NOVOVENT

NEW !

WINDER

Impellers with higher efficiency
and less sound level

SNC

Winder Solutions

The last new generation impeller

With the **Serrated Novovent Concept** (S.N.C.), NOVOVENT, S.A. has developed a new blades' generation. The S.N.C. is the result of three different research lines. Firstly, we get higher performance due to the sickle blades, secondly, due to the winglet applied at the end of the blade we debug turbulences and thirdly, in order to reduce the sound level we designed a serrated profile at the rear of the blades.

The S.N.C. blade compared with the traditional ones gets better performance in airflow and pressure; decreasing the power needs and sound levels about 15%.

The new impeller will be applied to all our axial product range. Applied with the Multiflow Novovent System (M.N.S.) gives to NOVOVENT an exclusive range of products and the possibility to offer unique solutions.

R+D+I

Our technical department is using for the designs and advanced applications the Computational Fluid Dynamic (CFD) and Finite Element Analysis (FEA)

Those systems get us pre-designed units, like Winder ones, to delimitate the first steps to check mechanical resistance avoiding possible mechanical failures and to pre-define fluid dynamics performance.

These first data are exported to our laboratory to test, check and validate the final design.

Acoustic

Novovent is equipped with the latest technologies for measuring noise under the norm AMCA 300 (BS848 part 2).

Laboratory

It is a long process where our R&D department develops new prototypes, tests them in our own laboratory so that we can finally offer them in our catalogue once we are sure that they guarantee the level of quality that our costumers and the market are expecting.

Our Laboratory tests all acoustic, electrical and fluid dynamics performance of all fans within two cameras and nozzle entrance test for fans up to 1.600 mm in diameter, 150.000 m3/h and 3.000 pa of static pressure following the international standards, ISO 5801:1997, BS 848-1:1980 and ANSI / AMCA 210-85:1985.

AXIAL WINDER

- Up to diameter 630 frame of PP reinforced with fiber glass. The frame of bigger diameters are made from epoxy painted metal sheet. Deep opening.
- High efficiency impellers made of aluminium according the SERRATED NOVOVENT CONCEPT and the MULTIFLOW NOVOVENT SYSTEM. Dynamically balanced.
- All the models include epoxy painted grill.
- Motors class F, up to 750W protection IP 65, the others IP 55.
- Working temperature: -30°C to 70°C.
- Airflow: motor - impeller.

AXITUB WINDER

- Casing made from epoxy painted metal sheet. The models bigger than 7,5 kW with inspection door.
- High efficiency impellers made of aluminium according the SERRATED NOVOVENT CONCEPT and the MULTIFLOW NOVOVENT SYSTEM. Dynamically balanced.
- Motors class F, up to 750 W protection IP 65, the others IP 55.
- Working temperature: -30°C to 70°C.
- Airflow: motor - impeller.

AXITUB PIROS WINDER

- Casing made from epoxy painted metal sheet. The models bigger than 7,5 kW with inspection door.
- High efficiency impellers, made of aluminium according the SERRATED NOVOVENT CONCEPT and the MULTIFLOW NOVOVENT SYSTEM. Dynamically balanced.
- Three phase motor, class H, IP 55, certified according EN12101 and Ex 3G Eex nA IIA T3.
- Working temperature: (S1) -20 +40°C; (S2) 400°C 2h.
- High adjustable motor support, fixed to the housing by screws.
- Airflow: motor - impeller.

PIROS BOX WINDER

- Box made from galvanised metal sheet, with rock wool of 50 mm class M0.
- High efficiency impellers, made of aluminium according the SERRATED NOVOVENT CONCEPT and the MULTIFLOW NOVOVENT SYSTEM. Dynamically balanced.
- Three phase motor, class H, IP 55, certified according EN12101 and Ex 3G Eex nA IIA T3.
- Working temperature: (S1) -20 +40°C; (S2) 400°C 2h.
- High adjustable motor support, fixed to the housing by screws.
- Airflow: motor - impeller.

Options

AXIAL WINDER	AXITUB WINDER	AXITUB PIROS WINDER	PIROS BOX WINDER	
•	•			Different tensions, speed and frequencies, 2 speed motors.
•	•	•	•	Another configuration with different performance.
•	•	•	•	Airflow: impeller - motor.
	•			Made in stainless steel.
	•			Short cased.
		•	•	For max. temperature of 200°C 2h, 300°C 2h.

