

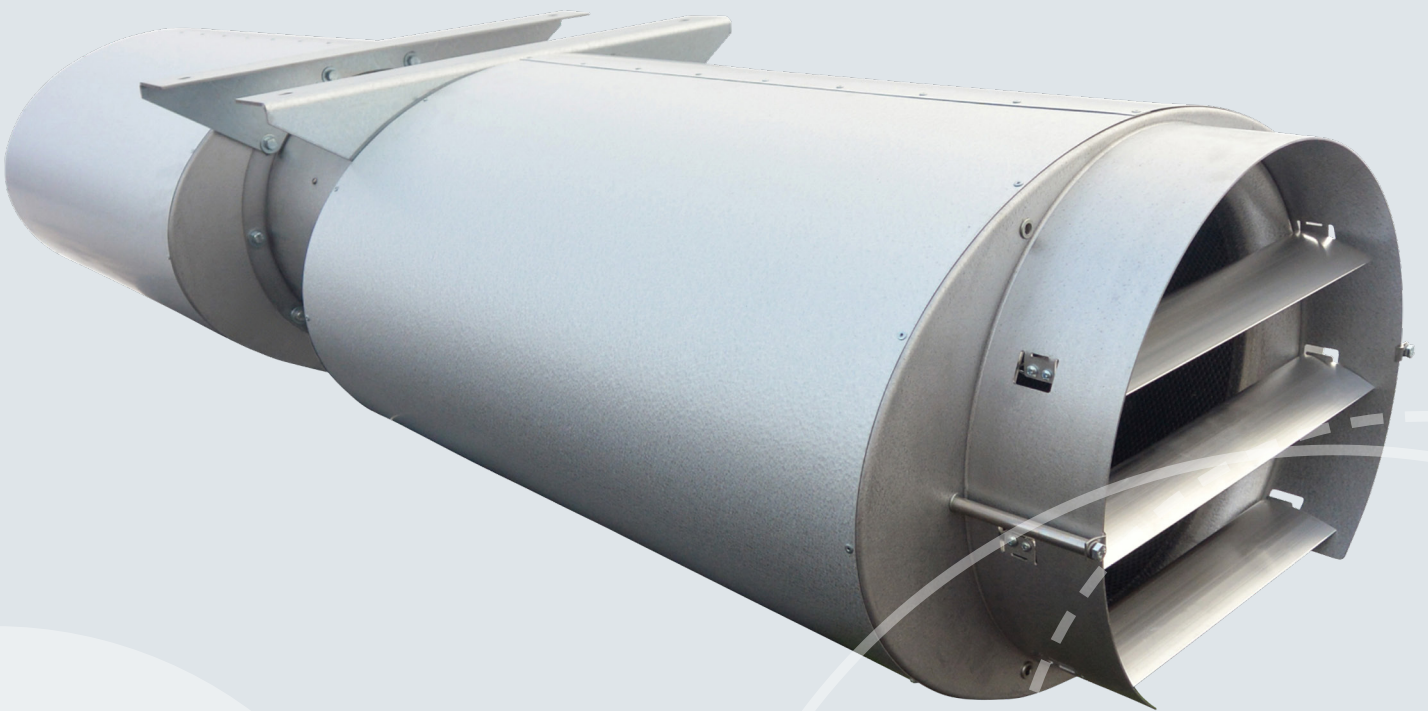
Pure competence in air.

CAR PARK JET FANS STANDARD AND HOT SMOKE

Building & Industry

NOVENCO 

SCHAKO Group



PRODUCT FACTS

PRODUCT

NOVENO car park jet fans are available in unidirectional (AU_, AZT and CGF) and reversible (AR_) versions.

- AUO/ARO – oval with silencers and NovAx™ fans
- ARP – oval with pad-mounted motors, silencers and NovAx™ fans
- AUZ – oval, cost-performance balanced with silencers and ZerAx® fans
- AUT/ART – circular and with NovAx™ fans
- AZT – circular and with ZerAx® fans
- CGF – flat with centrifugal fans

APPLICATIONS

The jet fans are for ventilation of car parks and other large spaces where polluted air needs to be removed effectively. They are an ideal supplement for fire fighting concepts and hot smoke removal.

RANGE

NOVENCO jet fans are manufactured in the following sizes.

	ØD [mm]
AUO/ARO	Ø290, Ø380, Ø500
ARP	Ø340
AUT/ART	Ø400
AUZ	Ø340
AZT	Ø450
CGF	Ø500

Internal duct diameters

CONSTRUCTION

The jet fans all employ the impulse principle for moving air. A small quantity of air is sucked in and ejected at high velocity to create a thrust, which draws the surrounding air in the same direction.

