



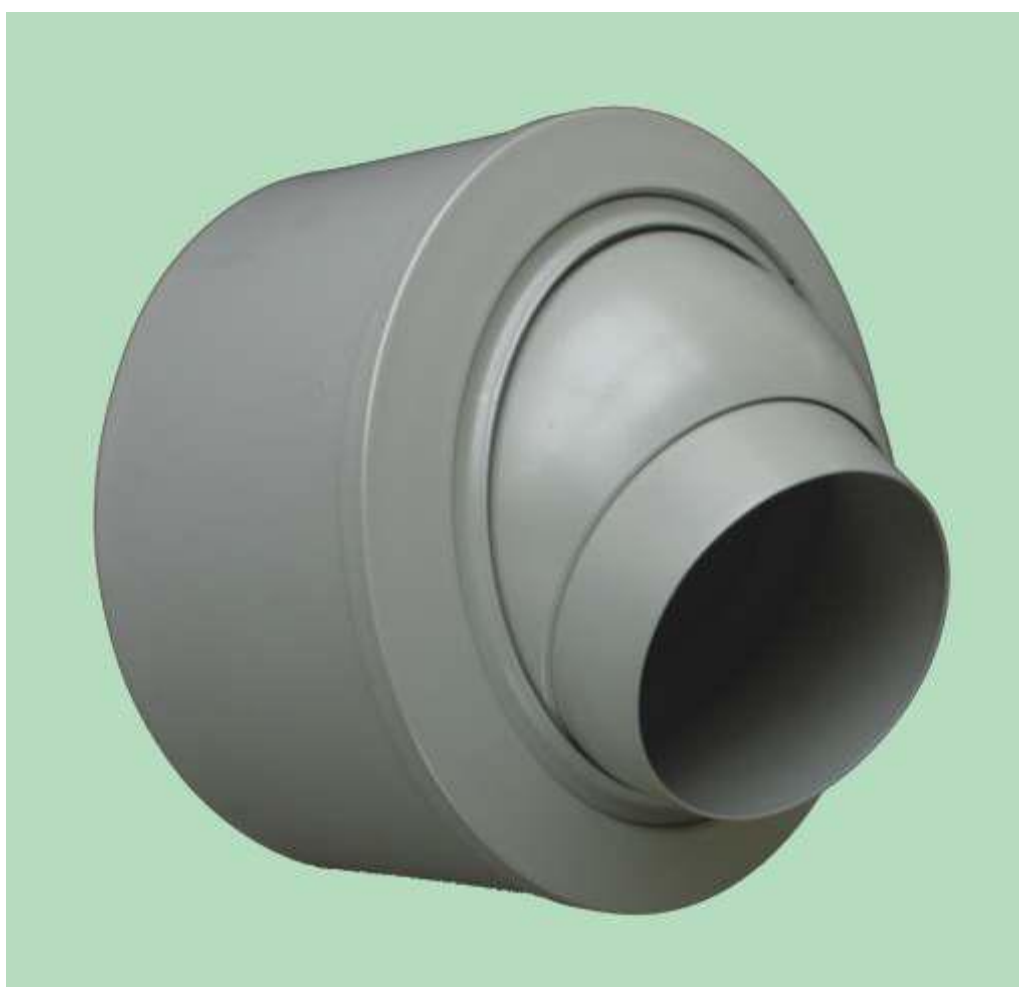
AEROGRAMMI

DESIGN AND MANUFACTURE OF GRILLES AND SPECIAL AIR CONDITIONING COMPONENTS



LONG RANGE JET NOZZLE

AMB



AMB



AMB-KSR



AMB-KO

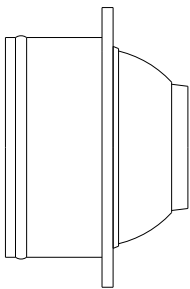


AMB-KL

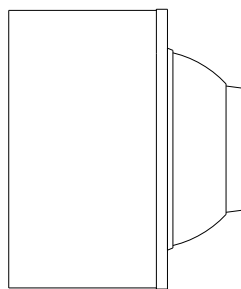
The diffuser AMB is a jet nozzle suitable for heating and cooling applications. For use in big rooms like sport centers, theatres, cinemas, shopping centers and factories. The big advantage of the AMB diffusers is the very long horizontal throw. Also it is equipped with adjustable head (manually in any direction, by electric actuator or auto regulated up and down only) in order to adjust the direction of the air.

Manufactured by aluminium electrostatically painted in RAL color or polished. There are parts made by galvanised steel and plastic.

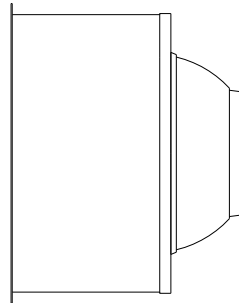
Different types are available according to the way of installation.



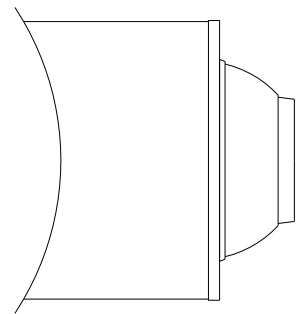
AMB-KO



AMB-KL



AMB-KA



AMB-KSR

AMB-KO: Jet nozzle for installation in wall or ceiling (in hole) and connection with flexible air duct. With adjustable head.

AMB-KL: Jet nozzle for coaxial installation in round visible air duct (in sleeve). With adjustable head.

AMB-KA: Jet nozzle for installation in the side of visible rectangular air duct. With adjustable head.

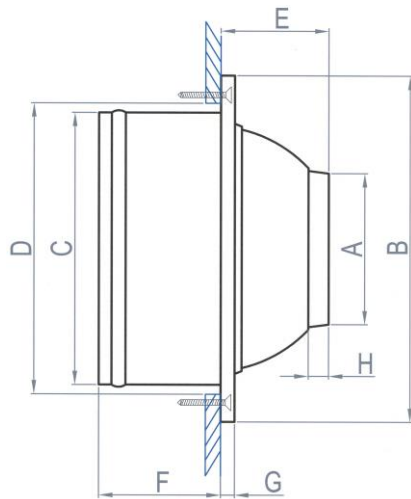
AMB-KSR: Jet nozzle for installation in the side of visible round air duct. With adjustable head.

Also the following version is manufactured:

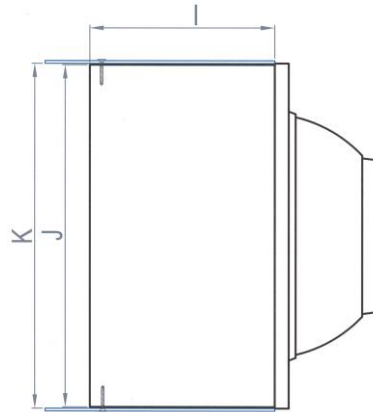
AMB-KO/KL/KA/KSR-MLD: With blades from MLD diffuser in the back. See page 19 for details.

AMB-O: Jet nozzle for installation in wall or ceiling (in hole). Without adjustable head.

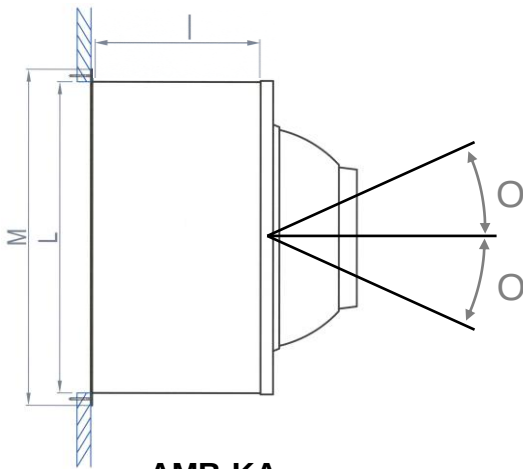
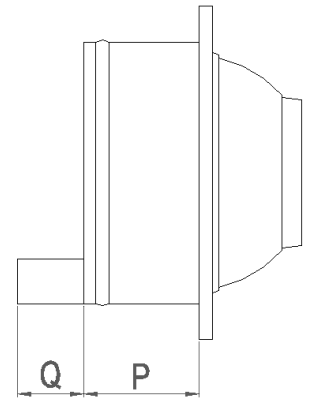
DIMENSIONS



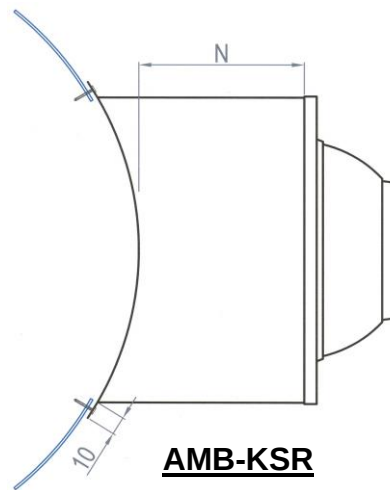
AMB-KO



AMB-KL



AMB-KA

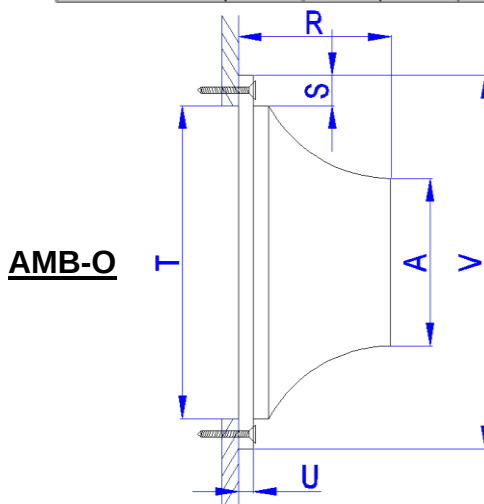


AMB-KSR

AMB KA/KO/KL/KSR 80/90/110/125		
	P	Q
AUTH	125	0
INTERNAL ACTUATOR	160	60

AMB KA/KO/KL/KSR 120/160/180/195		
	P	Q
AUTH	210	0
INTERNAL ACTUATOR	210	0

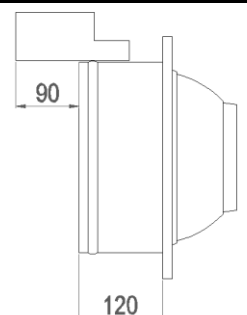
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O (°)
80	78	251	198	215	70	65	9	22	125	248	251	248	260	100	20
90	87				50			2							20
110	112				85			32							24
125	123				62			5							24
120	119	443	380	400	188	120	13	98	175	436	440	440	457	170	20
160	155				102			8							20
180	175				156			53							24
195	193				115			12							24



AMB-O

SIZE	A	V	R	S	T	U
80	78	232	108	24	192	12
90	87		88			
110	112		102			
125	123		78			
120	119	420	268	30	380	
160	155		181			
180	175		221			
195	193		182			

**AMB-KO-
120/160/180/195 WITH
EXTERNAL ACTUATOR**



ADJUSTMENT

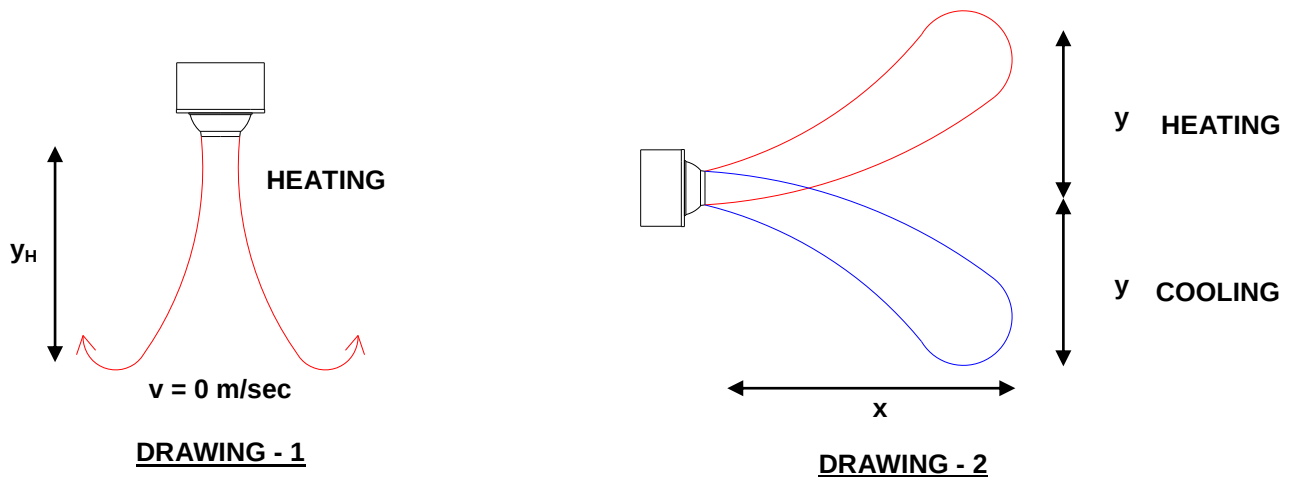
The regulation of the adjustable head is manual as standard. In all types and in all dimensions is possible the installation of electric actuator (internal or external, in the dimensions 80, 90, 110, 125 of the type AMB-KO only internal) for the adjustment of the head angle. The actuator could be on-off or analogue, 220 or 24V (see page 19). Also in all types and dimensions is possible the installation of mechanism for the automatic adjustment of the head angle according to the supply air temperature without need of external power (AUTH).

INSTALLATION

The installation of the jet nozzle AMB is possible in horizontal (DRAWING-2) or vertical position (DRAWING-1). **The vertical installation is recommended only for heating.**

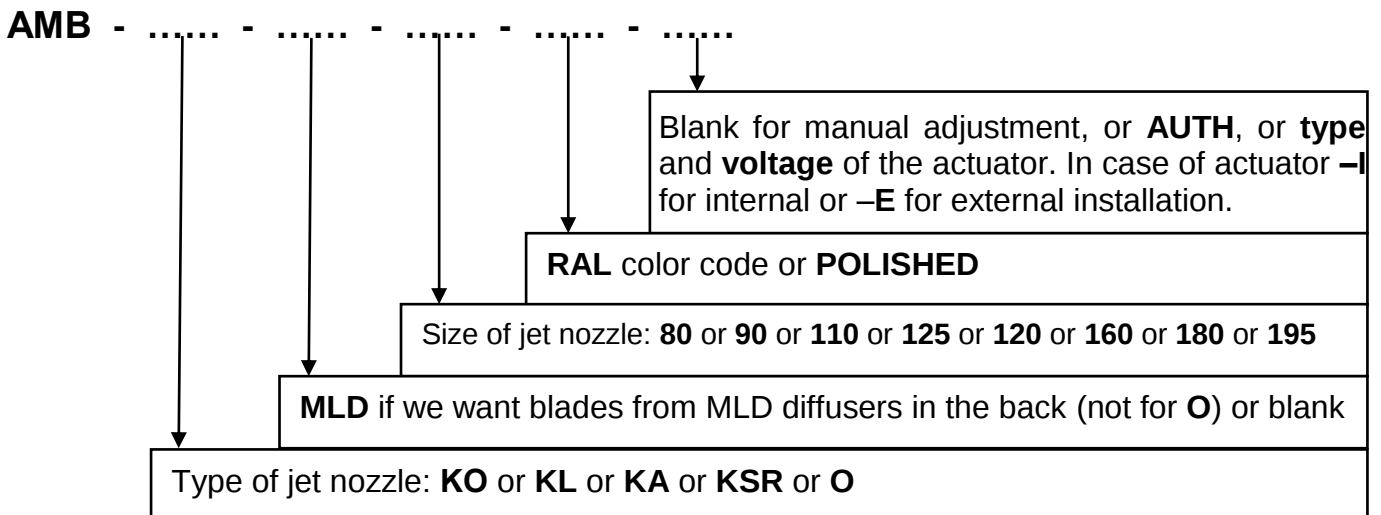
When we have horizontal installation the hot air goes up and the cold air goes down. So we use the adjustable head to send the hot air down and the cold air up.

Details for the installation of the AMB-KO diffusers in page 20.



