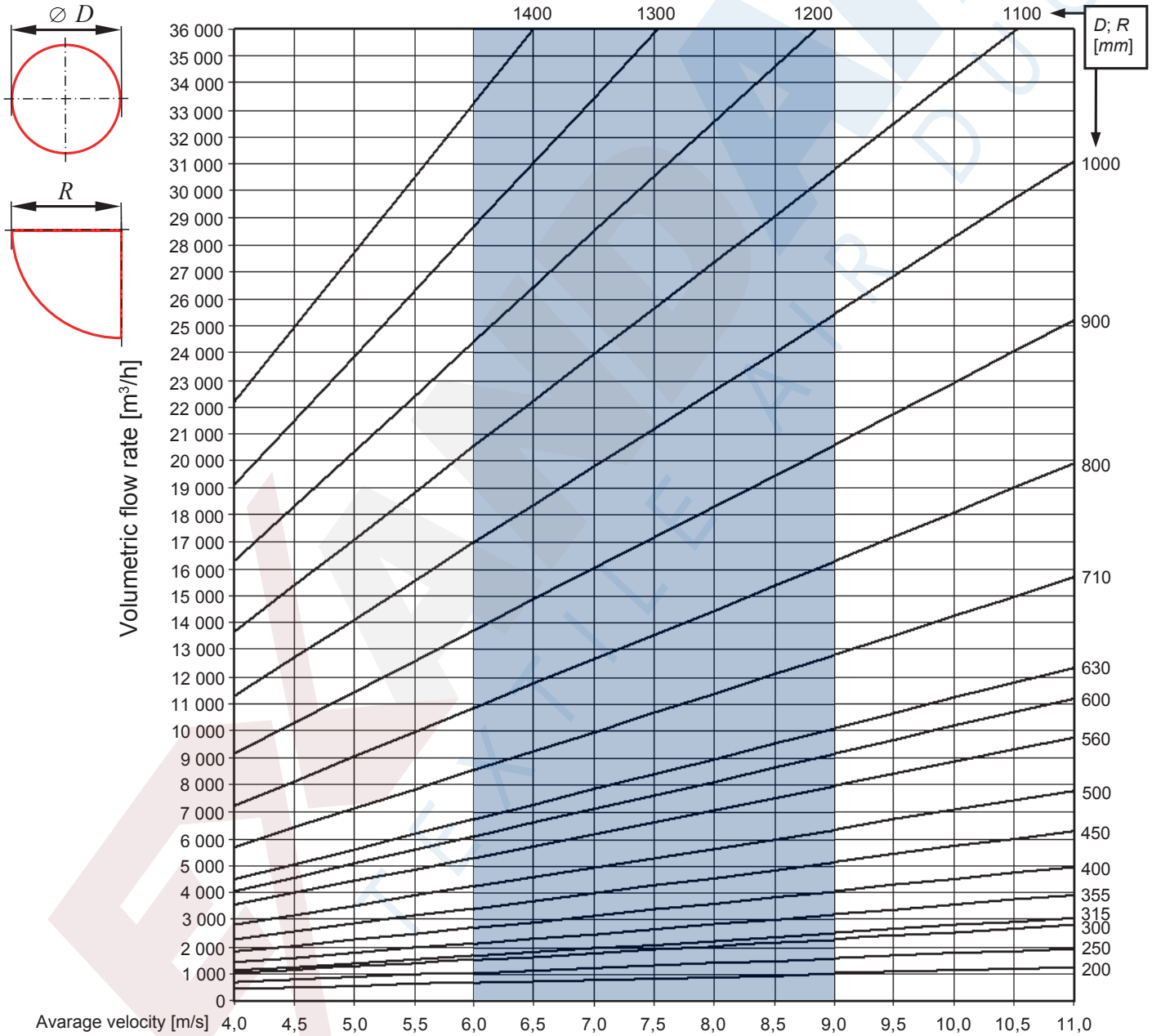
REFERENCE MANUAL OF MEASURING – CIRCLE, QUARTER-CIRCLE

Selection diagram for textile air ducts with circle and quarter-round section



Avarage velocity [m/s]	4,0	4,5	5,0	5,5	6,0	6,5	7,0	7,5	8,0	8,5	9,0	9,5	10,0	10,5	11,0
Maximum specific loss [Pa]	0,9	1,1	1,4	1,7	2,0	2,3	2,7	3,1	3,5	3,9	4,4	4,9	5,5	6,0	6,6
Dynamic pressure [Pa]	10	12	15	18	22	25	29	34	38	43	49	54	60	66	73
Minimum excess pressure [Pa]	27	34	42	51	60	71	82	95	108	121	136	152	168	185	203
Minimum static overpressure [Pa]	17	22	27	33	39	46	53	61	69	78	87	97	108	119	131
Reference height [m]	4	4	5	6	7	8	9	10	11	13	14	16	17	19	20