The AUO, ARO, ARP and AUZ are long units with oval silencers mounted on both sides of the fan casings. To complete the shape, the fan casings are fitted with oval outer casings.

The AUT-ART and AZT are circular short units with low noise levels.

The CGF are flat fans with impellers mount-

ed centrally and perpendicular to the inlet. The AUO and AUZ have wire guards on the inlet sides and deflectors on the outlets.

The reversible units ARO and ARP are fitted with deflectors on inlets and outlets.

The AUT and ART have wire guards on inlets and outlets with aerodynamically integrated deflectors as part of the design.

The AZT has a wire guard on the inlet and an adjustable outlet cone.

The CGF has deflectors in the outlet and wire guards in the inlet.

The fans are for ceiling or wall installation and are delivered with suspension brackets.

The AZT is delivered with a base plate instead of brackets. The CGF is for ceiling installation only.

MOTORS

Voltage: Two-speed motors of 3x400 V, 50 Hz or 3x380 V, 60 Hz

AZT: 3x400 V or 3x380 V, 50 or 60 Hz

Protection: Min. IP55 in accordance with IEC 34-5

Insulation class: F or H depending on temperature protection

Flanges: B14 in accordance with IEC 34-7; B30 for CGF

Mount (AU_ / AR_ / AZT / CGF): Socket with guide vanes

Mount (ARP): Stiffeners

ELECTRIC SWITCHES

The AUO-ARO have electric isolating switches integrated in the fan casing or internal terminal boxes.

The ARP, AUZ, AUT-ART and AZT have external terminal boxes.

The CGF has an internal terminal box.

IMPELLERS AND ROTORS

The motors are direct-coupled to the impellers on the jet fans. The AUO, ARO, ARP, AUT and ART have NOVENCO NovAx™ rotors consisting of two hub discs with cavities, in which the blades are mounted in pre-calculated positions.

The AUZ and AZT fans have NOVENCO ZerAx® rotors with blades mounted in

pre-calculated positions.

The CGF fans have NOVENCO centrifugal impellers with direct coupled motors.

SILENCING

The silencers on AUO, ARO, ARP and AUZ have minimum pressure loss and optimal sound attenuation. Noise generated by the fan and moving air is effectively removed through the use of perforated plate and sound absorbing insulation material.

The AUT, ART, AZT and CGF are low noise fans without dampers or insulating material.

MATERIALS

See the list of materials on page 4.

CLASSIFICATIONS

Environment: Meet requirements for operation in unheated, low corrosive environments according to DS/EN ISO 12944-2

Corrosion category: C3

Temperature range, standard:

-20 to +40 °C

AZT: -20 to +55 °C

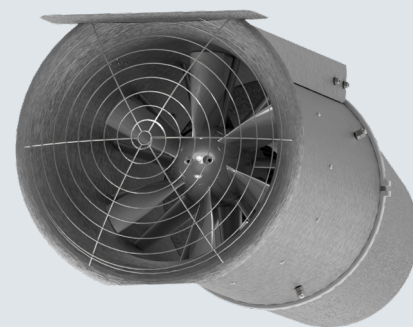
Temperature range, max.:

-40 to +120 °C

Temperature ranges, hot smoke fans:

F₂₀₀ 120, F₃₀₀ 60 and F₄₀₀ 120 certified according to EN 12101-3. Fans were tested for 2 hours at 300 °C and 400 °C.

Balancing of rotor unit: According with VDI 2060, ISO 1940, 1-1986 class Q 6.3



AZT jet fan

PRODUCT DESCRIPTION



FAN TYPES

Car park jet fans from NOVENCO are made in unidirectional (AU_, AZT and CGF) and reversible (AR_) versions. All fans are fitted with silencers or have silencing technology. Jet fans fitted with silencers include AUO, ARO, ARP and AUZ with rotor diameters ranging from Ø290 to Ø500 mm.

Basic jet fans types AUT, ART and AZT with silencing technology are available with rotor diameters Ø400 (AUT and ART) and Ø450 mm (AZT).

The CGF jet fans have low built-in height, low sound levels and impeller diameters of Ø500 mm.

FAN CASING

The fan casings for the AU_ and AR_ jet fans are rolled and welded steel tubes in 3 mm sheet. The AUO and ARO have furthermore external oval outer casings in AluZink sheet. The AZT fan casing is of pre-galvanised sheet.

The CGF fan casings are 2 mm sheet in AluZink and assembled with pop rivets.