WAY OF ORDER

For the order of the jet nozzles AMB we use the following string of letters and numbers:



EXAMPLES:

AMB-KO-110-POLISHED

AMB-KA-180-RAL 7035-ANALOGUE 24V-I

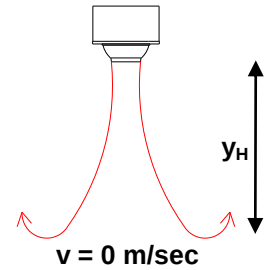
NOTE: In the jet nozzles AMB-KSR after the size of the nozzle we write the diameter of the air duct

i.e.: AMB-KSR-160- ϕ 600-RAL 9010-AUTH

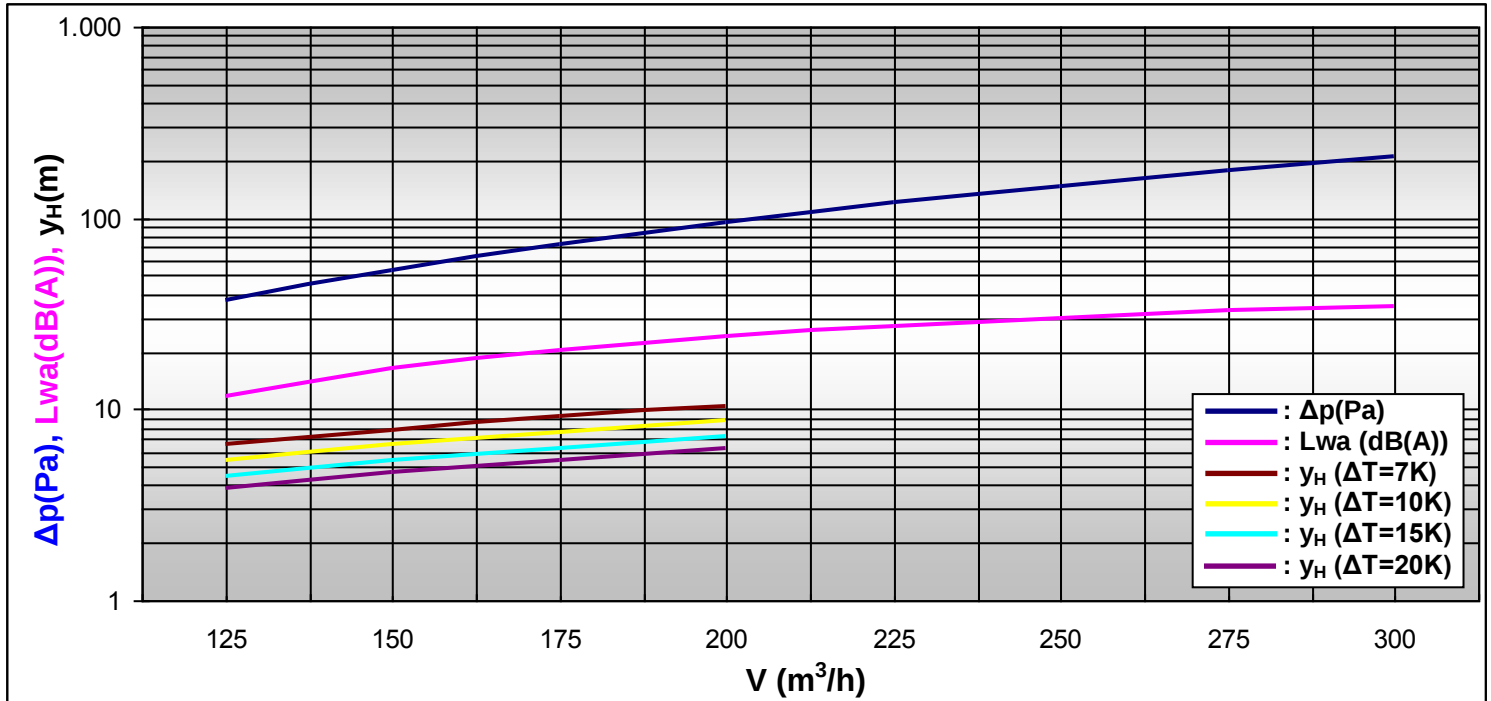
NOZZLE AND AIR THROW CHARACTERISTICS

A. Noise (Lwa), pressure drop (Δp) and vertical throw (y_H)

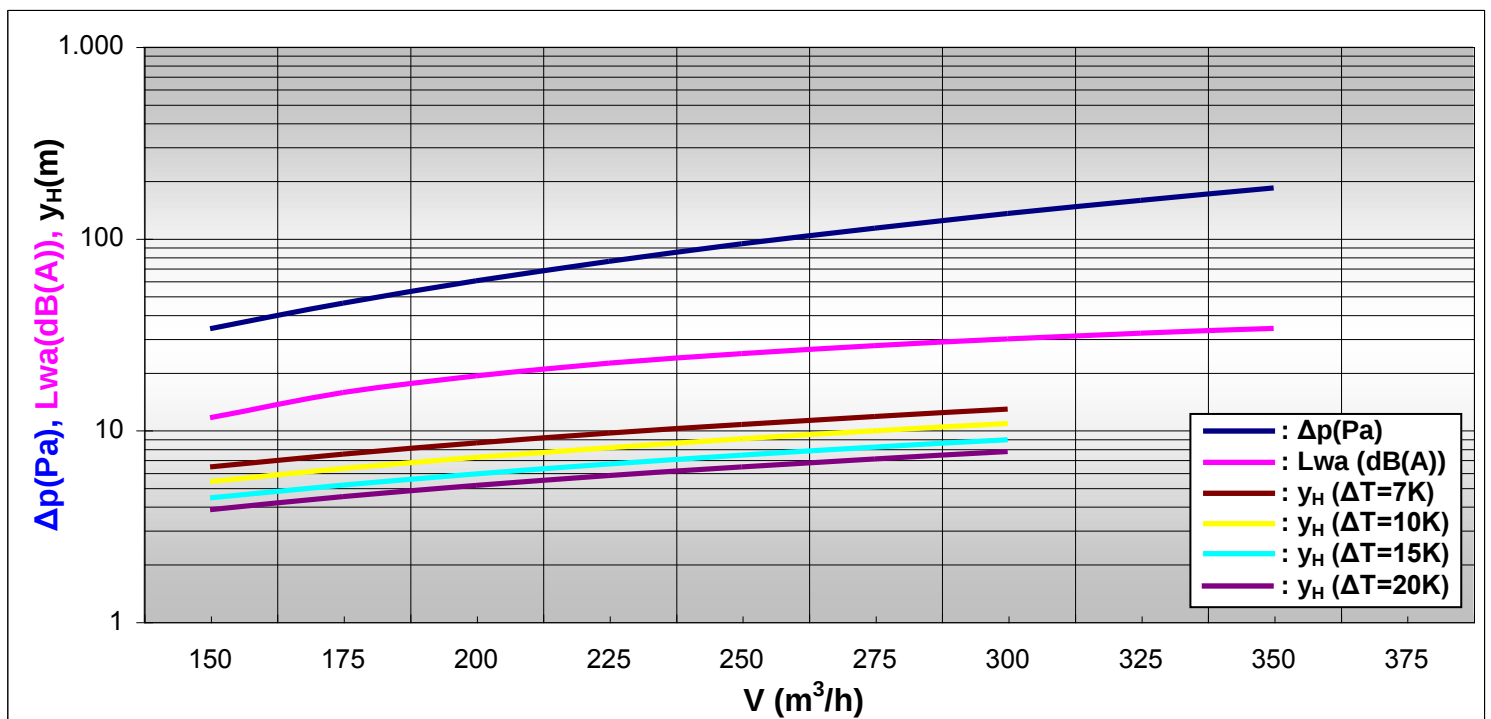
In the diagrams below we can see for all the sizes of the AMB jet nozzles how are changing the noise **Lwa (dB(A))**, the pressure drop **Δp (Pa)** and the vertical throw **y_H (m)** depending to the air volume supply in the jet nozzle **V (m³/h)**. The vertical throw is calculated for **heating** with **$\Delta T=7K$** , **$\Delta T=10K$** , **$\Delta T=15K$** and **$\Delta T=20K$** (ΔT = supply air temp. – room air temp.).