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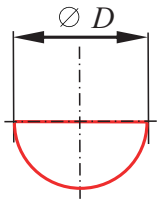
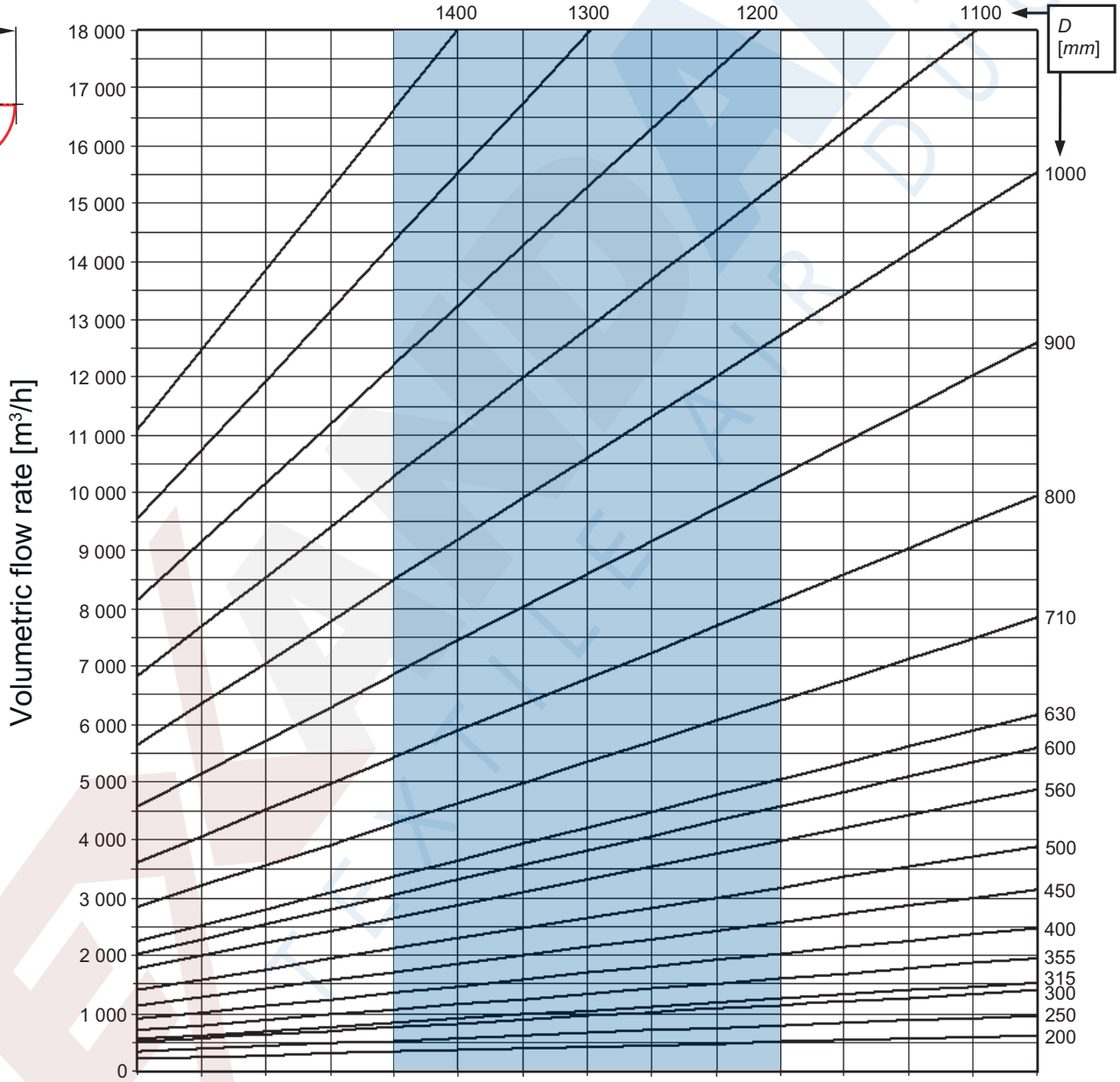
REFERENCE MANUAL OF MEASURING – SEMICIRCLE

Selection diagram for textile air ducts with semicircle





Avarage velocity [m/s]	4,0	4,5	5,0	5,5	6,0	6,5	7,0	7,5	8,0	8,5	9,0	9,5	10,0	10,5	11,0
Maximum specific loss [Pa]	1,3	1,6	2,0	2,4	2,8	3,3	3,8	4,4	5,0	5,7	6,4	7,1	7,9	8,7	9,5
Dynamic pressure [Pa]	10	12	15	18	22	25	29	34	38	43	49	54	60	66	73
Minimum excess pressure [Pa]	27	34	42	51	60	71	82	95	108	121	136	152	168	185	203
Min static overpressure [Pa]	17	22	27	33	39	46	53	61	69	78	87	97	108	119	131
Reference height [m]	4	4	5	6	7	8	9	10	11	13	14	16	17	19	20