MOTORS

The motors are two-speed, energy efficient, frequency regulated and with direct start. The motor protection is IP 55 in accordance with IEC 34-5. Insulation is class F or H depending on temperature protection.

SAFETY SWITCHES

The AUO and ARO can be delivered with or without safety switches mounted in the terminal boxes. The boxes are internal and integrated in the fan casing.

The ARP, AUT, ART, AUZ and AZT have external terminal boxes.

The CGF fans have internal terminal boxes.

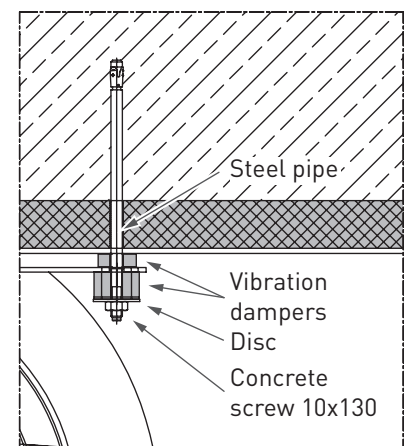
MOUNTING

The fans are fitted with brackets for ceiling or wall mounting. The AZT fan has a base plate instead of brackets. Fans type CGF are only for ceiling installation.

Distance requirements to beams and to the height of these are relatively small. On inlet sides there must be a minimum of 0.5 m to beams and on outlet sides a minimum of 2.0 m. Maximum beam height is 0.4 m

on outlet sides in installations within the minimum requirements.

Optimal performance and comfort is best achieved by installation of vibration



Use of vibration dampers

dampers between fan suspension points and ceiling. The AZT does not require vibration dampers.

CLASSIFICATIONS

The fans are intended for operation in unheated and low corrosive environments at standard temperatures between -20 and +40 °C. The AZT is intended for standard temperatures between -20 and +55 °C.

The fans are furthermore certified according to sizes and motor specifications for operation at high temperatures. All fans are tested for 120 min. of operation in different temperature classes.

	F₂₀₀ 120 and F₃₀₀ 60	F₄₀₀ 120
Fire test	300 °C / 120 min.	400 °C / 120 min.
Tested temperature classes		

Product	Motor	F ₂₀₀ 120	F ₃₀₀ 60	F ₄₀₀ 120
AUO-ARO 290- 380- 500	400 V, 50 Hz	x	x	x
AUO-ARO 290- 380- 500	380 V, 60 Hz	x	x	-
AUT-ART 400	400 V, 50 Hz	x	x	x
AUT-ART 400	380 V, 60 Hz	x	x	-
ARP-AUZ 340	400 V, 50 Hz	x	x	x
ARP-AUZ 340	380 V, 60 Hz	x	x	-
AZT 450	400 V, 50 or 60 H	x	x	-
AZT 450	380 V, 50 or 60 Hz	x	x	-
CGF 500	400 V, 50 Hz	x	x	-