Data table

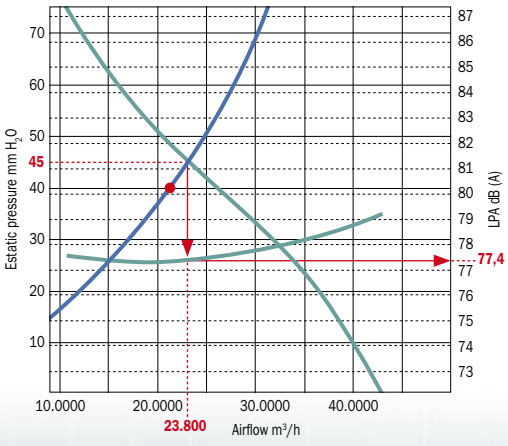
400V 50Hz (III~) 1400 r.p.m. (n: min-1) Ø 560 - 1.250 mm

	Ø mm	m³/h	A	kW	rpm	CORRECTION FACTOR							
						63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000Hz	4000 Hz	8000 Hz
WINDER 4-560T-4 0,55 kW	560	10.087	1,36	0,55	1.430	14,8	15,9	12,1	10,1	15,2	24,0	28,7	36,9
WINDER 4-560T-4 0,75 kW	560	12.551	1,85	0,75	1.435	12,7	14,3	12,3	12,3	16,4	23,8	28,1	35,4
WINDER 4-560T-4 1,1 kW	560	14.418	2,44	1,10	1.420	14,1	15,3	13,0	13,6	17,6	24,8	28,8	35,5
WINDER 4-630T-4 0,75 kW	630	14.341	1,85	0,75	1.435	14,8	15,9	12,1	10,1	15,2	24,0	28,7	36,9
WINDER 4-630T-4 1,1 kW	630	17.918	2,44	1,10	1.420	12,7	14,3	12,3	12,3	16,4	23,8	28,1	35,4
WINDER 4-630T-4 1,5 kW	630	20.587	3,29	1,50	1.420	14,1	15,3	13,0	13,6	17,6	24,8	28,8	35,5
WINDER 4-710T-6 1,1 kW	710	17.303	2,44	1,10	1.420	21,7	16,5	10,3	11,0	14,6	21,9	28,0	36,5
WINDER 4-710T-6 1,5 kW	710	19.547	3,29	1,50	1.420	19,7	15,9	10,9	10,5	14,6	21,5	27,1	35,0
WINDER 4-710T-6 2,2 kW	710	24.444	4,64	2,20	1.410	17,4	15,3	11,0	10,7	14,5	21,3	26,9	34,3
WINDER 4-800T-6 3 kW	800	30.324	6,47	3,00	1.410	24,3	12,5	10,0	12,0	15,9	22,6	24,8	33,1
WINDER 4-800T-6 4 kW	800	36.424	7,69	4,00	1.430	17,4	15,3	11,0	10,7	14,5	21,3	26,9	34,3
WINDER 4-800T-6 5,5 kW	800	41.350	10,60	5,50	1.465	16,7	13,3	10,2	11,5	16,8	24,8	29,0	35,6
WINDER 4-900T-6 4 kW	900	36.378	7,69	4,00	1.430	28,3	11,4	10,6	12,8	17,9	25,0	26,9	35,4
WINDER 4-900T-6 5,5 kW	900	43.070	10,60	5,50	1.465	24,3	12,5	10,0	12,0	15,9	22,6	24,8	33,1
WINDER 4-900T-6 7,5 kW	900	50.711	14,20	7,50	1.470	22,3	12,4	9,9	11,6	15,6	22,4	24,9	32,8
WINDER 4-1000T-6 7,5 kW	1.000	50.200	14,20	7,50	1.470	28,3	11,4	10,6	12,8	17,9	25,0	26,9	35,4
WINDER 4-1000T-6 11 kW	1.000	62.602	21,50	11,00	1.460	21,0	11,4	10,2	12,8	18,2	25,3	27,7	35,8
WINDER 4-1000T-6 15 kW	1.000	75.500	29,00	15,00	1.455	17,4	11,2	10,3	13,1	18,1	25,0	27,8	35,5
WINDER 4-1250T-6 15 kW	1.250	101.500	29,00	15,00	1.455	28,3	11,4	10,6	12,8	17,9	25,0	26,9	35,4
WINDER 4-1250T-6 22 kW	1.250	125.800	41,70	22,00	1.470	26,6	13,7	10,4	11,5	15,5	22,8	24,4	33,9
WINDER 4-1250T-6 30 kW	1.250	141.250	54,80	30,00	1.475	22,3	12,4	9,9	11,6	15,6	22,4	24,9	32,8