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COMPARISON OF COSTS FOR GALVANIZED AND TEXTILE AIRDUCTKÖLTSÉG ÖSSZEHASONLÍTÁS*

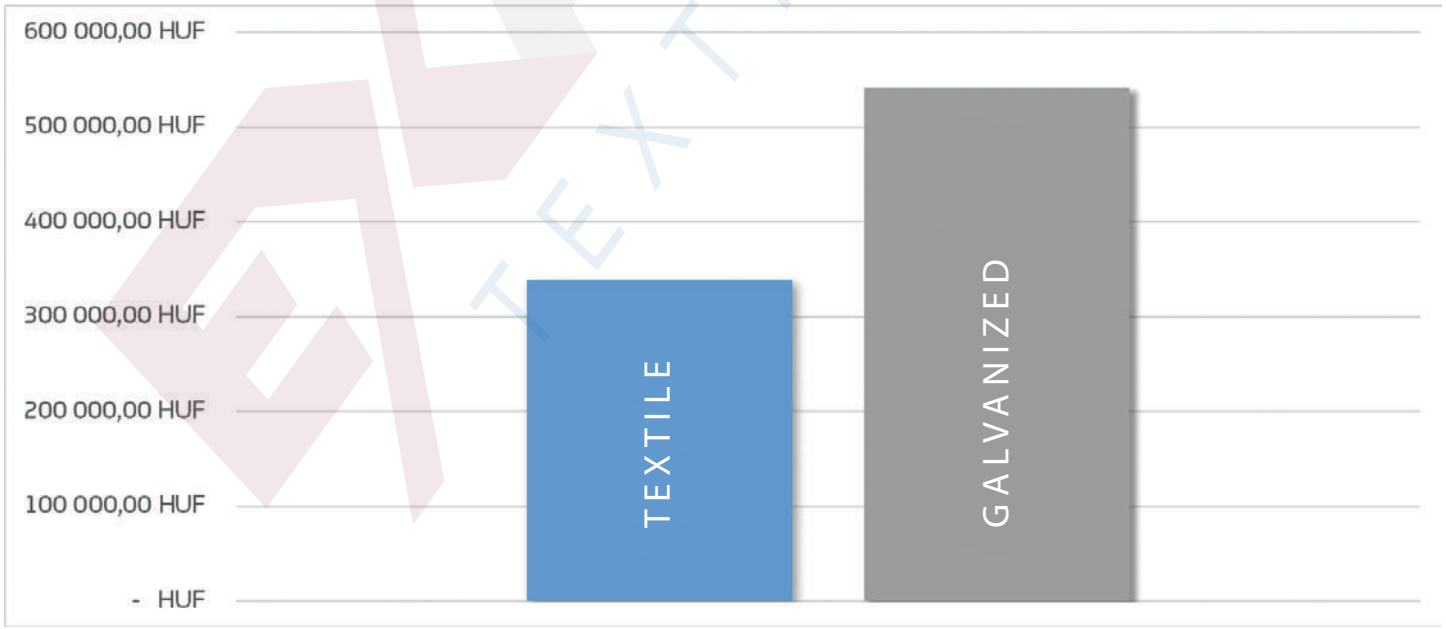
Material costs of galvanized airduct, including execution

Item	Size	Note	Quantity	Unit	Total
Straight duct	DN700	Galvanized SPIKO pipe, 1 fibre= 6m, C class of density	3	pc	203 706,00 HUF
Pipe coupling	DN700	Rubber pipe coupling, C class of density	2	pc	14 725,00 HUF
End piece	DN700	C class of density	1	pc	10 725,00 HUF
Pipe clip	DN700	Rubber, suspended on both sides	5	pc	9 992,50 HUF
Suspension		Threaded stem, trapezoid suspension, bolt, nut (without (	1	pc	46 200,00 HUF
diffuser grid	RGS-2-825-225	RGS-shutter, regulatory shutter in option	9	pc	116 914,95 HUF
Insulation	13mm	Armafelx	45	m2	139 500,00 HUF
					541 763,45 HUF

Material costs of textile airduct, including execution

Item	Size	Note	Quantity	Unit	Total
1 Straight duct	DN500	Circular cross-section	18	m	238 509,77 HUF
2 Rail			18	m	48 294,25 HUF
3 Wire suspension	4m length	Suspended in fluted sheet	8	pc	51 720,23 HUF
					338 524,26 HUF

In case of textile airduct systems a smaller diamater is sufficient as it works with higher airflow speed in optimal way.
From above-mentioned comparison and referred to a given system it is evident that 38% saving in costs of textile airduct can be attained, and this corresponds to a saved amount of 203.239 HUF.



*It is not qualified as tendering

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