Certified products according to temperature classes



AUT 400 jet fan



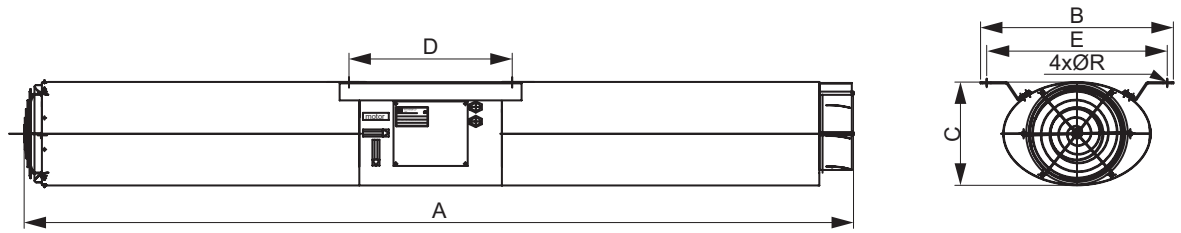
CGF 500 flat fan

	AUO / ARO	ARP	AUZ	AUT / ART	AZT	CGF
Blades	Aluminium alloy					
Hub	Galv. steel sheet		Aluminium	Galv. steel sheet	Aluminium	-
Hub shells	Steel sheet		-	Steel sheet	-	-
Hub cap	-	-	Aluminium	-	Aluminium	-
Guide vanes	-	-	Aluminium	-	Aluminium	-
Motor mount	Steel sheet		Aluminium	Steel sheet	Aluminium	-
Exterior						
Fan casing		Rolled steel tube in 3 mm sheet			2 mm sheet in AluZink	
Outer fan casing	0.75 mm sheet in AluZink	-	-	-	-	-
Wire guards	Stainless steel					
Deflectors		Aluminium		Galvanised steel	AluZink	
Suspension		Hot-galvanised 4 mm steel sheet			2 mm sheet in AluZink	Hot-galvanised 4 mm steel sheet
Silencers						
Inside tube	Perforated pregalvanised steel sheet			-	-	-
Sound attenuating material	Fireproof and moisture resistant			-	-	-
Outer casing	0.75 mm sheet in AluZink			-	-	-
Cones	Galvanised steel			-	-	-
Paint (outer casing)						
NCS	Optional: Powder coating in any colour, film thickness 80 µm					
RAL	Optional: Powder coating in any colour, film thickness 80 µm					

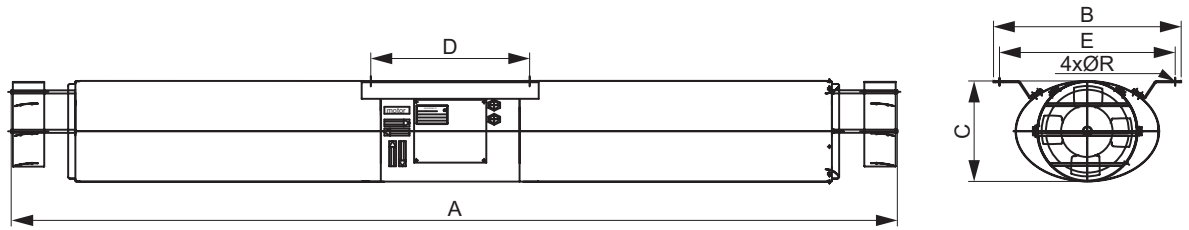
Materials

DIMENSIONS

AUO

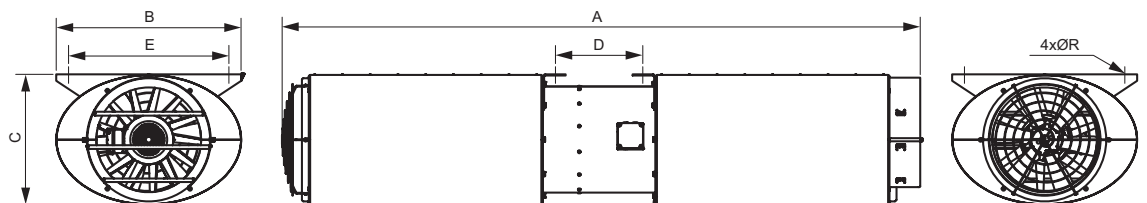


ARO

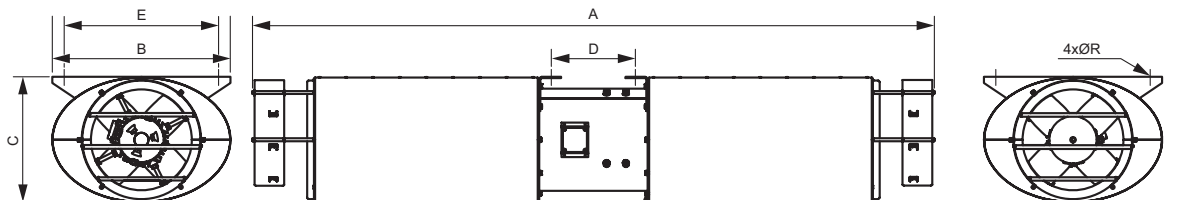


	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	ØR	Total weight [kg]
AUO 290	2570	598	320	506	560	14	80
AUO 380	2672	758	420	506	720	14	110
AUO 500	2606	870	540	600	830	14	160
ARO 290	2823	598	320	506	560	14	80
ARO 380	2918	758	420	506	720	14	110
ARO 500	2854	870	540	600	830	14	160

AUZ



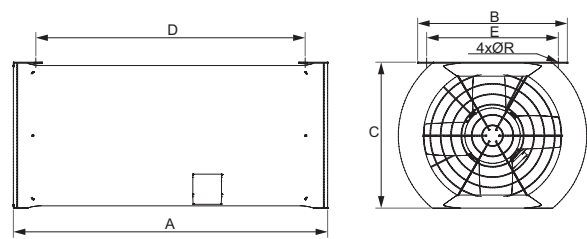
ARP



	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	ØR	Total weight [kg]
AUZ 340	2070	599	422	283	520	14	86
ARP 340	2296.6	599	422	283	520	14	100