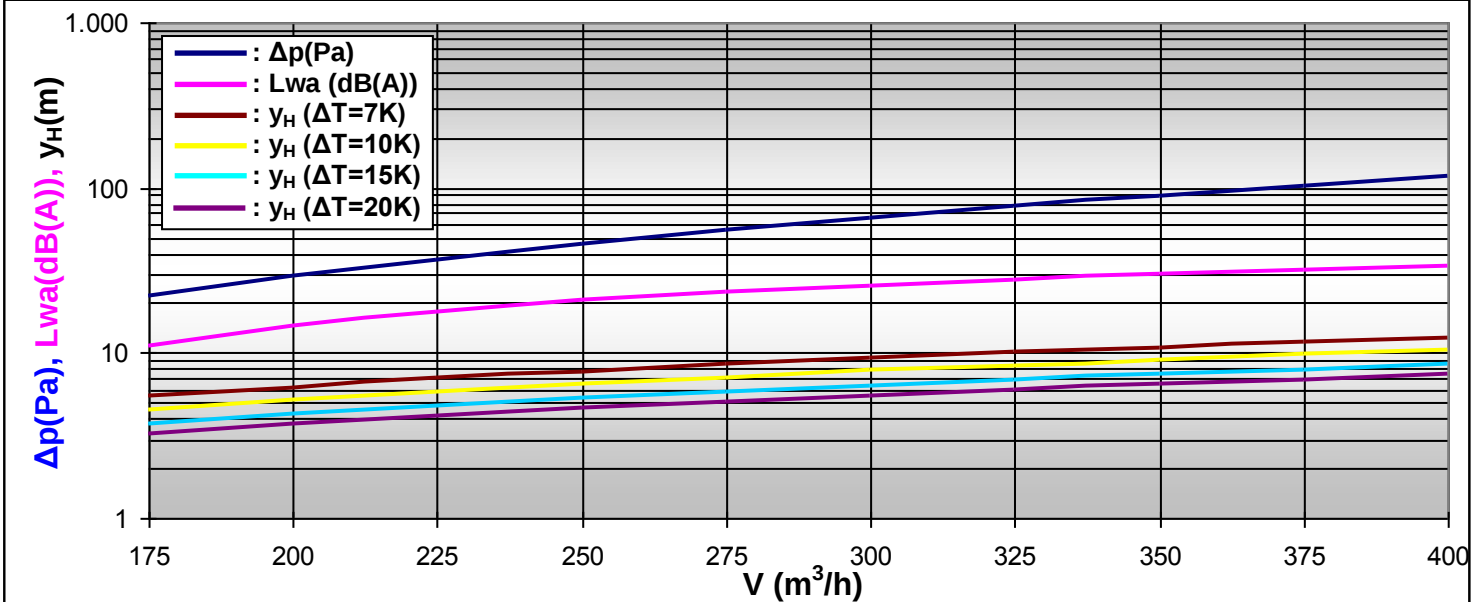
Ø80



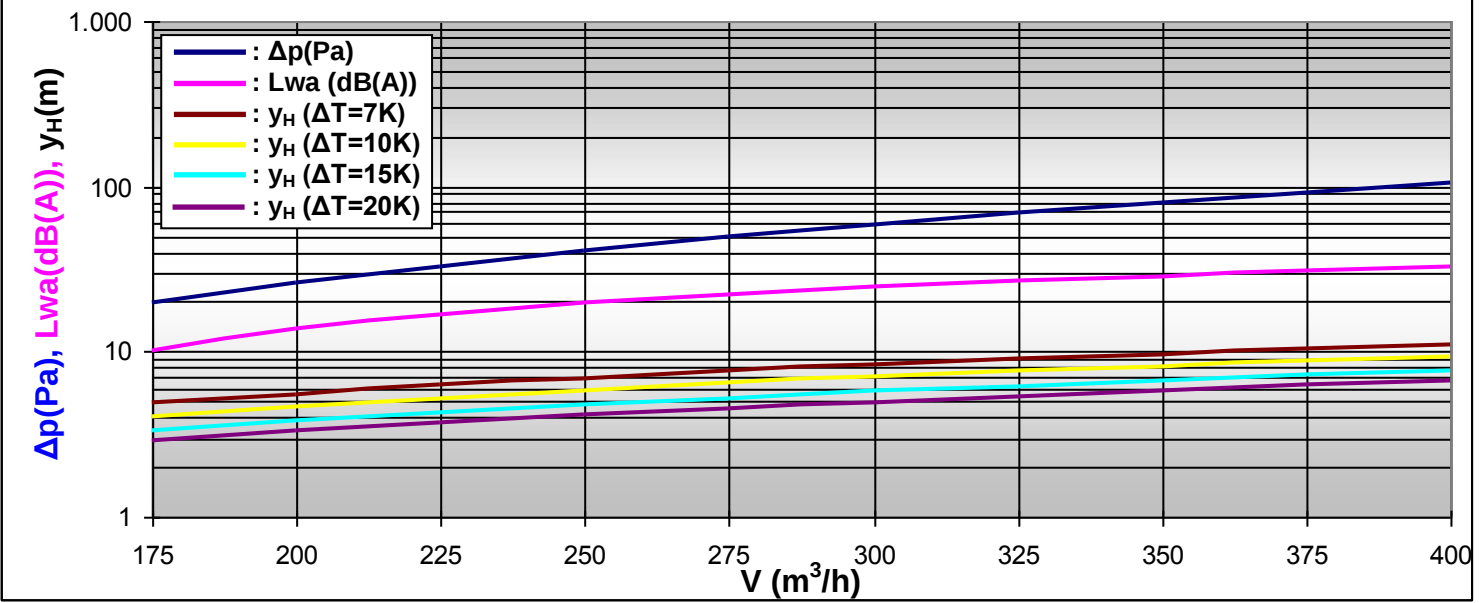
Ø90



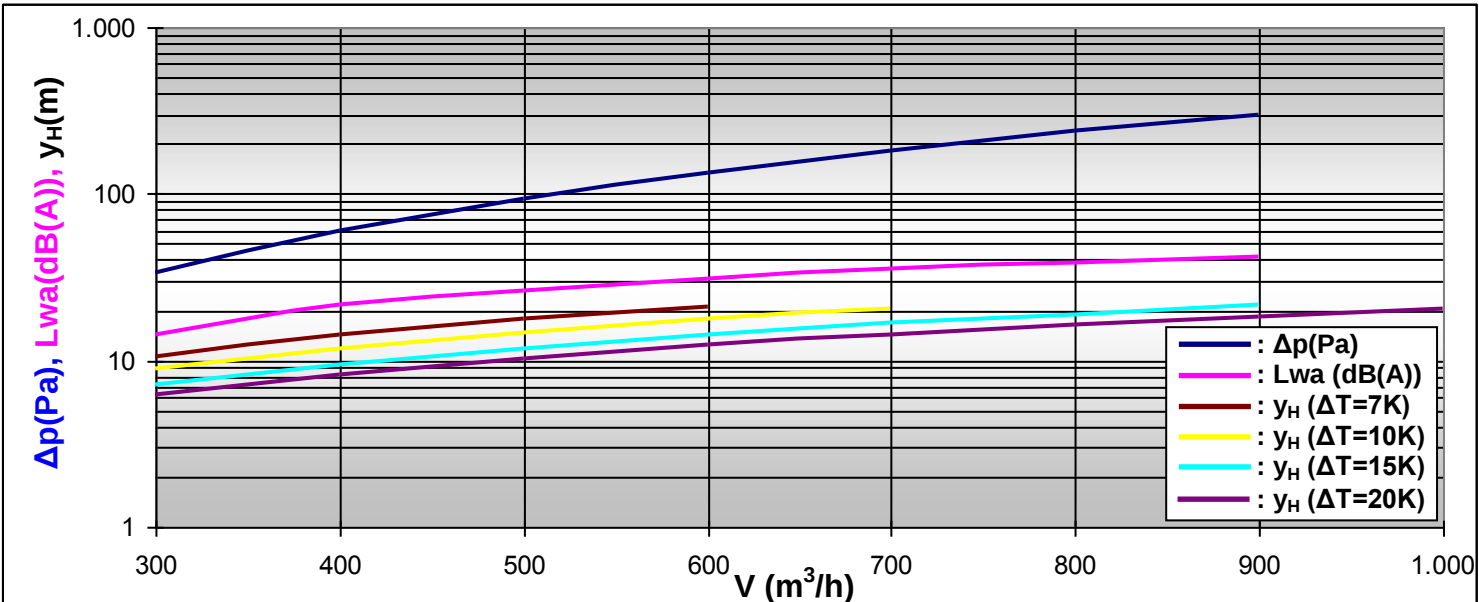
Ø110



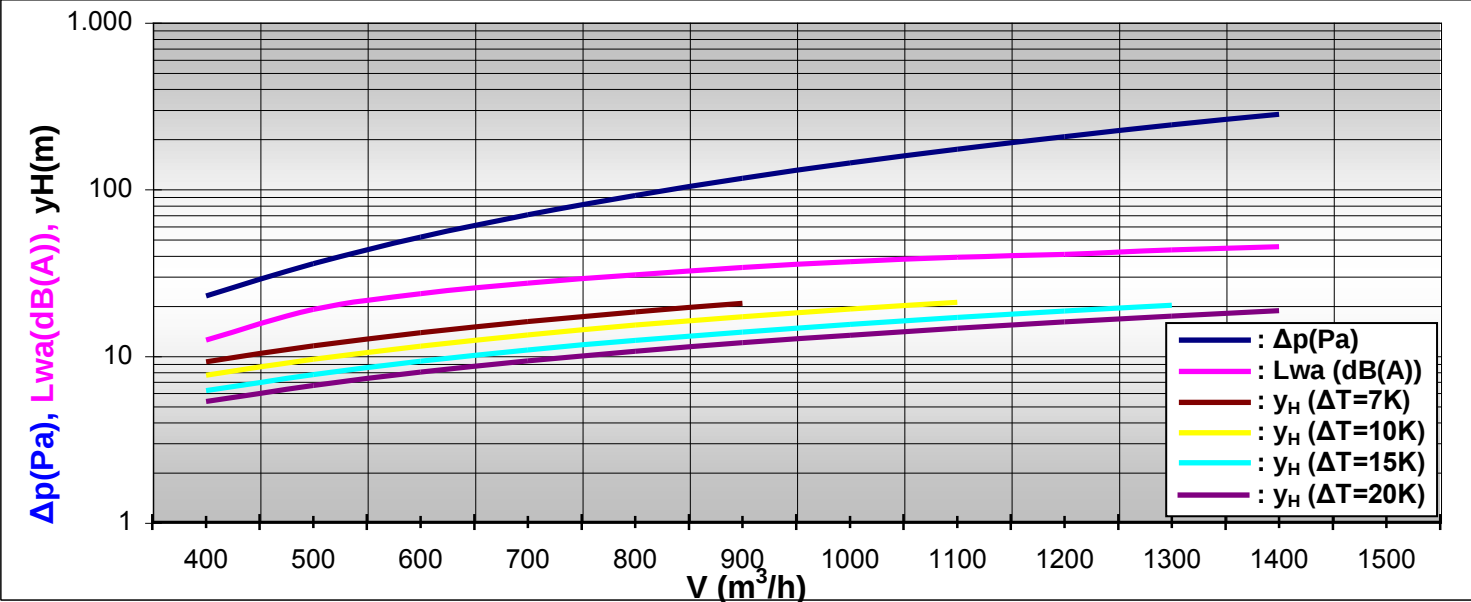
Ø125



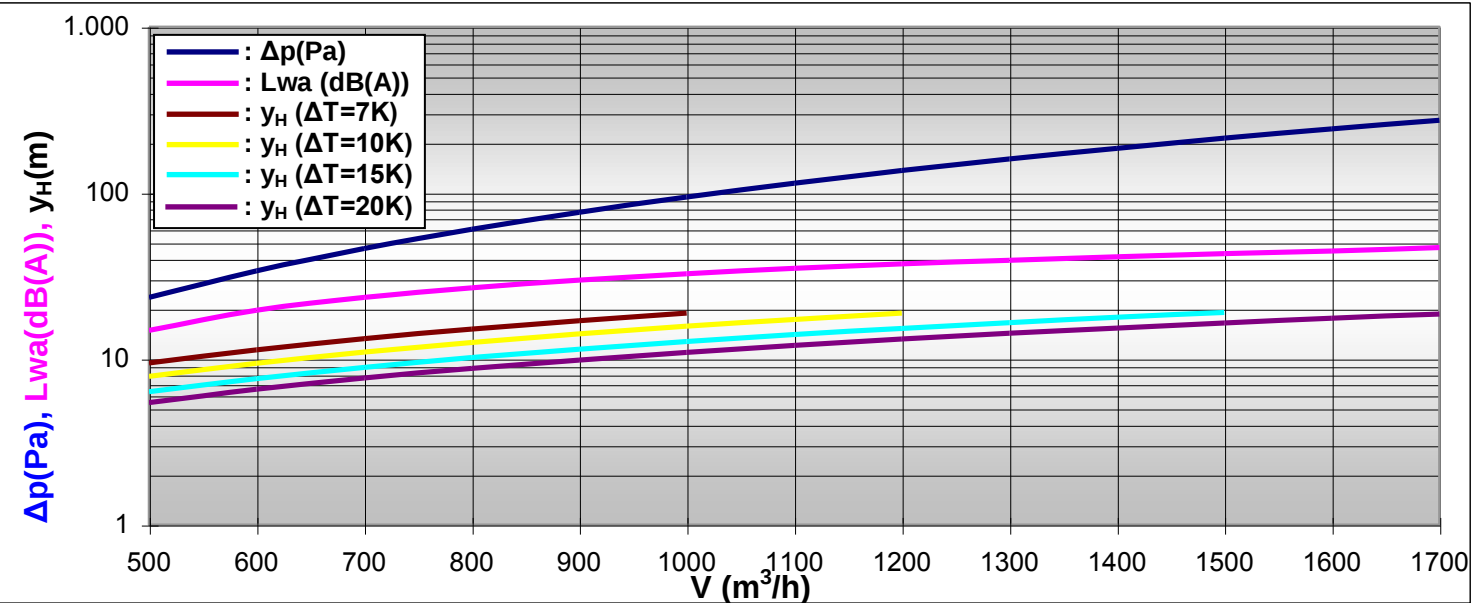
Ø120



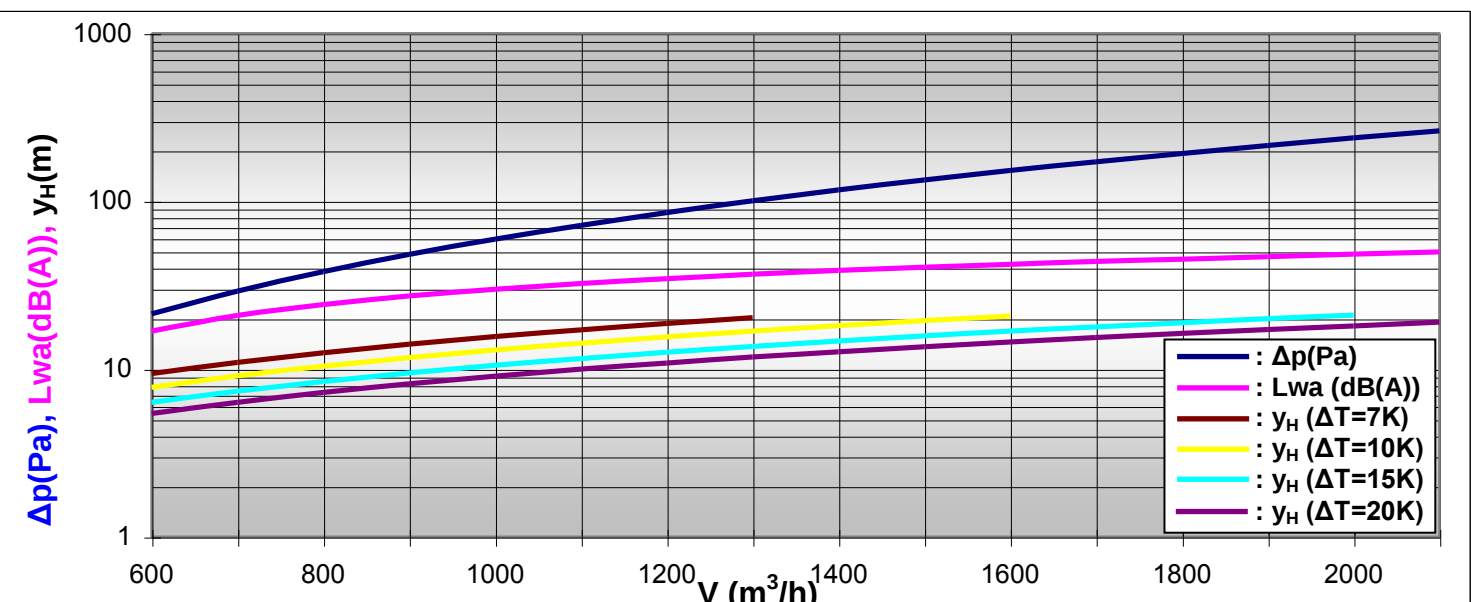
Ø160



Ø180

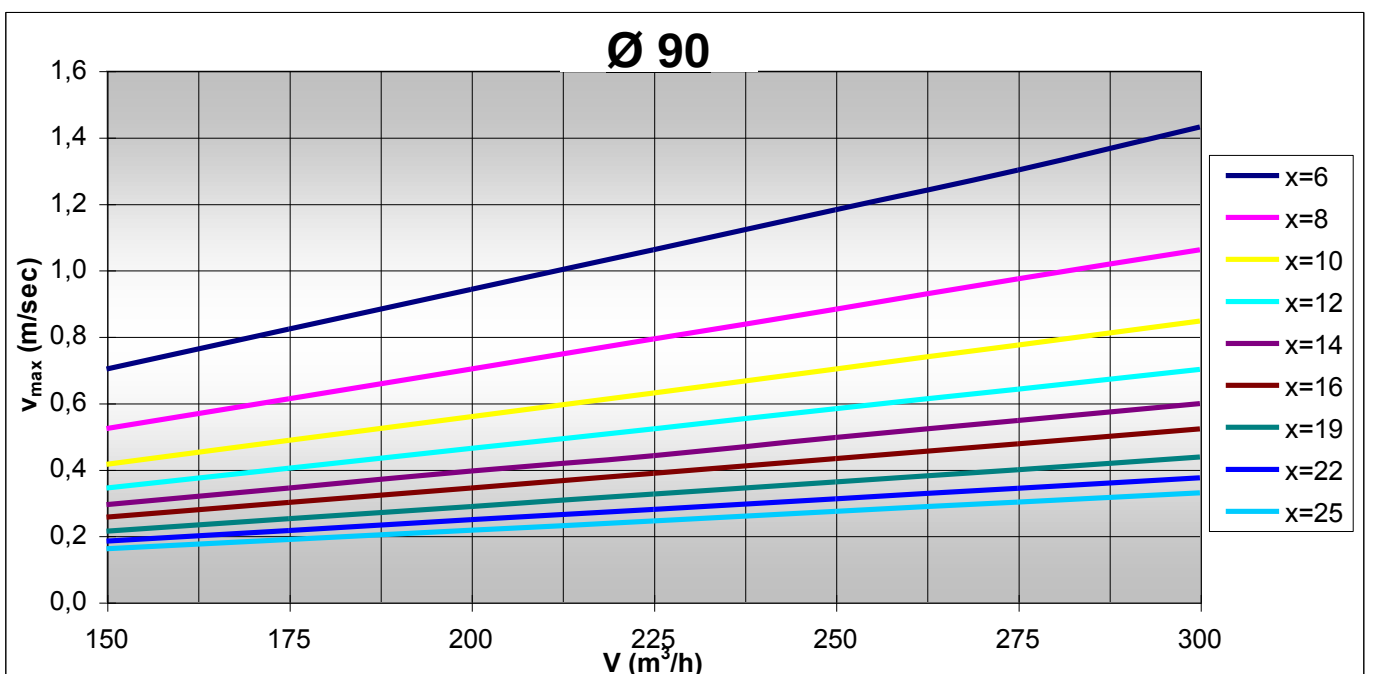
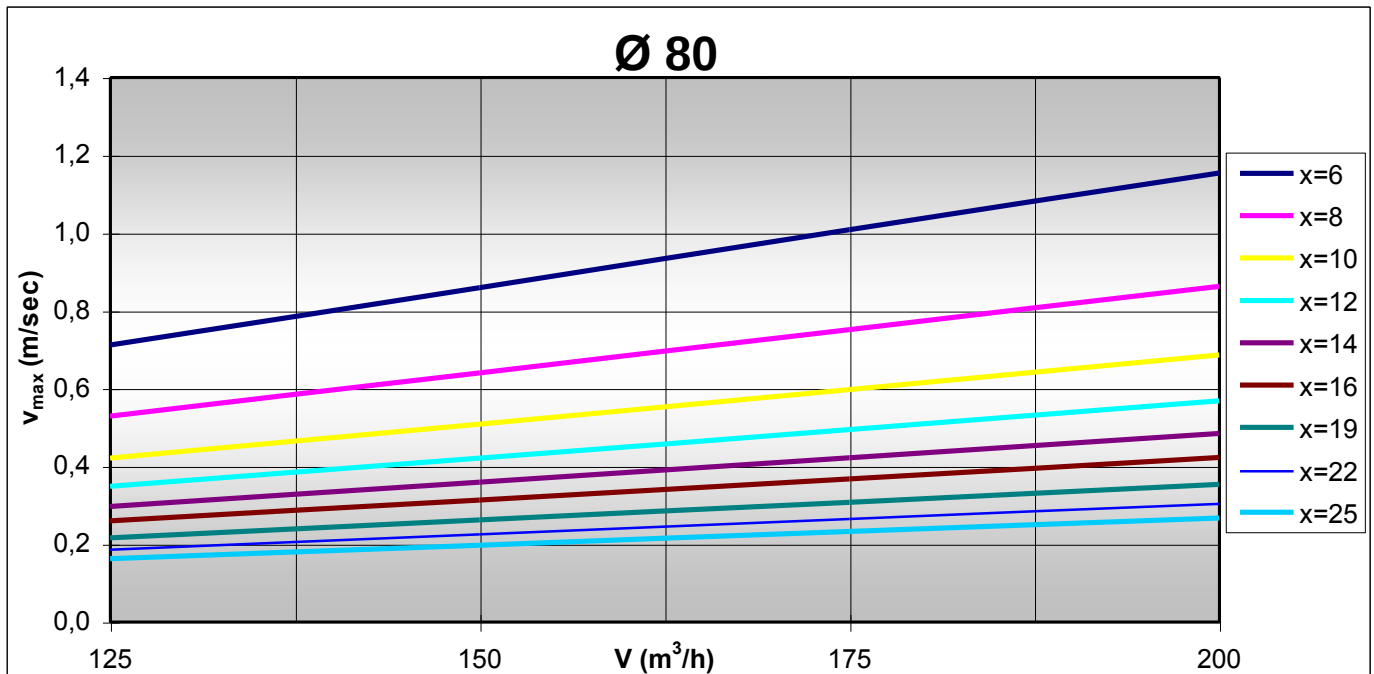
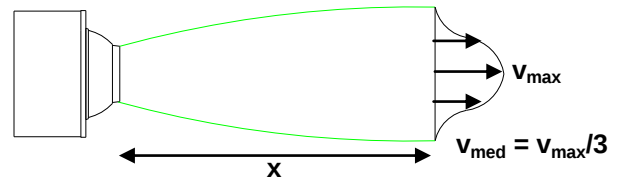