400V 50Hz (III~) 900 r.p.m. (n: min-1) Ø 560 - 1.250 mm

	Ø mm	m³/h	A	Potencia kW	rpm	CORRECTION FACTOR							
						63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000Hz	4000 Hz	8000 Hz
WINDER 6-560T-4 0,37 kW	560	9.334	1,41	0,37	870	14,1	15,3	13,0	13,6	17,6	24,8	28,8	35,5
WINDER 6-630T-4 0,55 kW	630	13.321	1,70	0,55	870	14,1	15,3	13,0	13,6	17,6	24,8	28,8	35,5
WINDER 6-710T-6 0,37 kW	710	13.500	1,41	0,37	870	19,7	15,9	10,9	10,5	14,6	21,5	27,1	35,0
WINDER 6-710T-6 0,75 kW	710	15.798	2,21	0,75	870	17,4	15,3	11,0	10,7	14,5	21,3	26,9	34,3
WINDER 6-710T-6 1,10 kW	710	18.083	2,93	1,10	870	15,9	15,3	12,0	11,4	15,4	21,6	26,8	33,4
WINDER 6-800T-6 0,55 kW	800	16.600	1,70	0,55	870	28,3	11,4	10,6	12,8	17,9	25,0	26,9	35,4
WINDER 6-800T-6 0,75 kW	800	19.592	2,21	0,75	870	24,3	12,5	10,0	12,0	15,9	22,6	24,8	33,1
WINDER 6-800T-6 1,10 kW	800	23.005	2,93	1,10	870	22,3	12,4	9,9	11,6	15,6	22,4	24,9	32,8
WINDER 6-900T-6 1,10 kW	900	23.620	2,93	1,10	870	28,3	11,4	10,6	12,8	17,9	25,0	26,9	35,4
WINDER 6-900T-6 1,50 kW	900	29.192	3,80	1,50	870	26,6	13,7	10,4	11,5	15,5	22,8	24,4	33,9
WINDER 6-900T-6 2,20 kW	900	32.789	5,22	2,20	870	22,3	12,4	9,9	11,6	15,6	22,4	24,9	32,8
WINDER 6-1000T-6 3,0 kW	1.000	38.567	6,90	3,00	970	21,3	11,5	11,0	13,7	19,0	26,0	28,6	36,5
WINDER 6-1000T-6 4,0 kW	1.000	42.756	8,70	4,00	970	19,0	11,0	10,6	13,4	18,4	25,3	28,0	36,3
WINDER 6-1000T-6 5,50 kW	1.000	46.407	11,90	5,50	970	17,4	11,2	10,3	13,1	18,1	25,0	27,8	35,5
WINDER 6-1250T-6 5,5 kW	1.250	63.383	11,90	5,50	970	28,3	11,4	10,6	12,8	17,9	25,0	26,9	35,4
WINDER 6-1250T-6 7,50 kW	1.250	66.888	15,90	7,50	970	26,6	13,7	10,4	11,5	15,5	22,8	24,4	33,9
WINDER 6-1250T-6 11 kW	1.250	87.712	24,60	11,00	970	22,3	12,4	9,9	11,6	15,6	22,4	24,9	32,8

How to get the octave bands from the graphic?

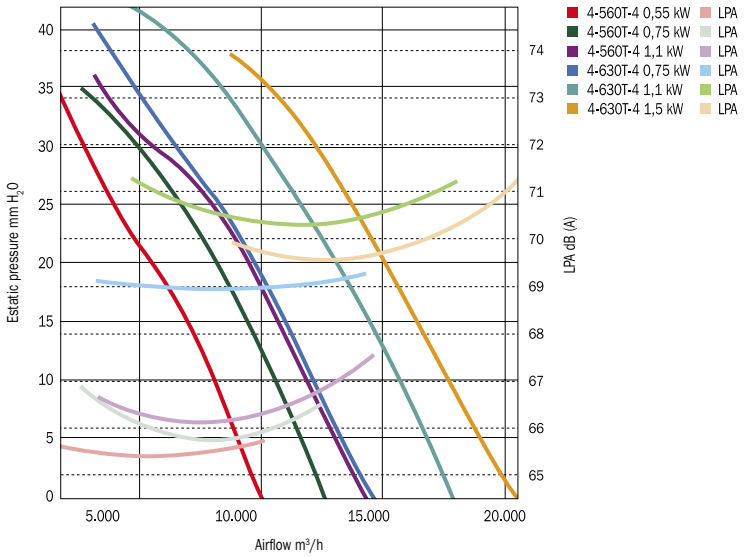


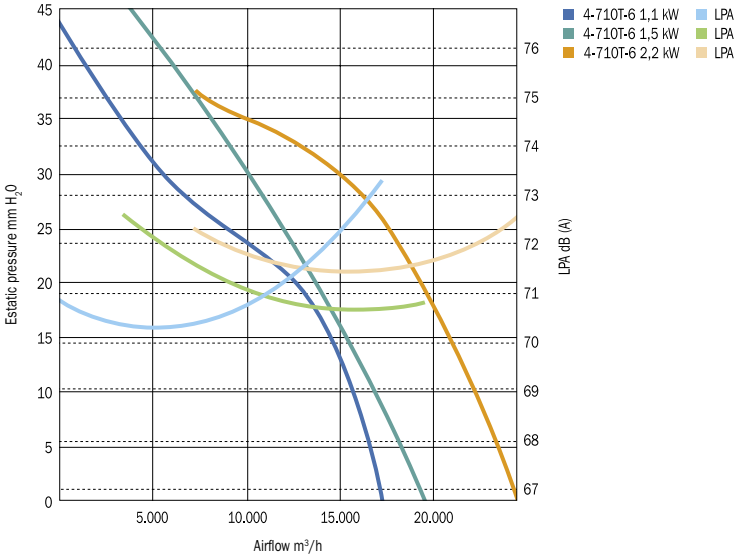
For instance, we would like to calculate the octave bands for a fan working at 20.500 m³/h at 40 mmh20.
Firstly, we need to get the working point (Q = 23.800 m³/h at 40 mmh20).
Secondly, from the working point, vertically, we look for the intersection in the acoustic curve.
Thirdly, we obtain the value of the sound pressure from the data in the right side of the graph. Once we have the sound pressure (77,4), we subtract the correction factor from the data table.

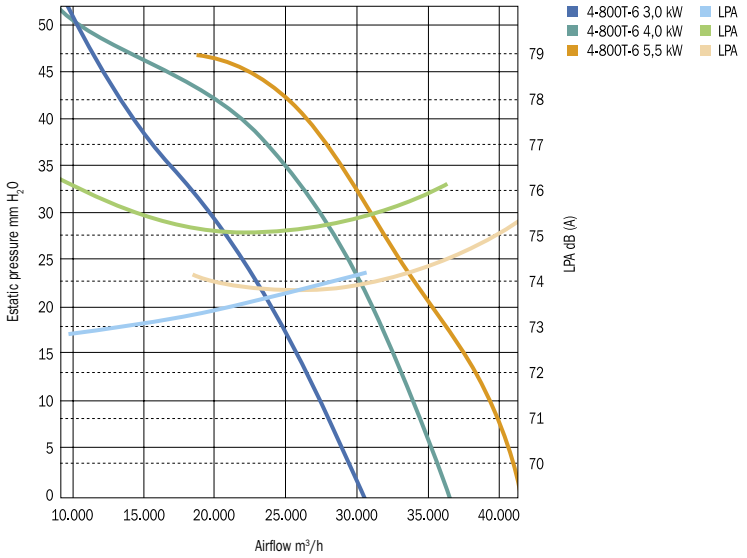
	Airflow m³/h	Static pressure mmcda	Octaves	LpA 63	LpA 125	LpA 250	LpA 500	LpA 1000	LpA 2000	LpA 4000	LpA 8000
WINDER 4-900T-6 5,5 kW	23.800	45	Value curve				77,4				
			Correction factor	24,3	12,5	10,0	12,0	15,9	22,6	24,8	33,1
			Total	**53,1**	**64,9**	**67,4**	**65,4**	**61,5**	**54,8**	**52,6**	**44,3**