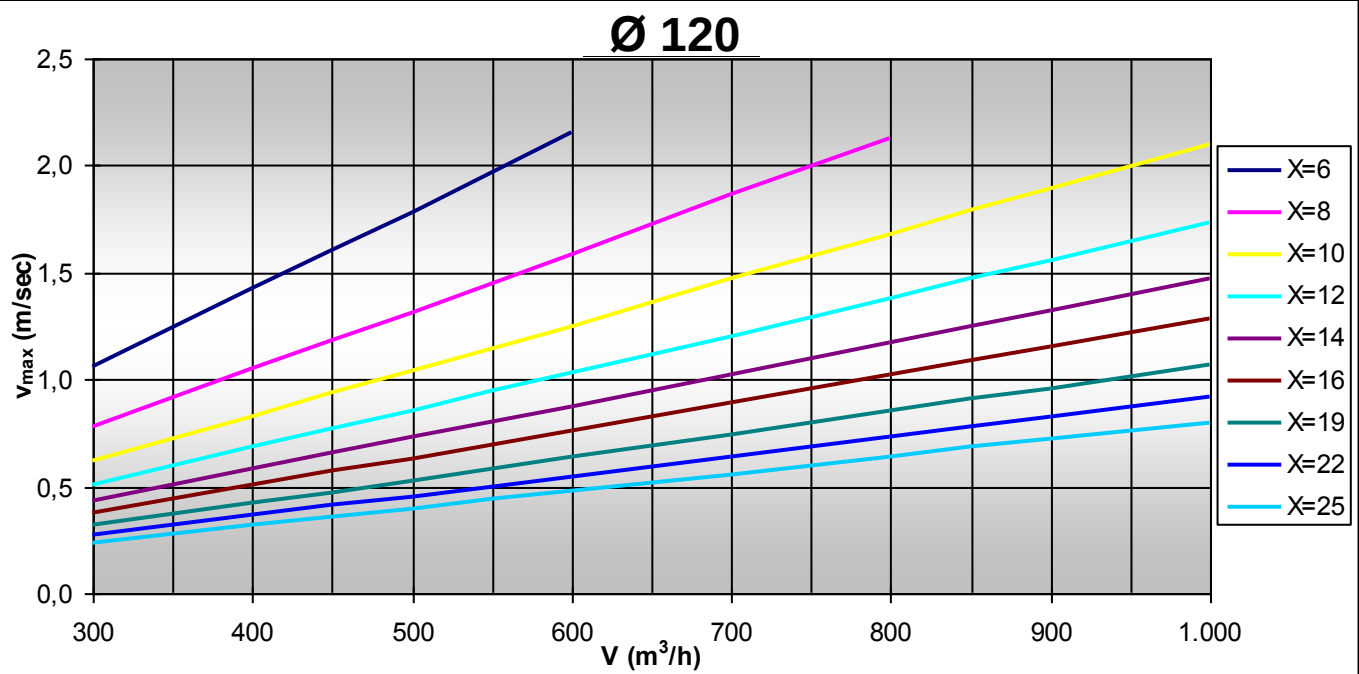
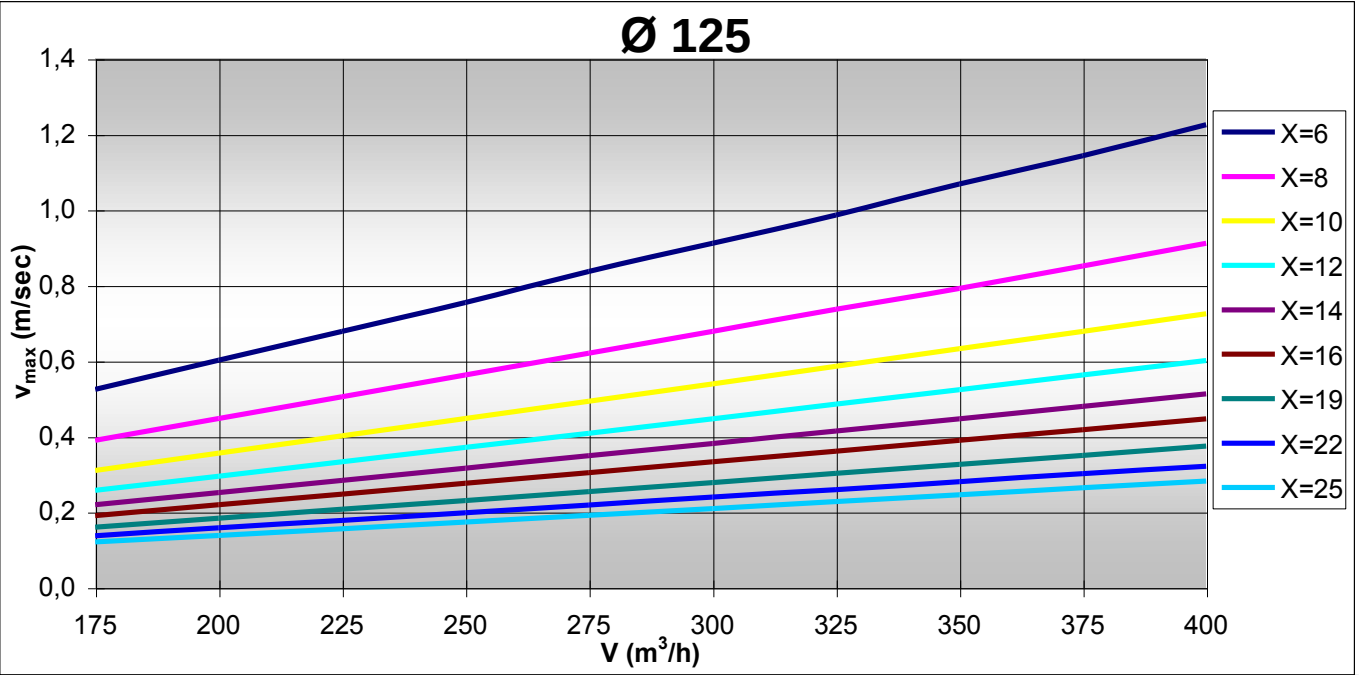
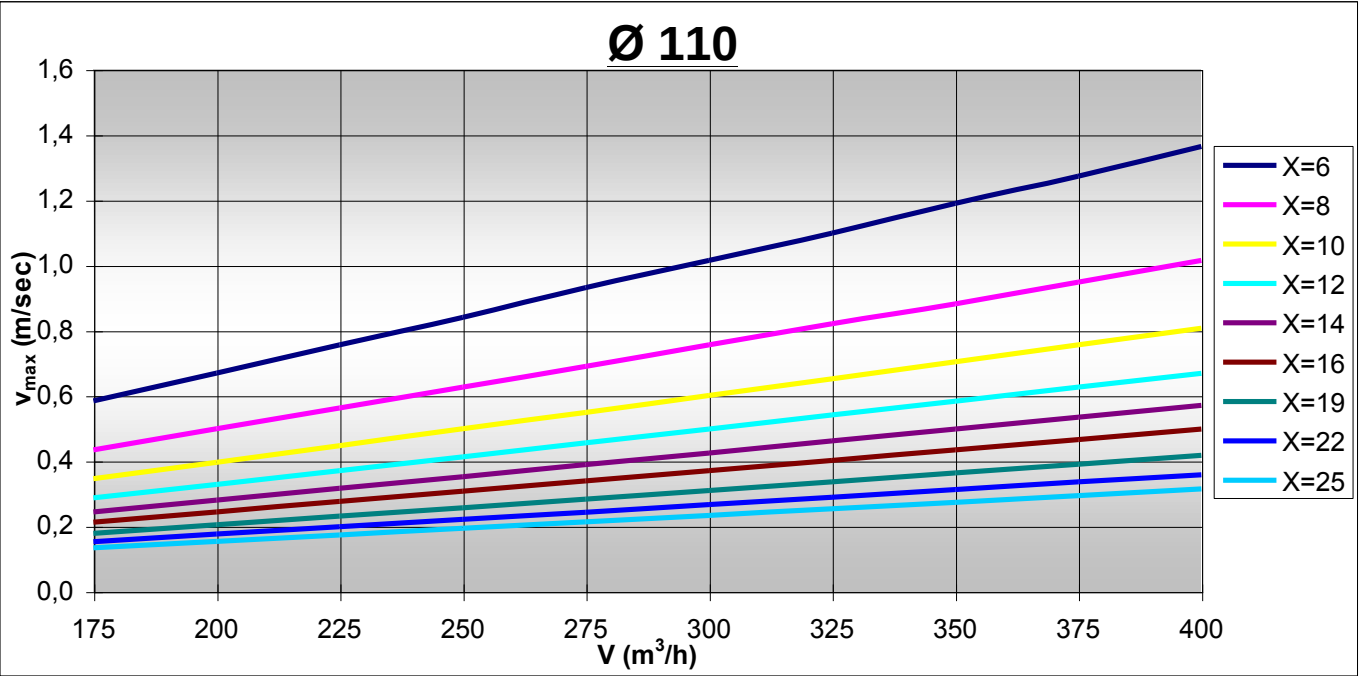
Ø195

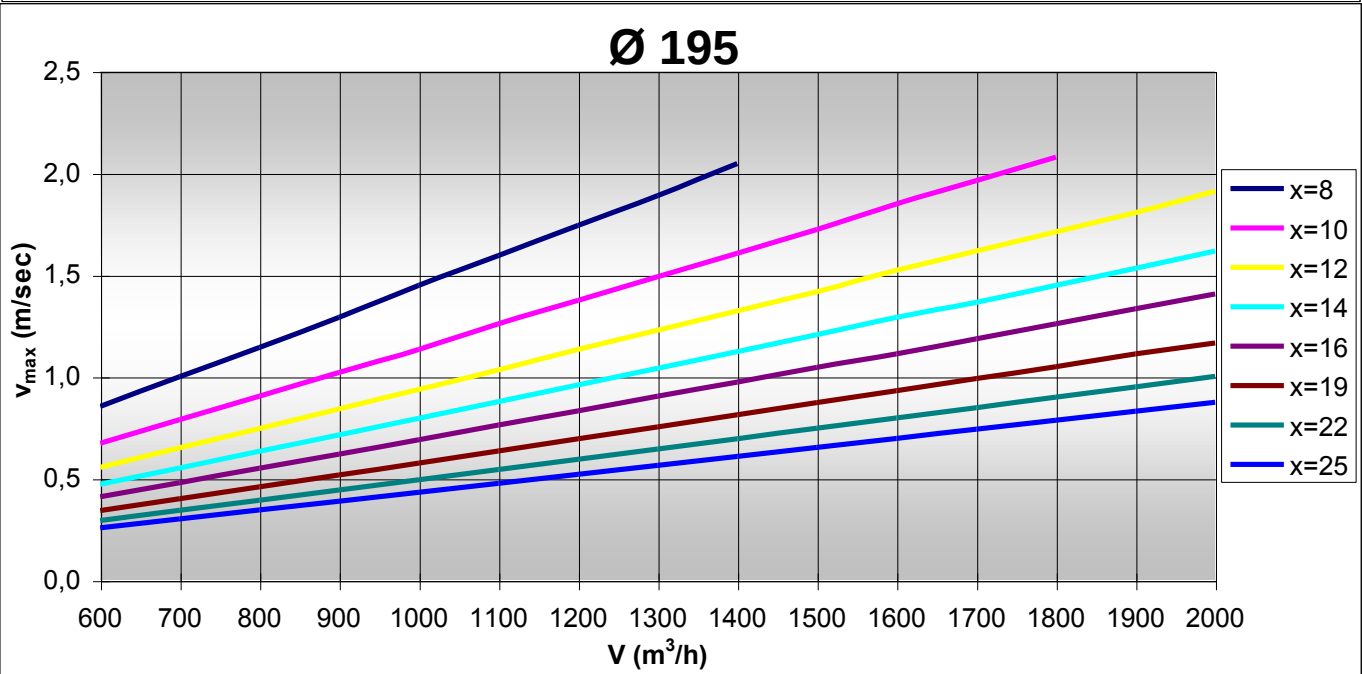
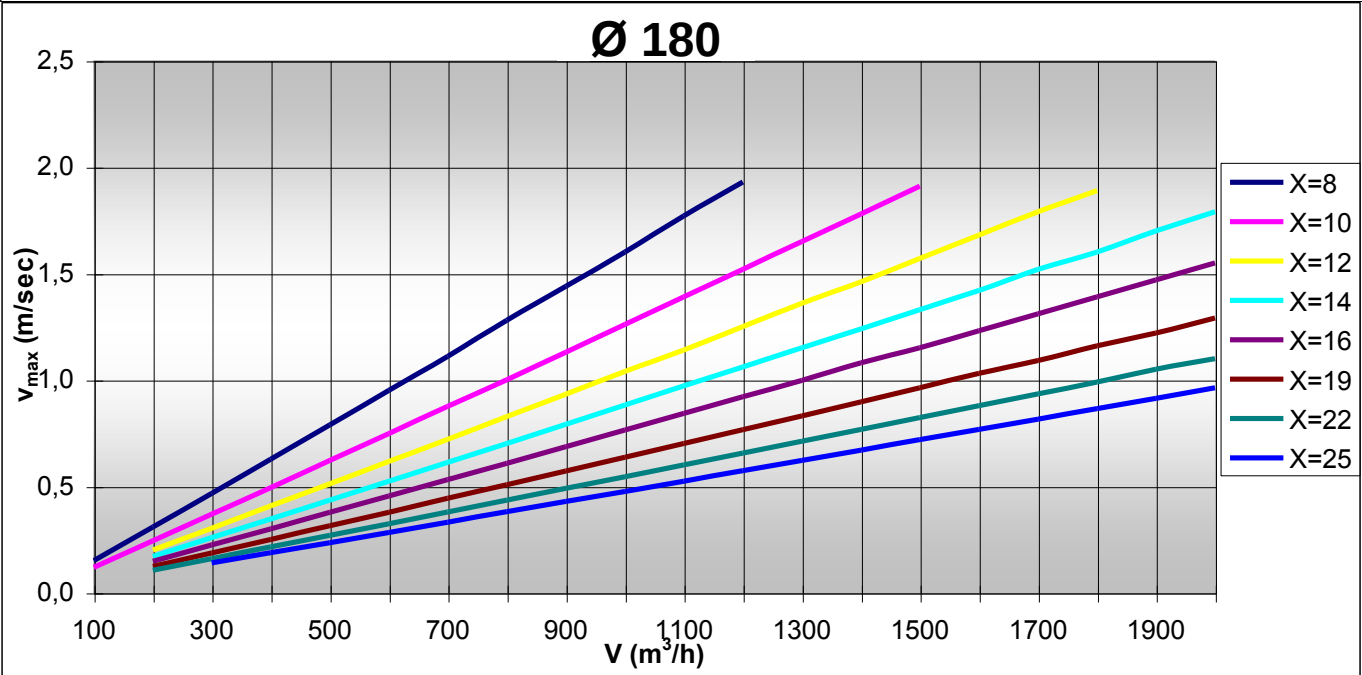
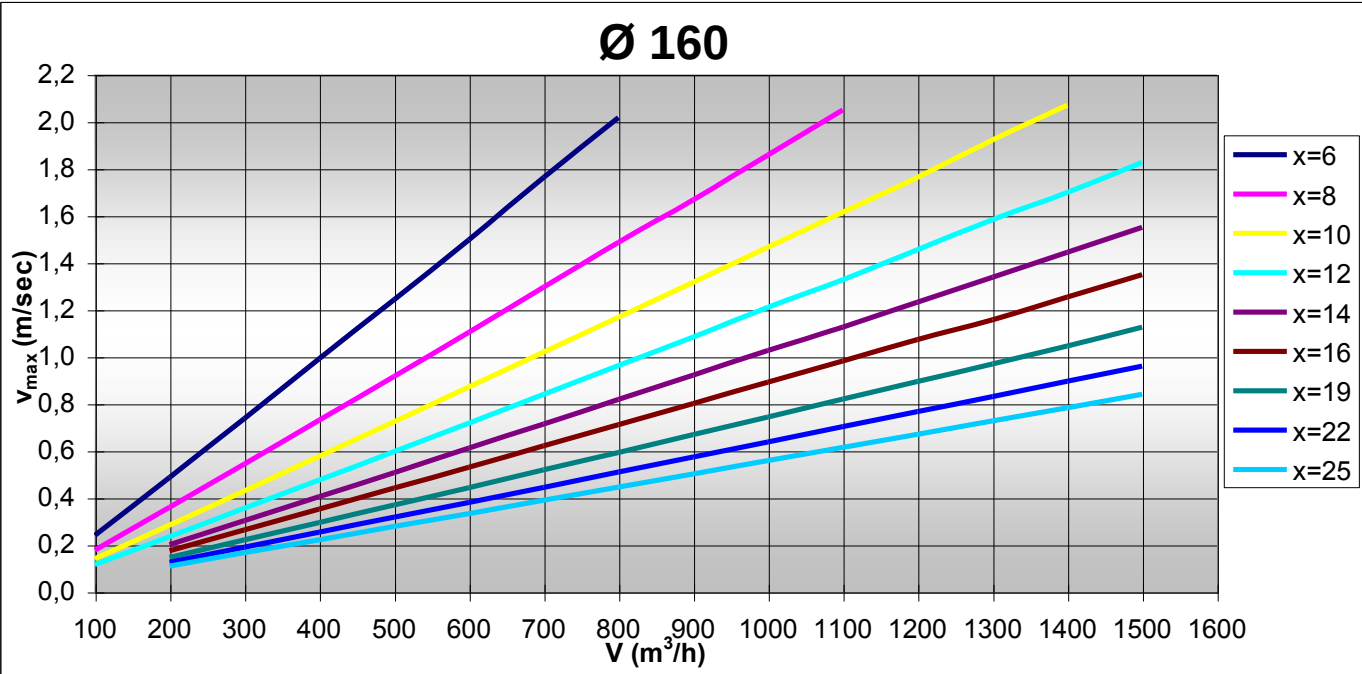


B. Maximum ($v_{\max}$) and medium (v_{med}) air velocity depending to the distance from the jet nozzle (x) in horizontal throw

In the diagrams below we can see, for all the sizes of the AMB jet nozzles, how are changing depending to the air volume supply V (m^3/h), the maximum air velocity in the center of the air throw $v_{\max}$ (m/sec) in distance x (m) from the jet nozzle. The medium air throw velocity is equal to the 1/3 of the maximum ($v_{\text{med}} = v_{\max}/3$).