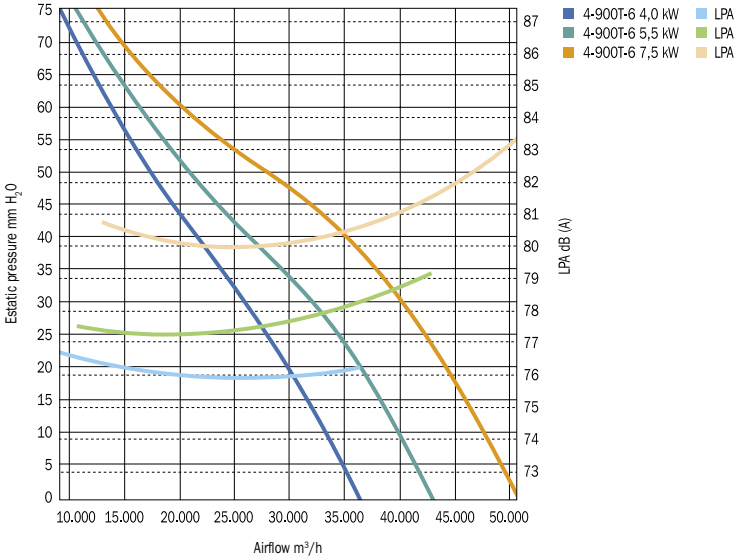
Values at 3 m radiated

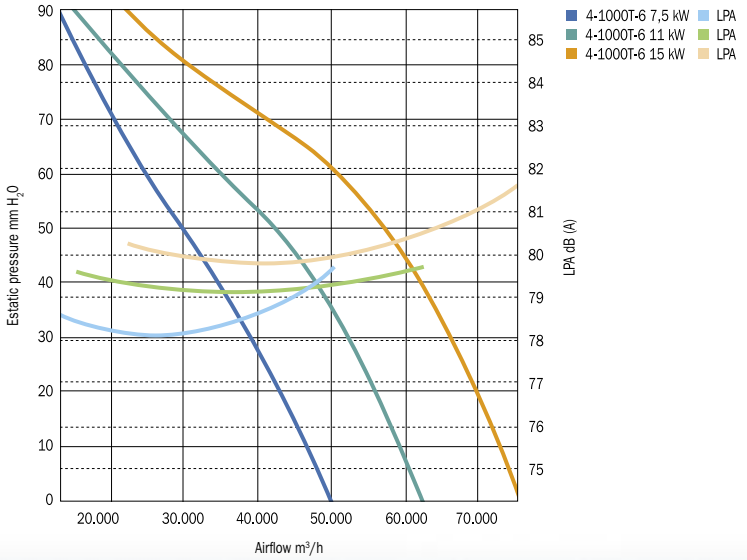
Performance data

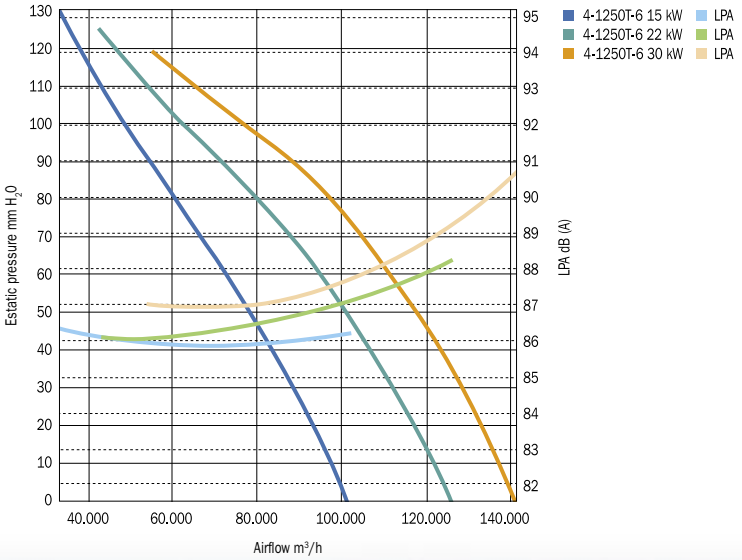




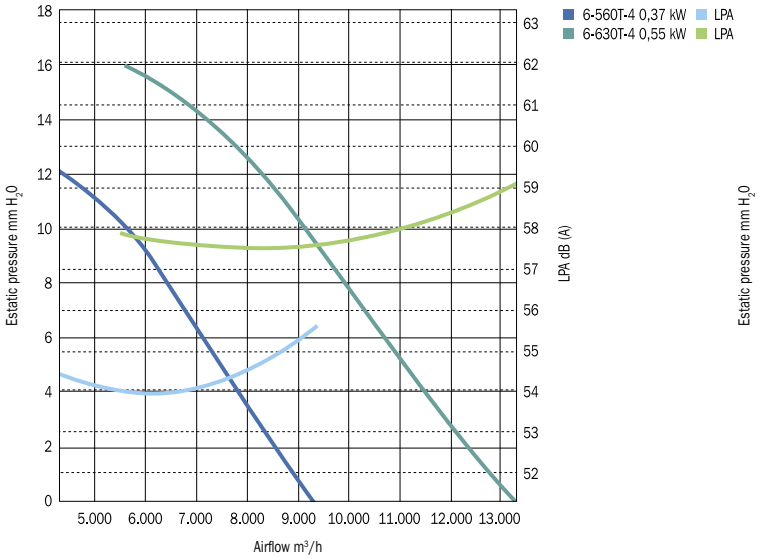


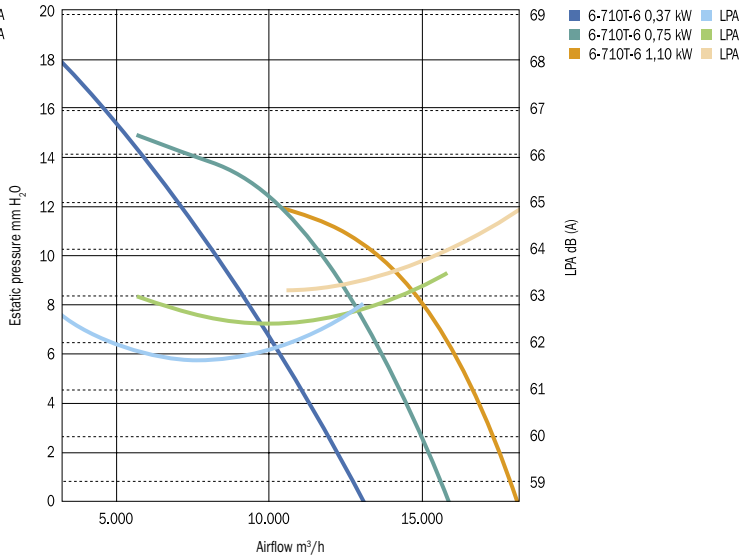


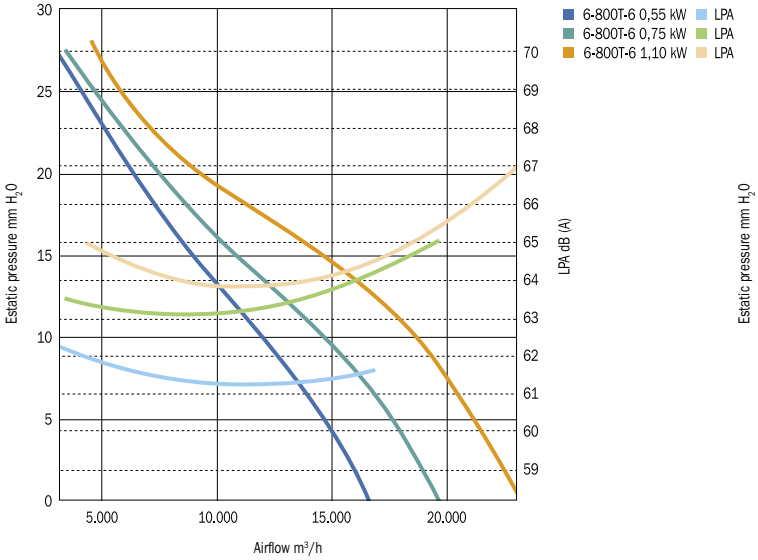


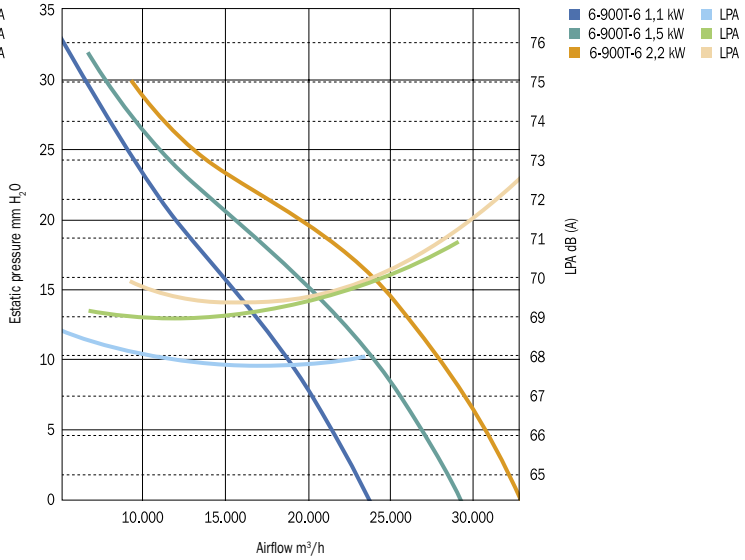


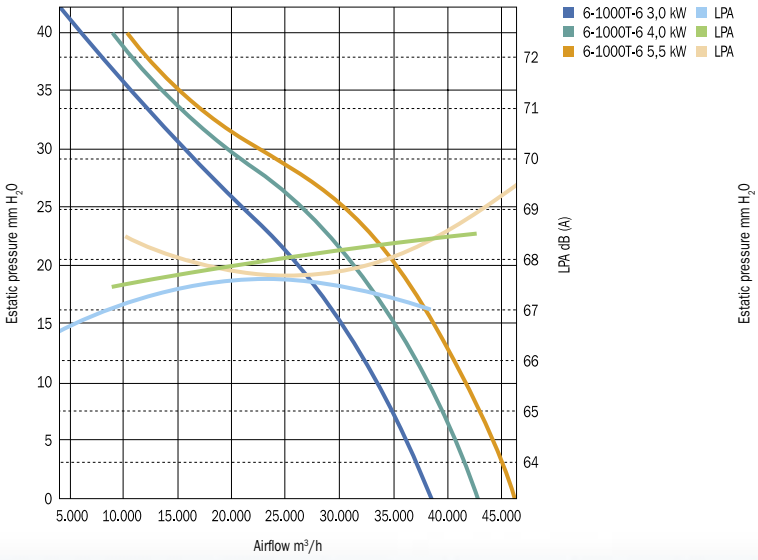
Performance data

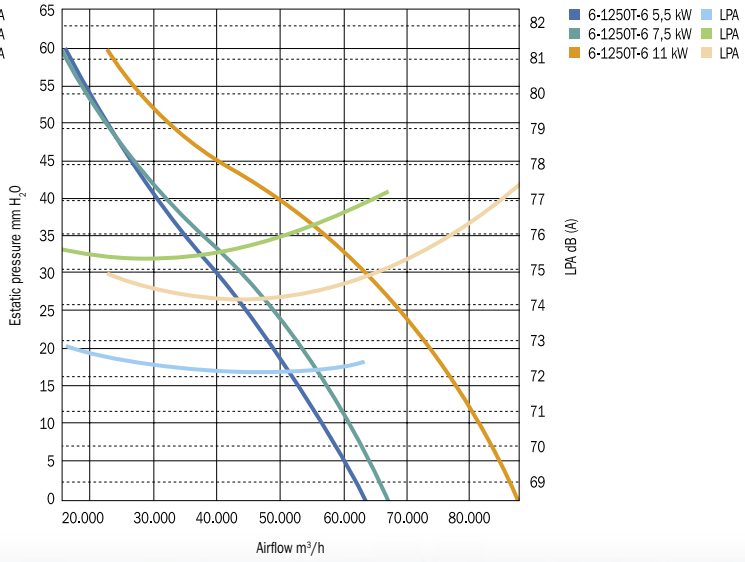


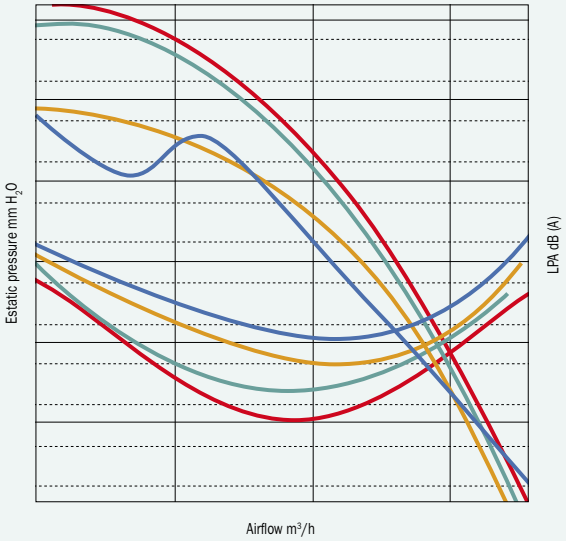












- Conventional impeller
- Impeller with sickle form
- Impeller with sickle form with winglet
- Impeller with sickle form with winglet and serrated profile (WINDER)

Better performances with less sound level

On this graph, we can be observed the advantages of the winder impellers versus the