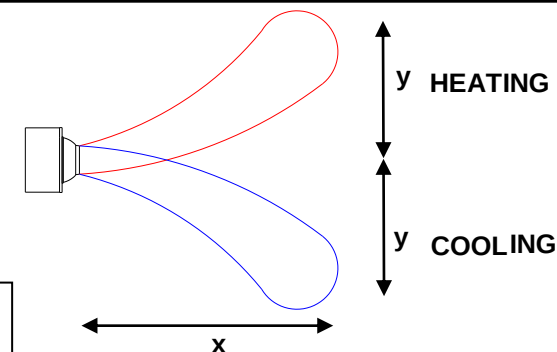






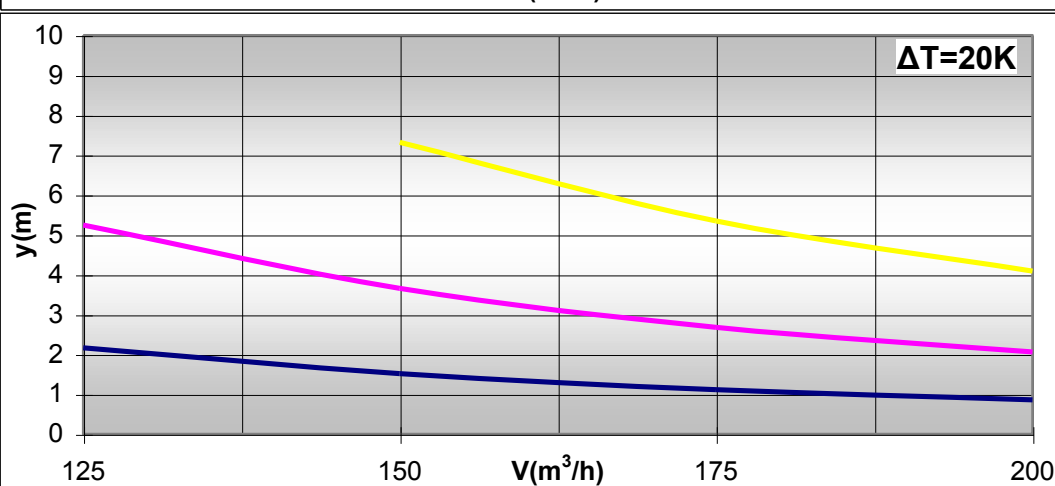
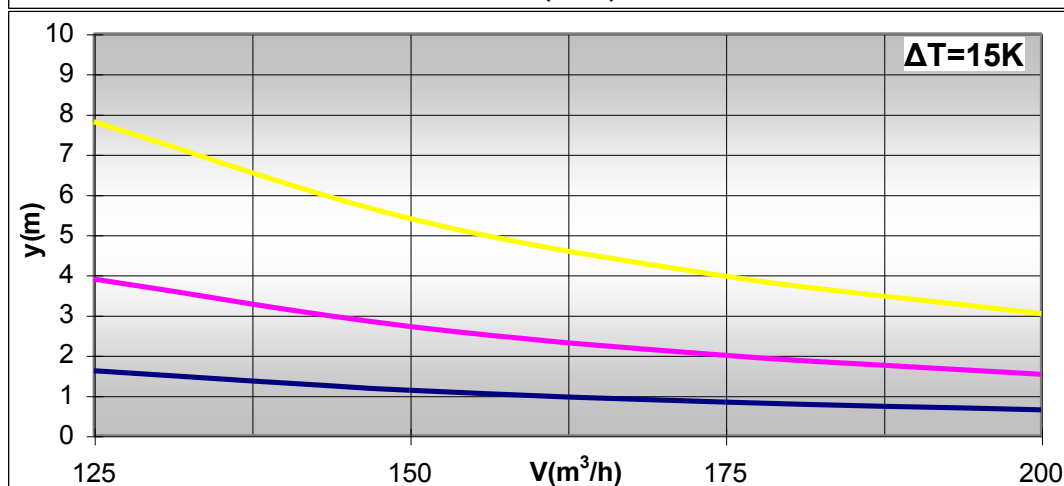
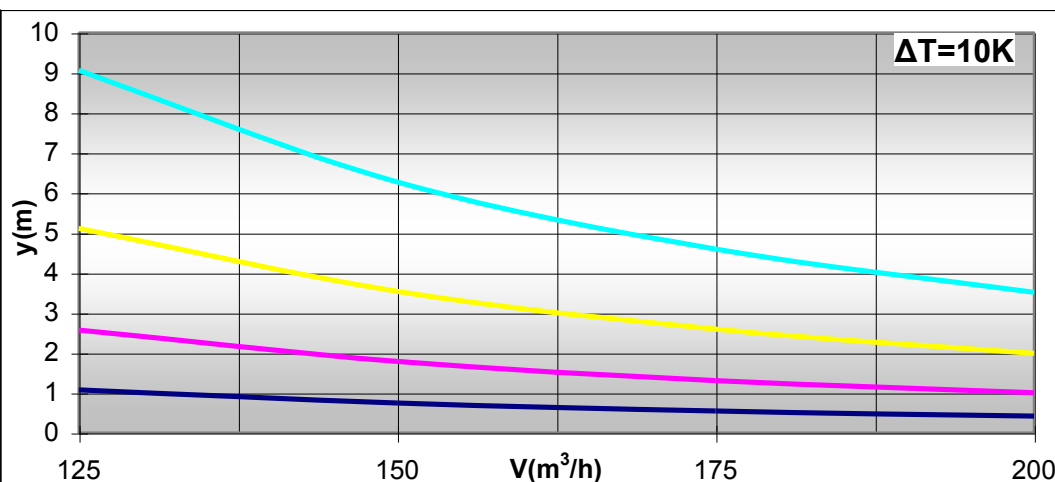
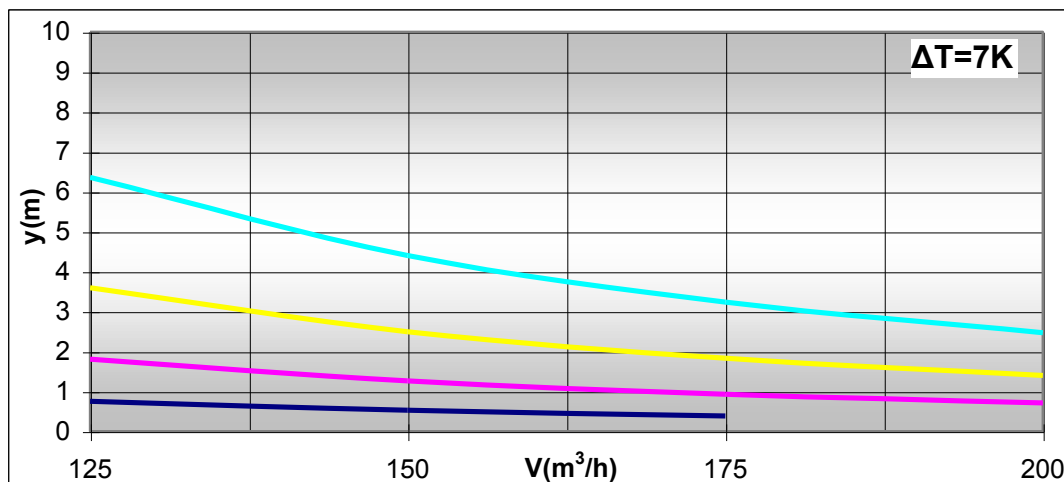
C. Vertical deviation (y) of the horizontal air throw depending to the distance from the jet nozzle (x)

In the diagrams below we can see for all the sizes of the jet nozzles AMB how changes depending on the air volume supply V (m^3/h) and the distance from the jet nozzle (x), the vertical deviation of the center of the air throw y (m) upwards (in heating) or downwards (in cooling). The vertical deviation is calculated for temperature differences $\Delta T=7, 10, 15$, and 20K for heating and cooling.



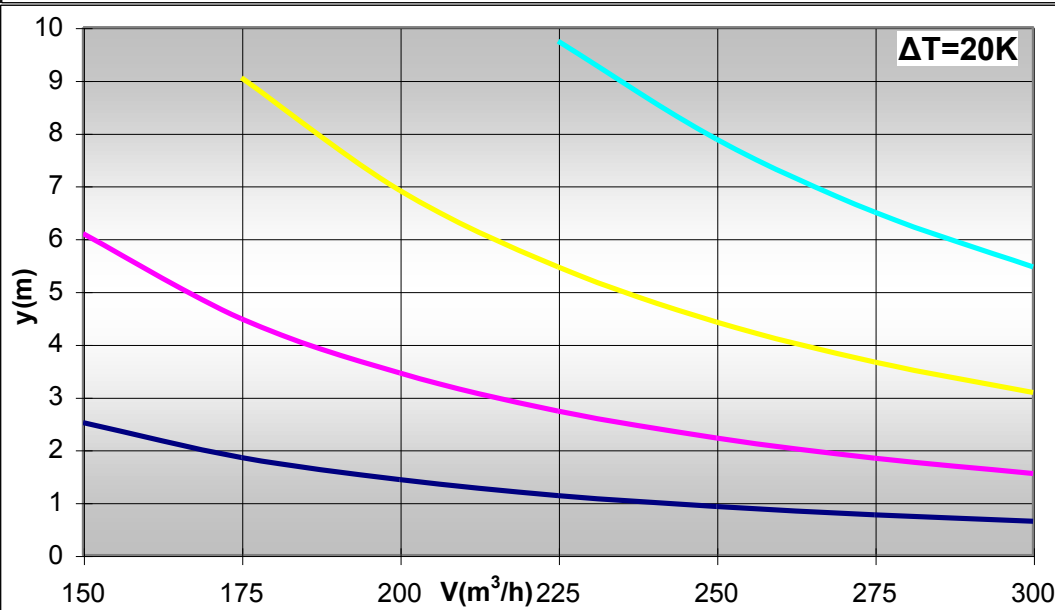
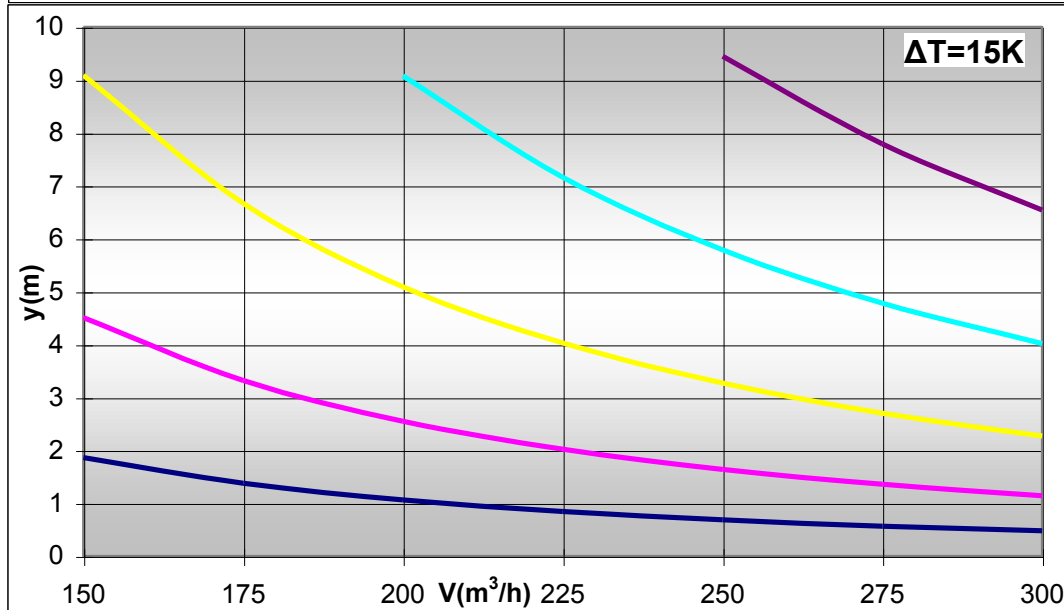
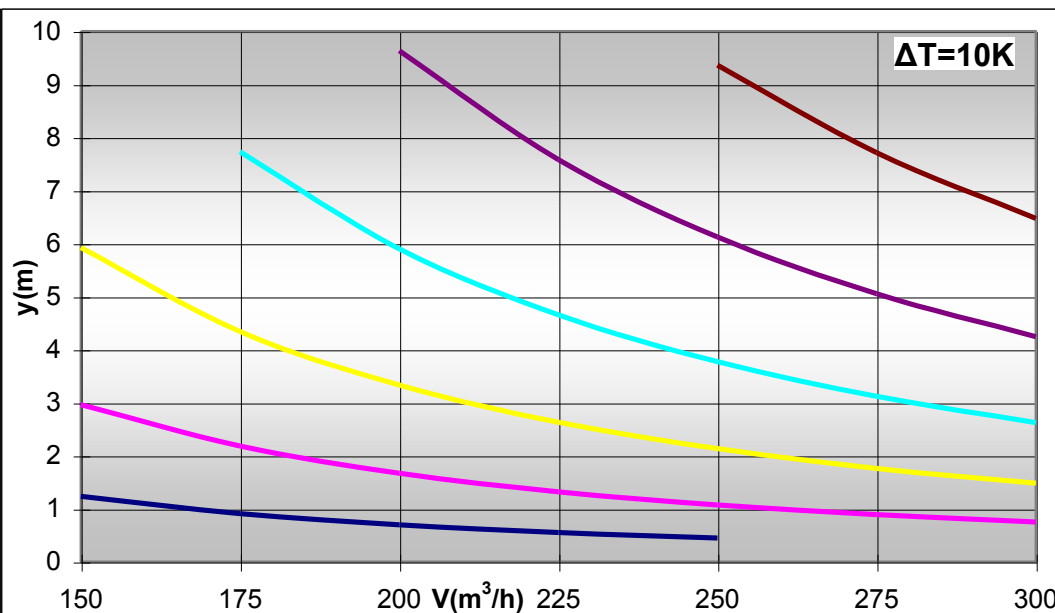
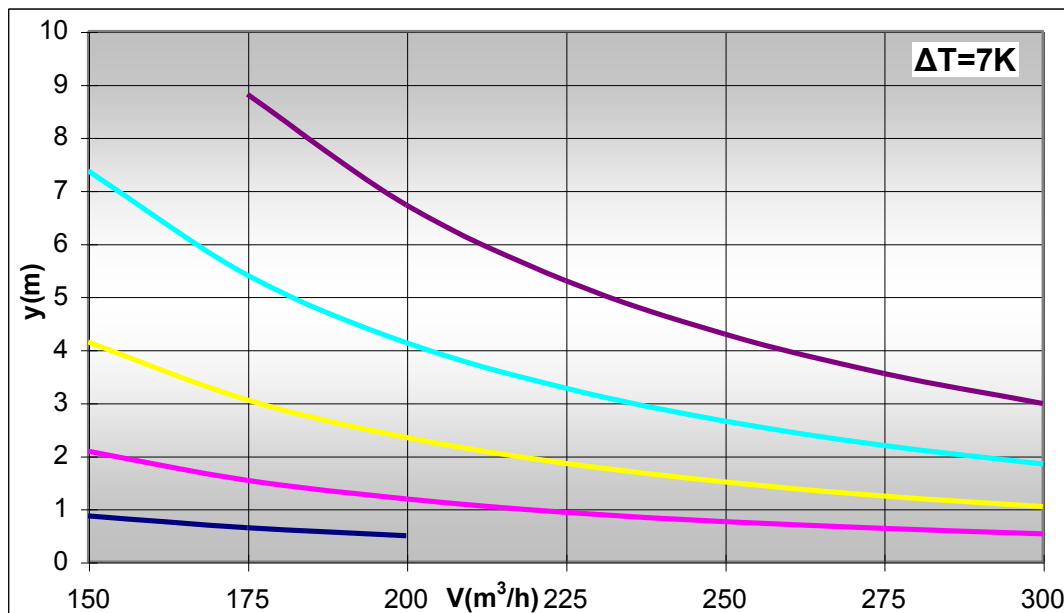
Ø 80

— : X=6m — : X=8m
— : X=10m — : X=12m



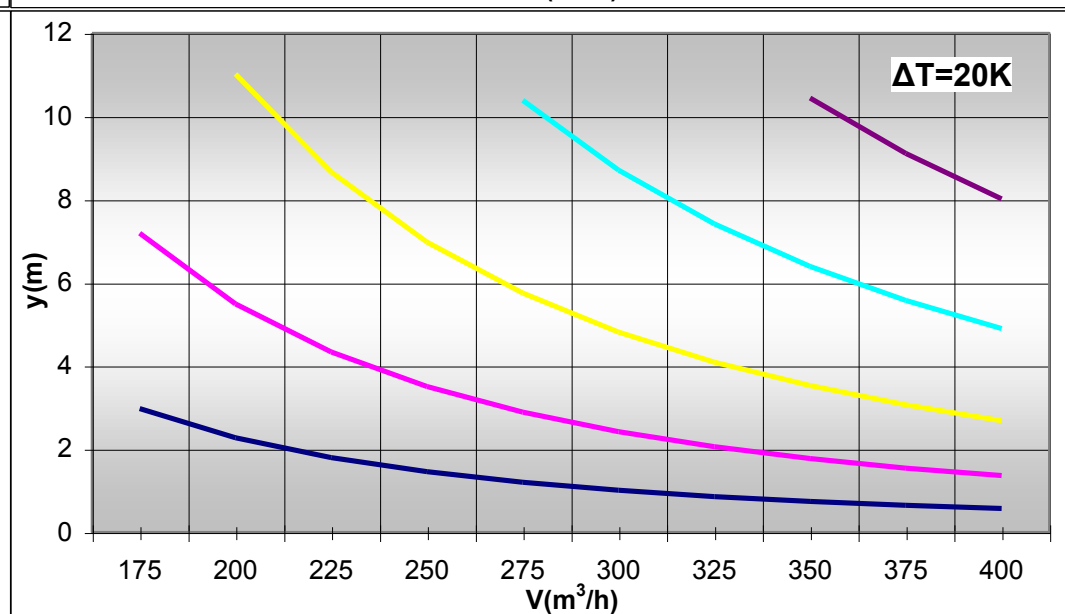
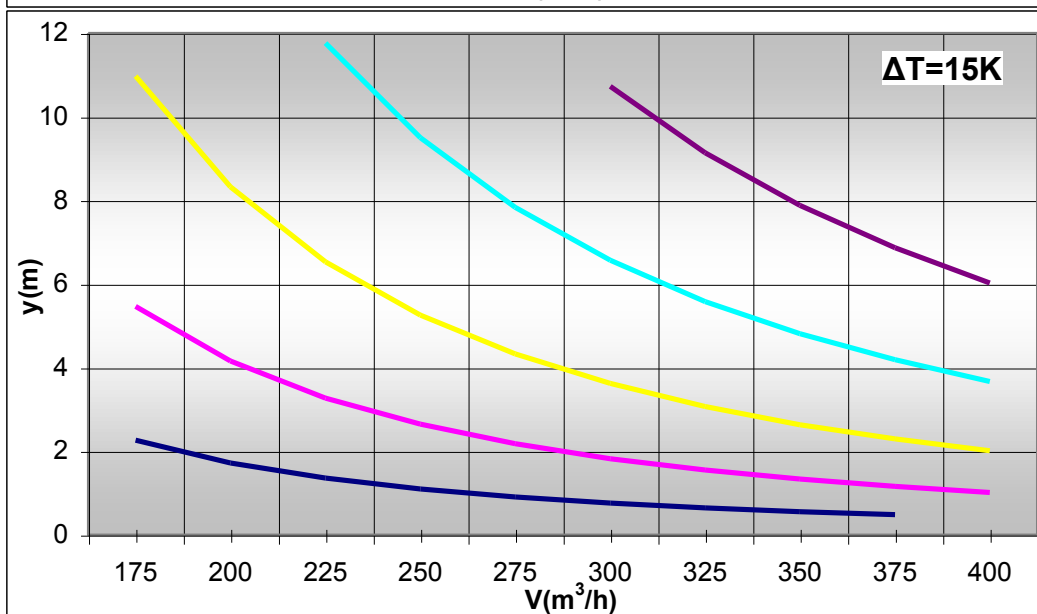
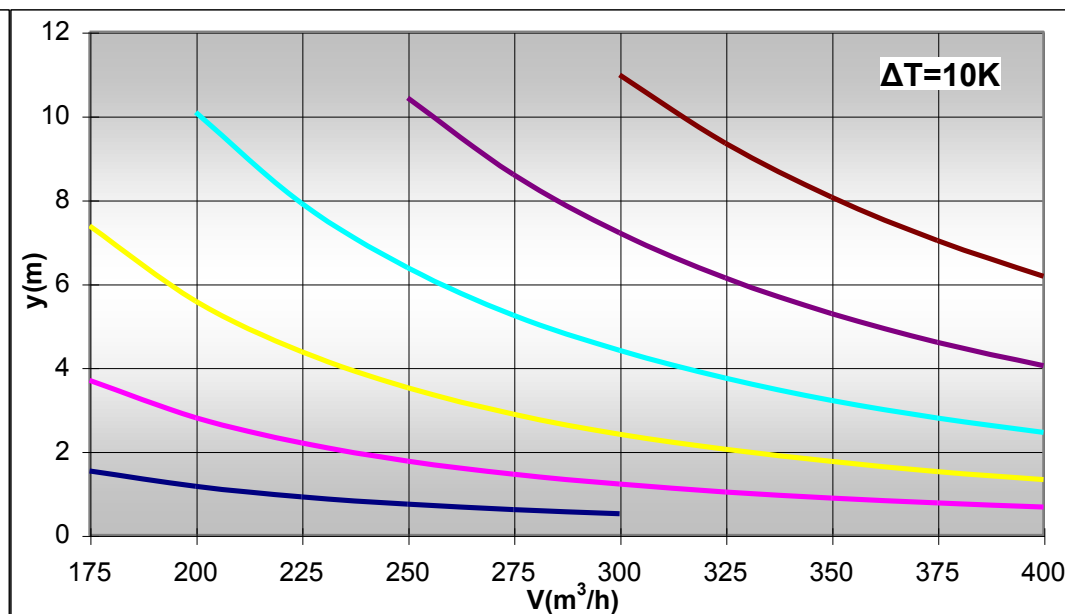
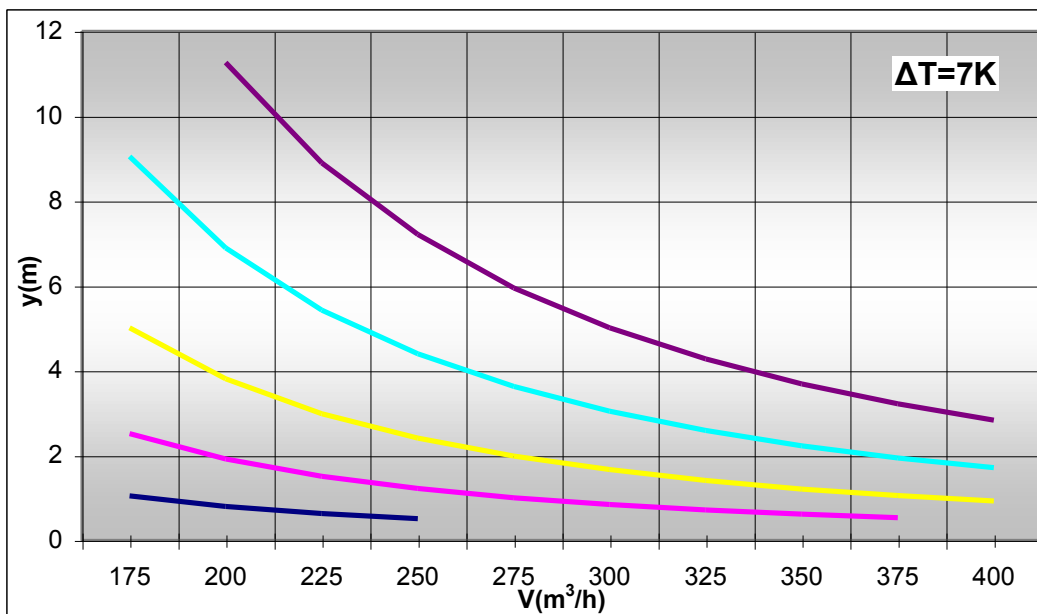
Ø 90

— : X=6m — : X=8m — : X=10m
— : X=12m — : X=14m — : X=16m



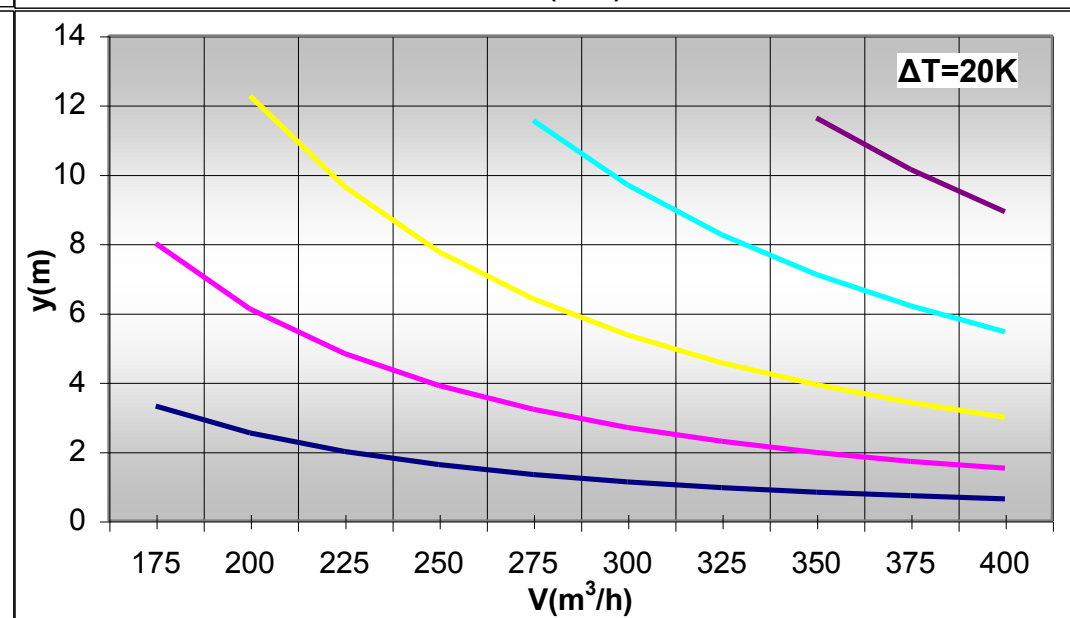
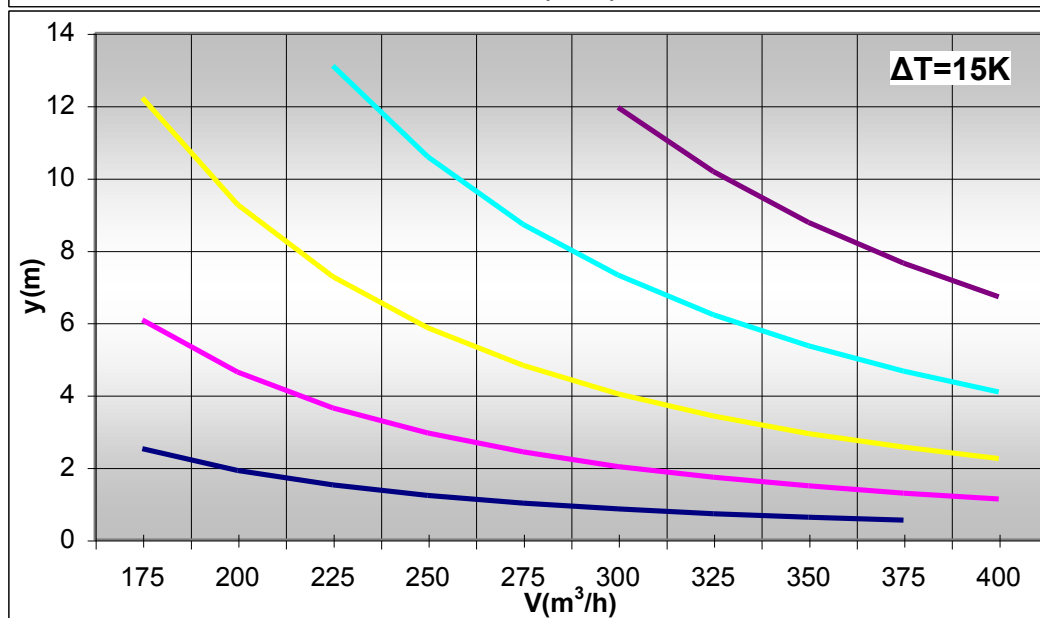
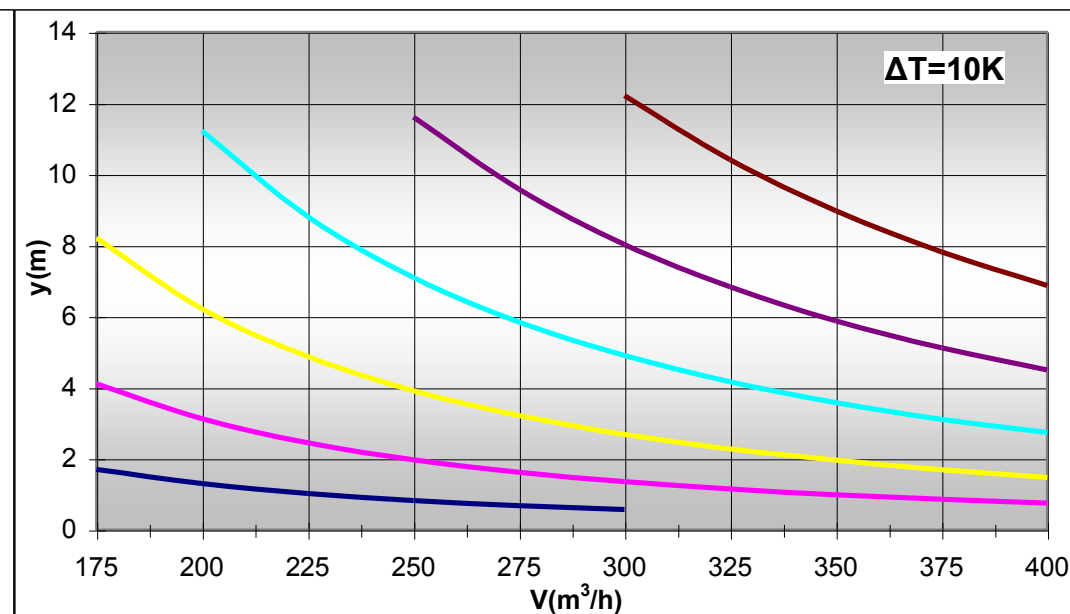
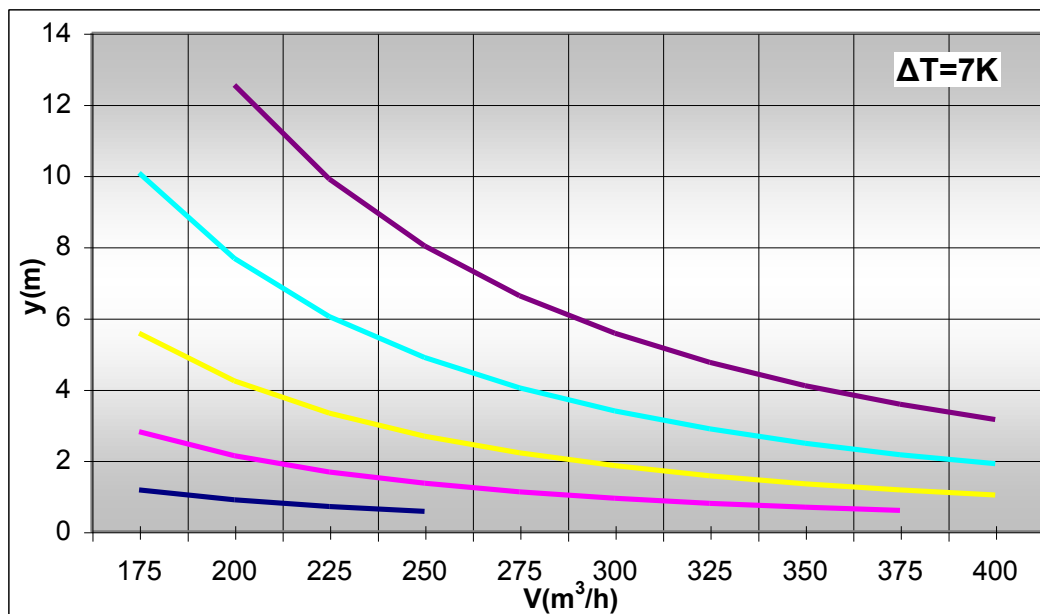
Ø 110