traditional ones. The sickle form from the **blade** (A) will enable better performances.

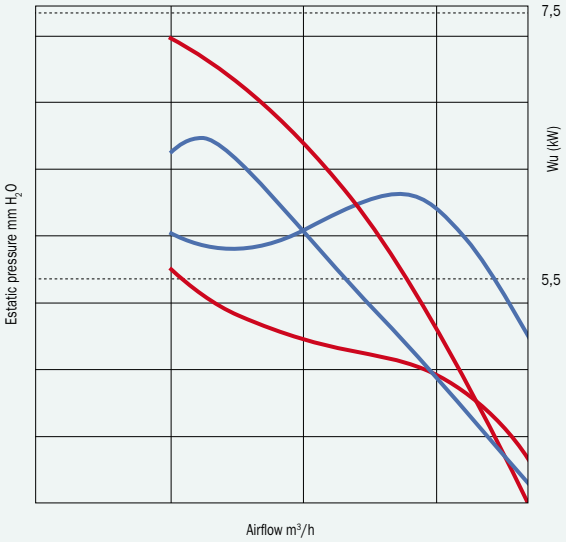
If we add to the sickle blade the **winglet** (B) we will get a high reduction in turbulences.

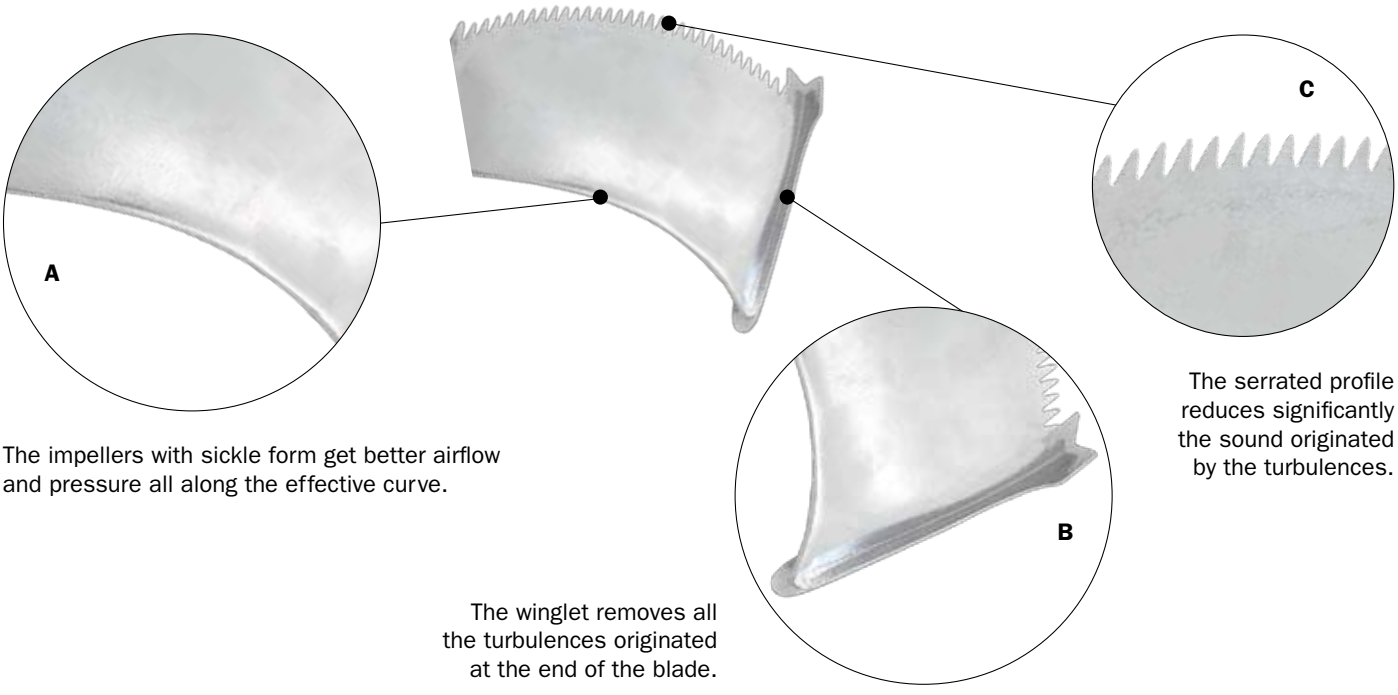
And finally, adding the serrated **profile** (C) we still increasing the performance and we reduce significantly the sound level.