— : X=6m — : X=8m — : X=10m
— : X=12m — : X=14m — : X=16m



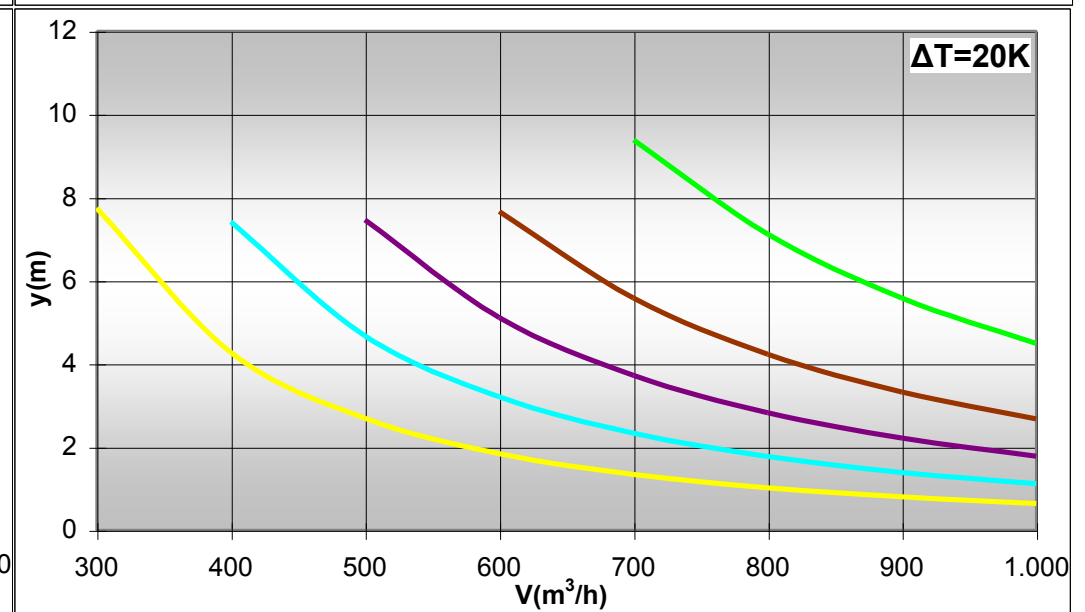
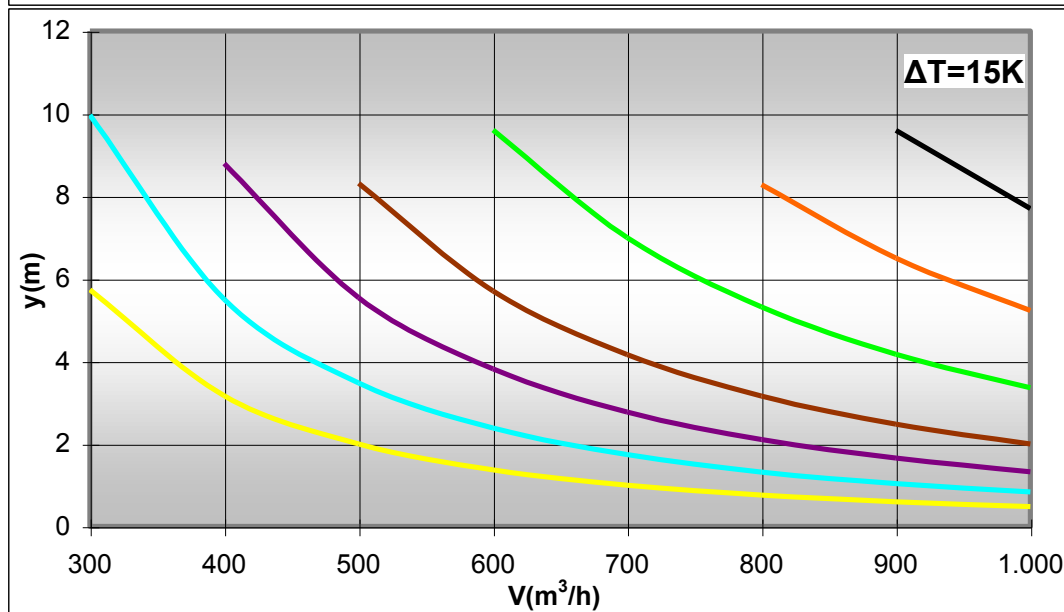
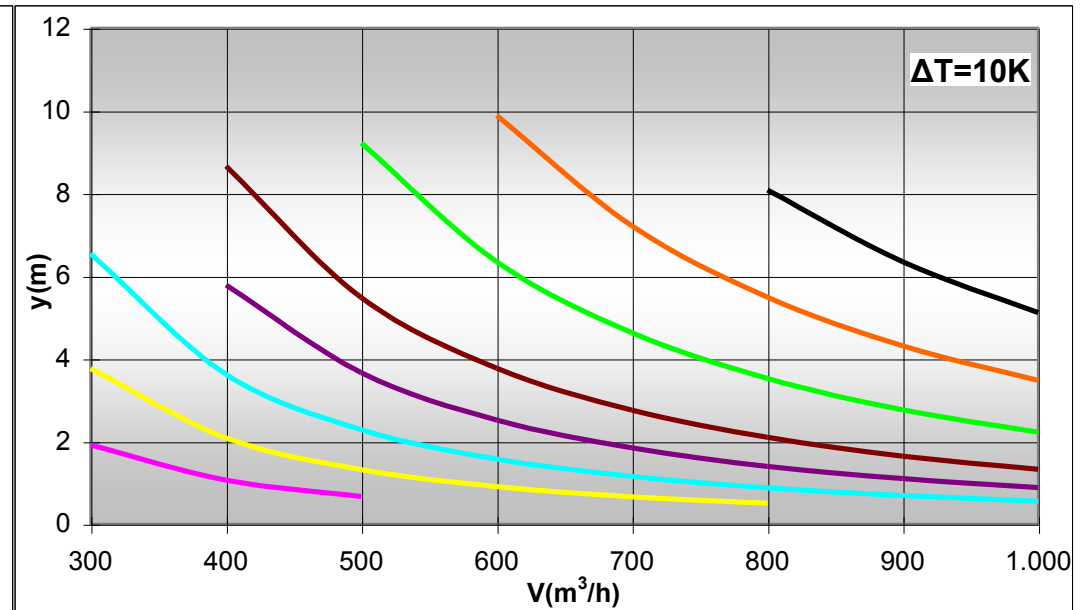
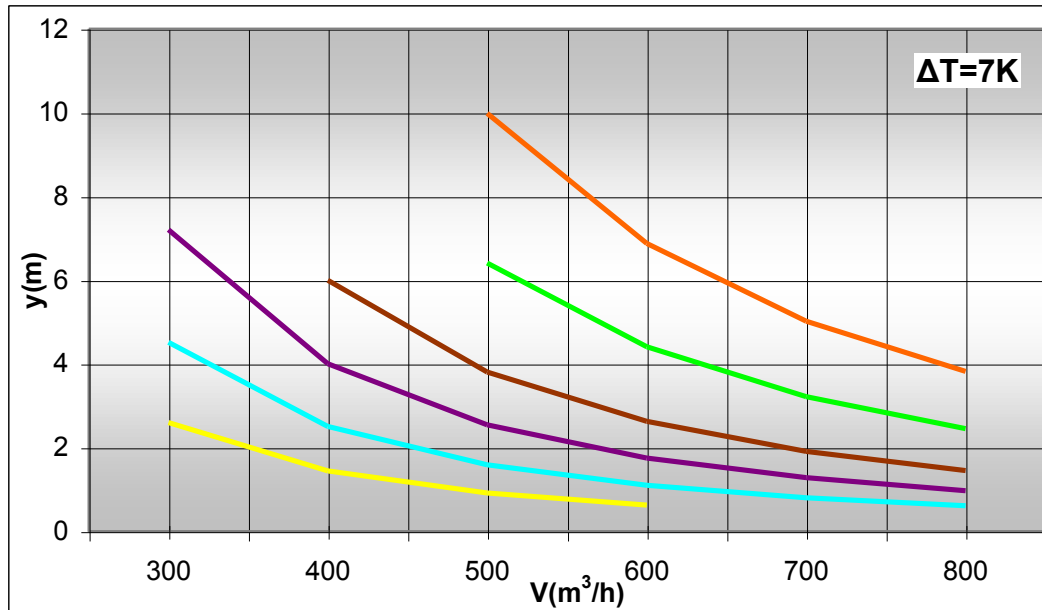
Ø 125

— : X=6m — : X=8m — : X=10m
— : X=12m — : X=14m — : X=16m

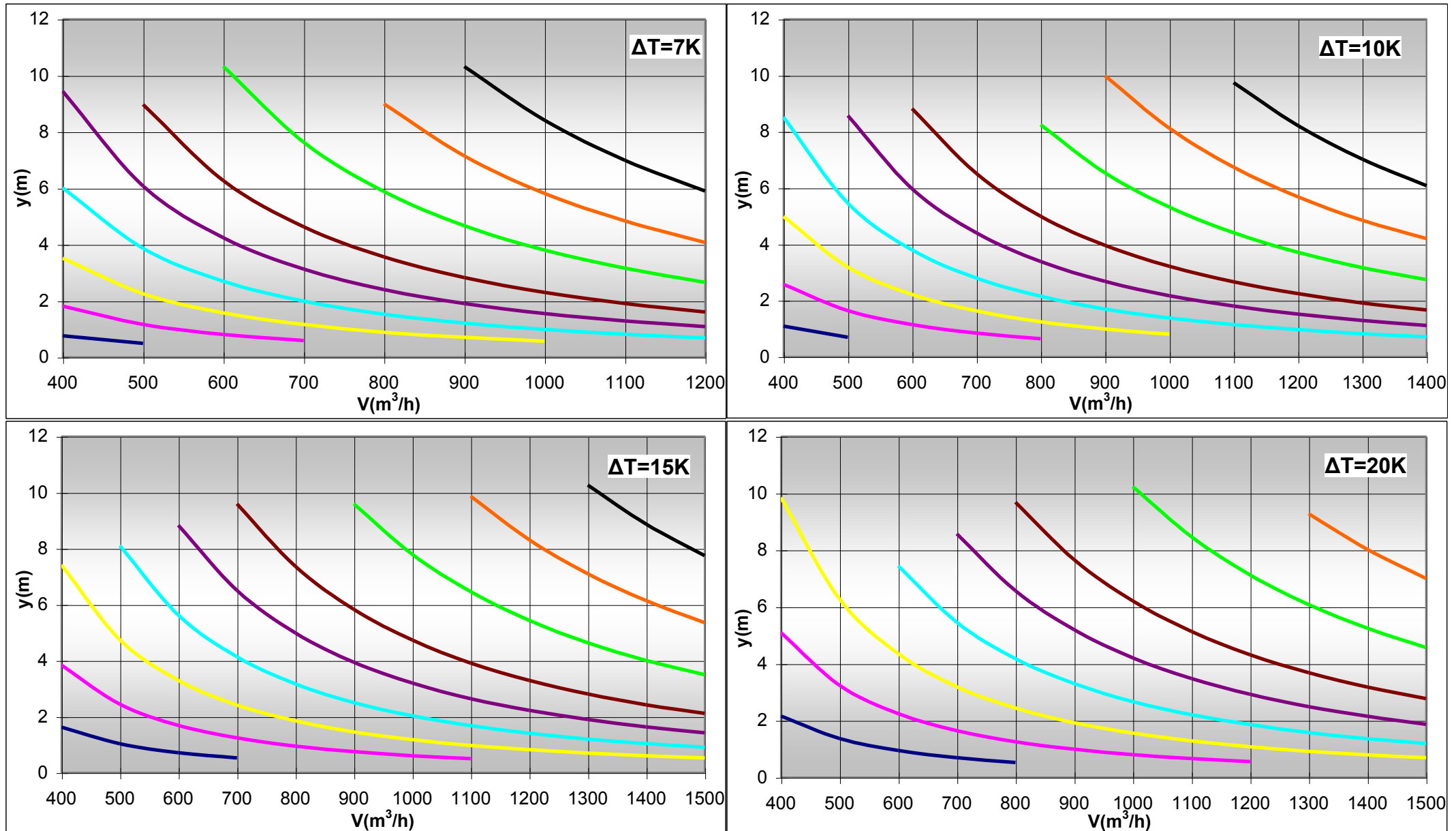
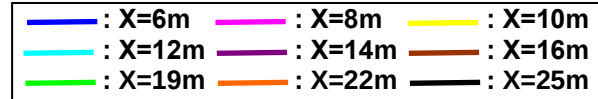


Ø 120

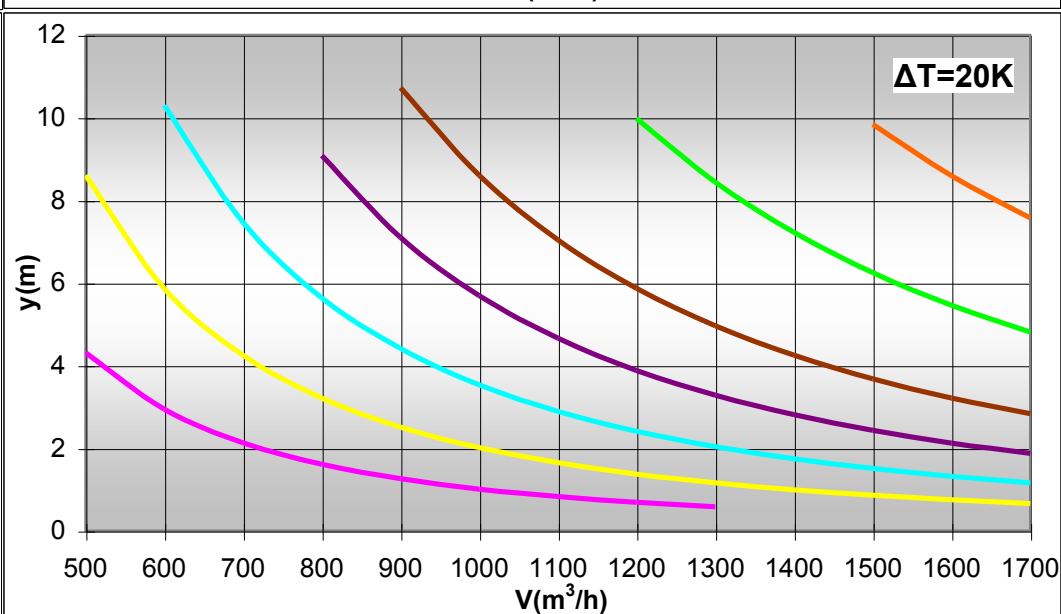
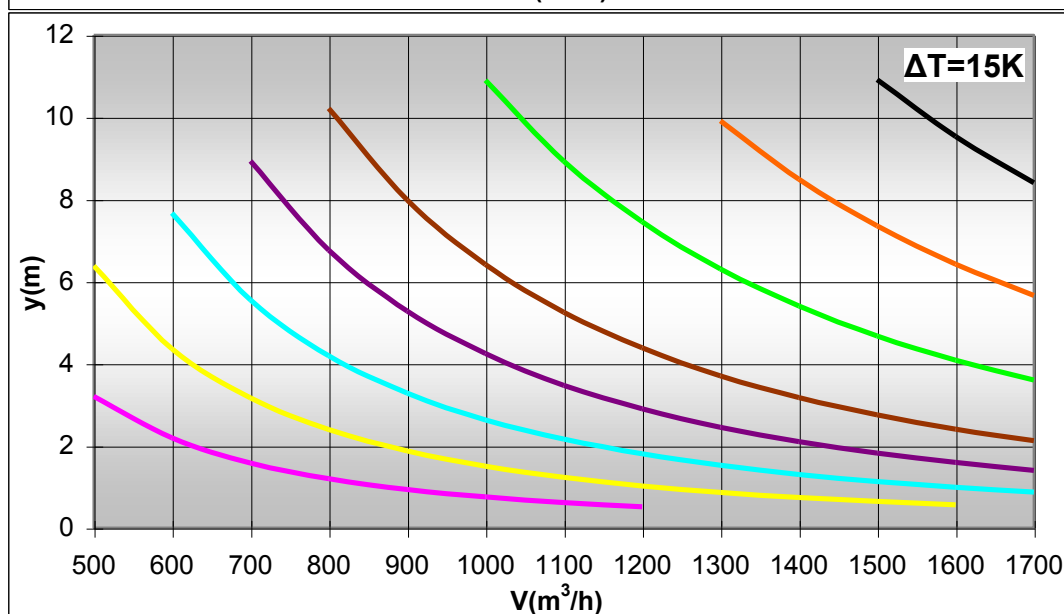
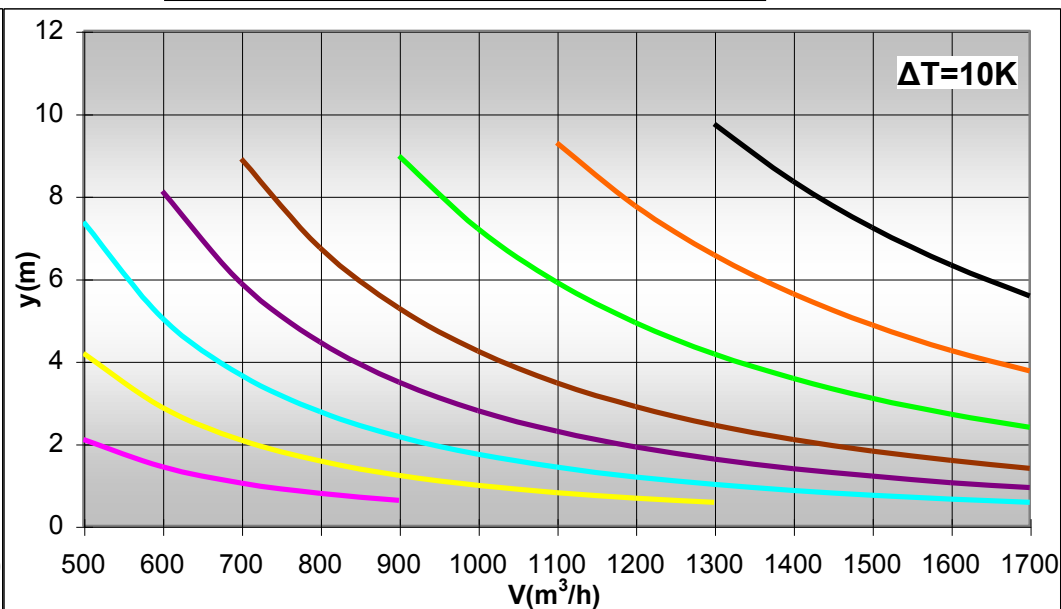
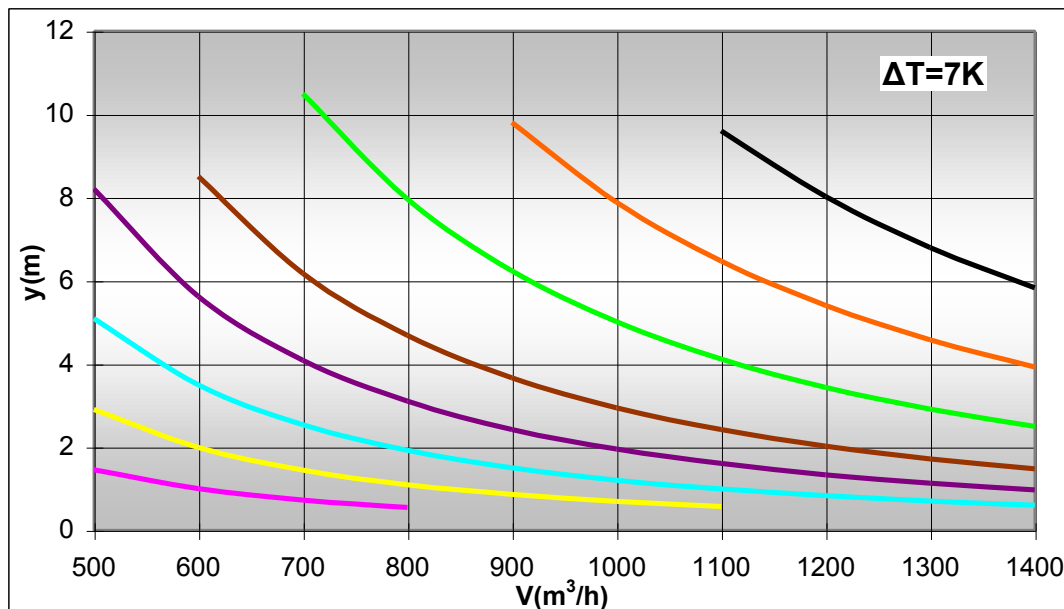
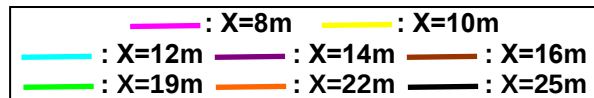
: X=8m : X=10m
 : X=12m : X=14m : X=16m
 : X=19m : X=22m : X=25m



Ø 160

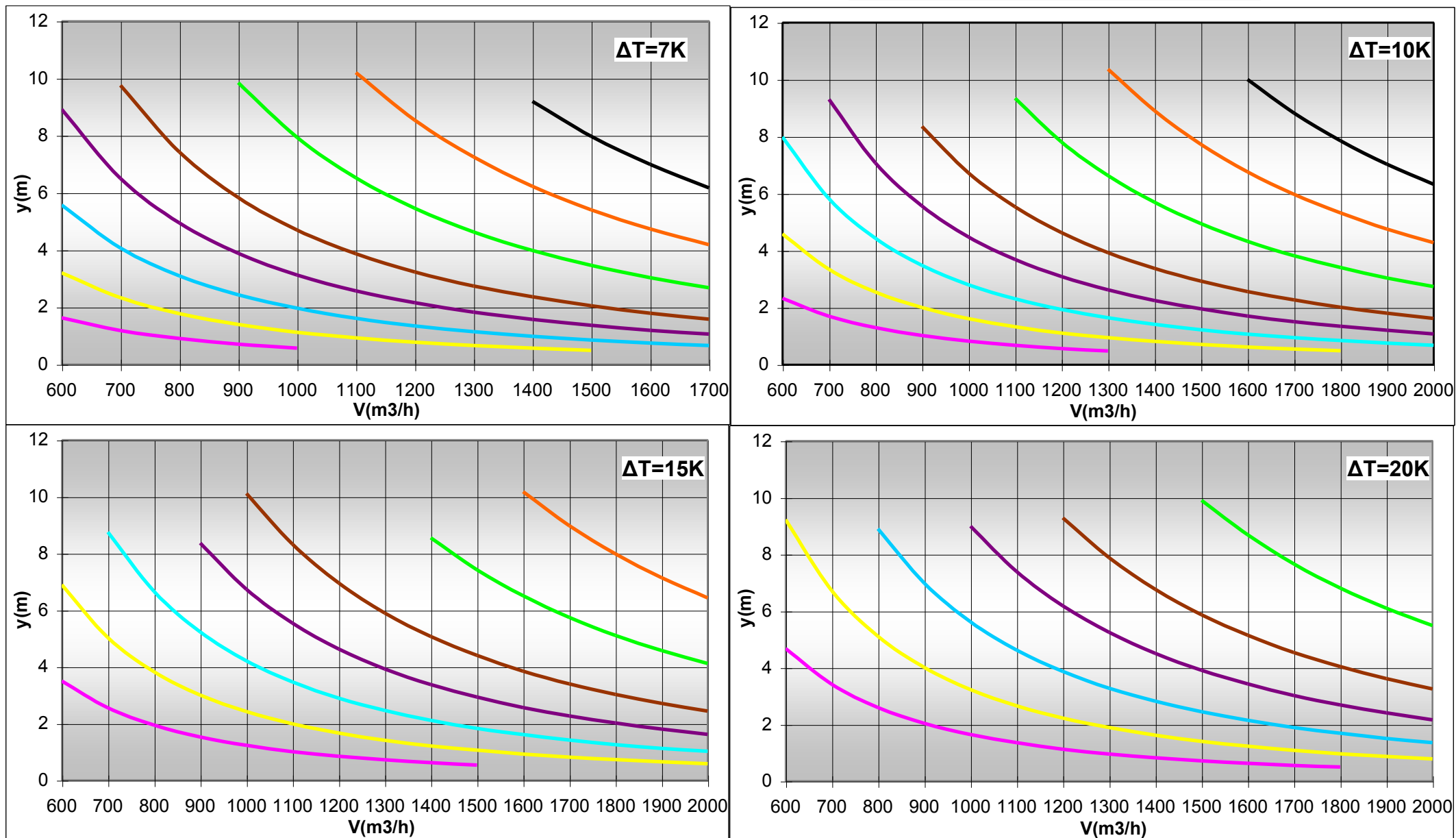


Ø 180

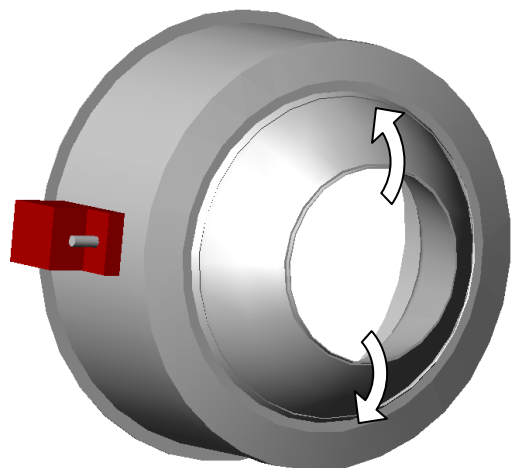


Ø 195

: X=8m : X=10m
 : X=12m : X=14m : X=16m
 : X=19m : X=22m : X=25m



HEAD ADJUSTMENT WITH ELECTRIC ACTUATOR

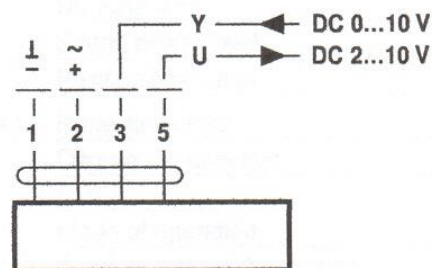
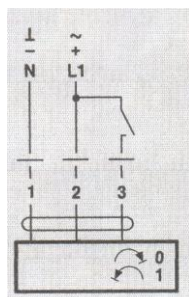


In the diffusers AMB with electric actuator the head is moving in one direction (up and down) only. The actuator is possible to be installed external (-E) or internal (-I). In AMB-KO-80/90/110/125 the actuator is installed internal only.

WIRE CONNECTIONS:

ON-OFF:

ANALOGUE:



For the electric actuators:

Max. Temperature: 50°C

Max. Relative Humidity: 95%

AMB-MLD – JET NOZZLE WITH ADJUSTABLE THROW

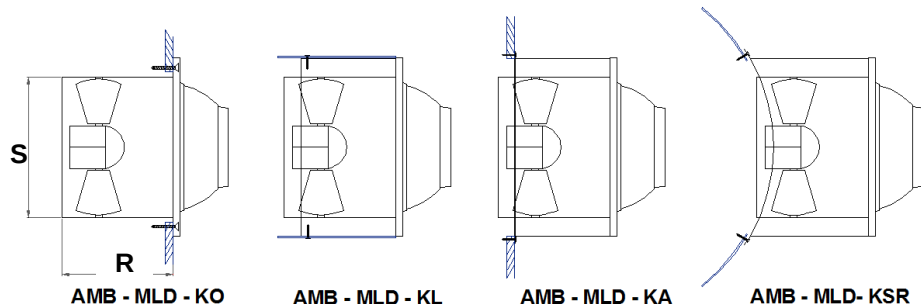


Sometimes the throw achieved by the AMB jet nozzle is bigger than the needed. In this case we can use the AMB-MLD jet nozzle which has in the neck the core and the blades of the MLD diffuser (in black color to be not visible). When we change the blades angle we change the opening of the air jet so the throw of the air jet. You can see how you can adjust the blades angle in the MLD diffuser brochure. For the dimensions 80, 90, 110 and 125 you can find the pressure drop and the noise from the blades section from the diagrams of the MLD Ø200, for the dimensions 120, 160, 180 and 195 from the diagrams of the MLD Ø400. Then you add the pressure drop of the AMB and the MLD. About the noise we take in account the bigger one, except their difference is smaller than 2 db(A), in this case we add 2-3 db(A) in the bigger noise.

ATTENTION: In all the versions there is a neck which exceeds in the back of the jet nozzle as you can see in the drawings below. The neck dimensions are shown in the table below, the other dimensions of the jet nozzle AMB-MLD are the same with the standard AMB's (See page 3).

The way of order is the same with the simple AMB.

Example: AMB-MLD-KA-180-RAL 7035-ANALOGUE 24V.



NECK DIMENSIONS (mm)		
SIZE	R	S
80, 90, 110, 125	157	200
120, 160, 180, 195	353	380



Open blades



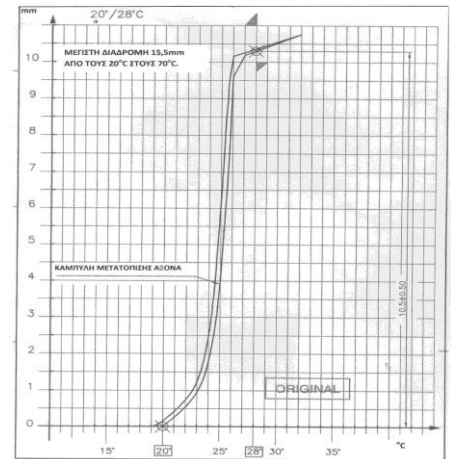
Closed blades

AUTOMATIC HEAD ANGLE ADJUSTMENT WITH THERMAL ACTUATOR (AMB-...-AUTH)



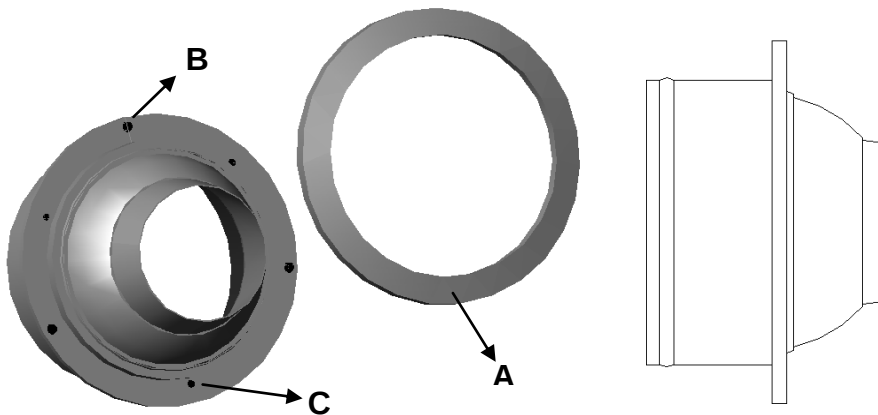
The automatic adjustment of the head angle is succeeded with a thermal actuator which according to the supply air temperature moves an axis. This movement is very intensive between 20-28°C, outside this temperature area the movement is very small.

Usually the supply air temperature in cooling is below 20°C and in heating is over



28°C. We can use this phenomenon with a proper motion transmission mechanism to adjust the head angle in the position of cooling or heating. The installation of the automatic head angle adjustment mechanism is possible in all the types and dimensions of AMB. The big advantage in this case is that we install the diffuser like a simple one and we forget it, and that we have not the cost of the electric installation like the diffusers with electric actuator.

INSTALLATION AND ADJUSTMENT



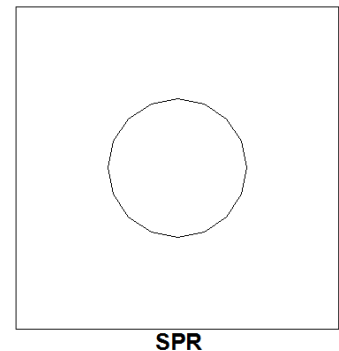
INSTALLATION INSTRUCTIONS FOR AMB-KO DIFFUSER

- We unscrew the small screws in the side and we take off the cover **A** which covers the external flange of the diffuser so the screws are not visible.
- We put the diffuser in the hole.
- We fix the diffuser with screws in the holes **B** (the bigger close to the edge of the flange).

HEAD ADJUSTMENT OF DIFFUSERS AMB-KO/KL/KA/KSR

- We unscrew a little the small screws **C**.
- We rotate the head to come in position to rotate up-down.
- We give to the head the angle where we need.
- We screw the screws **C** till the head will be stable.
- We put the cover **A** and we fix it with the small screws in the side.

AMB-KO IN PLATE SPR



When we want to install the jet diffusers AMB-KO in false ceiling with dimensions 600X600 mm we can use the plate SPR. Recommended only for **heating**.

SPR is a steel plate with thickness 1mm and outside dimensions 595X595mm with round hole in the center for diffuser installation. The plate and the diffuser are electrostatically painted in RAL color.

All sizes of AMB-KO is possible to be installed.