The combination of the winglet, the serrated profile and the sickle form gets a better performance in airflow and pressure, decreasing the sound level.

Better performances, less power needs

This graph shows a comparison between winder model and conventional fan using the same diameter and similar performance. Winder solution is able to provide more airflow with less consumption. Winder needs a 5,5 kW motor meanwhile conventional fan needs 7,5 kW motor as illustrated.

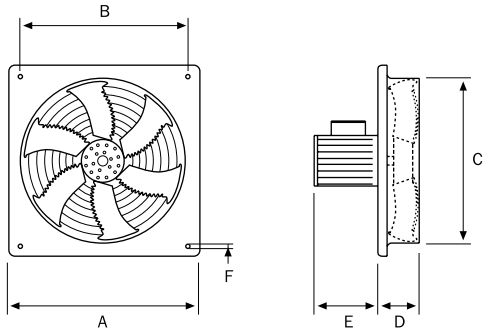




The impellers with sickle form get better airflow and pressure all along the effective curve.

The winglet removes all the turbulences originated at the end of the blade.

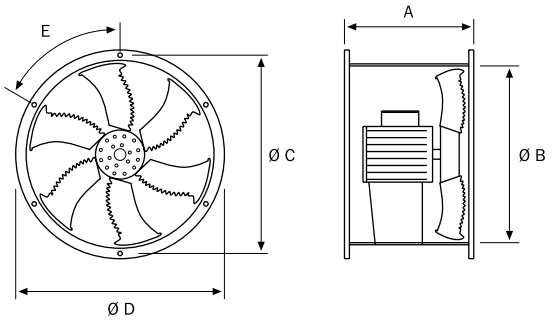
The serrated profile reduces significantly the sound originated by the turbulences.



AXIAL WINDER

Ø	A	B	C	D	E	F	Kg[1]
560	725	675	565	115	359	10,50	24
630	800	730	635	140	374	10,50	38
710	850	800	710	110	433	11,00	44
800	970	910	803	175	530	15,00	124
900	1.070	1.010	914	197	640	14,50	178
1000	1.200	1.140	1.003	205	725	12,00	193

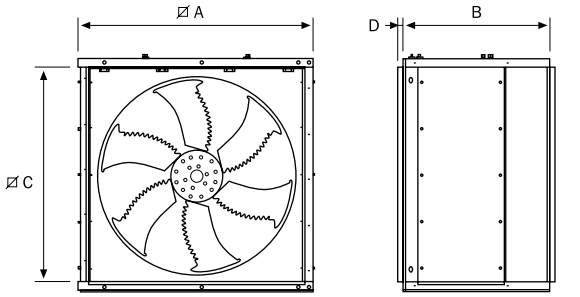
[1] Version with powerful motor

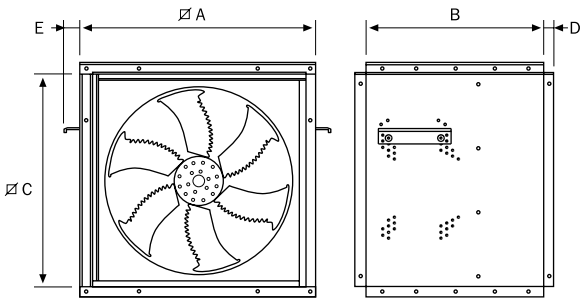


AXITUB WINDER / AXITUB PIROS WINDER

	A	Ø B	Ø C	Ø D	E	Kg[1]
560	400	565	620	648	12 x 30	55
630	400	640	690	720	12 x 30	84
710	500	720	770	800	12 x 30	90
800	600	807	860	900	16 x 22,5	130
900	700	910	970	1.010	16 x 22,5	204
1000	700	1.010	1.070	1.110	16 x 22,5	221
1250	900	1.265	1.315	1.355	16 x 22,5	268

[1] Version with powerful motor





PIROS BOX WINDER

	A	B	C	D	E	Kg[1]
560	695	530	630	30	40	96
630	790	600	725	30	40	96

[1] Version with powerful motor

	A	B	C	D	Kg[1]
710	873	650	800	30	151
800	971	650	850	30	151
900	1.071	750	970	30	272
1000	1.203	750	1.070	30	272
1250	1.490	940	1.380	30	330

[1] Version with powerful motor

NOVOVENT

SISTEMAS DE VENTILACIÓN Y CLIMATIZACIÓN

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