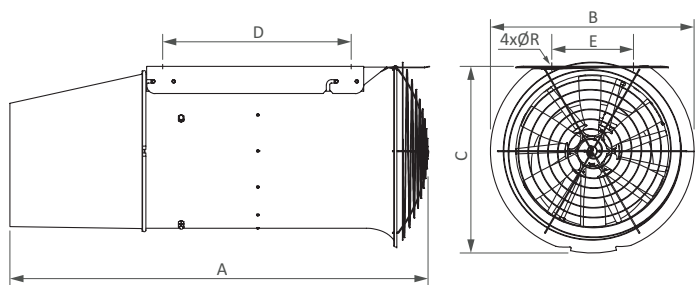
DIMENSIONS

AUT/ART



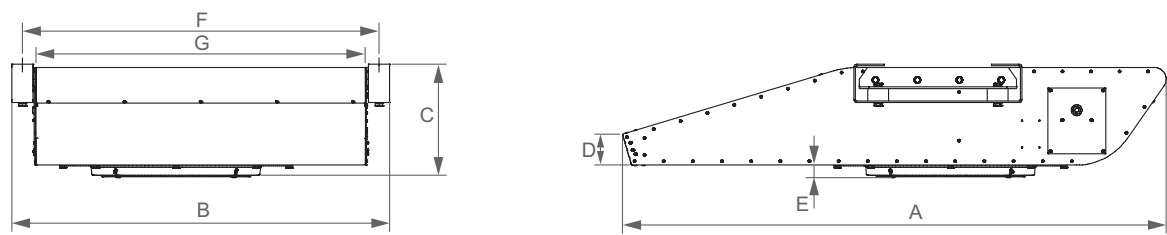
	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	ØR	Total weight [kg]
AUT/ART 400	854	522	423	779	470	14	63

AZT



	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Total weight [kg]
AZT 450	1133	600	530	540	260	70

CGF



	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	Total weight [kg]
CGF 500	1296.5	900	262	73.5	29	850	790	75

TECHNICAL SPECIFICATIONS

		Sizes 290		Sizes 340		Sizes 380		Sizes 400		Sizes 450	Sizes 500				
		AUO	ARO ¹	ARP	AUZ	AUO	ARO ¹	AUT	ART ¹	AZT	AUO	ARO ¹	CGF		
Thrusts [N]		5 / 21	4 / 15	15 / 50	15 / 50	15 / 57	15 / 52	14 / 53	13 / 50	26 / 100	27 / 105	28 / 111	12 / 50		
Number of poles		4 / 2										8 / 4			
Power supply		3x400 V, 50 Hz or 3x380 V, 60 Hz										3x400 V, 50 Hz			
Rated power [kW] ²		0.1 / 0.5		0.3 / 1.3		0.3 / 1.1		0.3 / 1.3		0.6 / 2.5		0.5 / 2.2		0.3 / 1.2	
Nominal current, 400V, 50 Hz [A]	Std. temp.	0.7 / 2.0		0.9 / 3.1		0.8 / 2.7		0.9 / 3.1		1.7 / 5.3		1.6 / 4.7		1.3 / 2.9	
	F ₂₀₀ 120 F ₃₀₀ 60	0.4 / 1.8		0.7 / 2.9		0.6 / 2.5		0.7 / 2.9		1.6 / 4.7		1.6 / 4.9		1.3 / 2.9	
	F ₄₀₀ 120	0.4 / 1.8		0.7 / 2.9		0.6 / 2.5		0.7 / 2.9		- / -		1.6 / 4.7		- / -	
Nominal current, 380V, 60 Hz [A]	Std. temp.	0.8 / 2.8		1.0 / 3.2		0.9 / 2.7		1.0 / 3.2		1.6 / 5.5		1.6 / 4.7		- / -	
	F ₂₀₀ 120 F ₃₀₀ 60	0.5 / 1.8		0.8 / 3.2		0.7 / 2.7		0.8 / 3.2		1.6 / 4.9		1.6 / 4.9		- / -	
Sound pressure [dB(A)] ³		38 / 49	38 / 50	50 / 64	42 / 59	42 / 55	45 / 59	54 / 72	56 / 75	55 / 74	48 / 62	52 / 67	61 / 75		

1 Data for reversible fans is given for air direction impeller – motor.

2 Performance data is for standard conditions at 20° C, sea level and 50% relative humidity. The values apply to all power supply options.

3 Sound pressure levels are calculated for 50 Hz motors at 3 m / 45° under free field conditions from the fan inlet. The reference sound power level is measured in a laboratory according to the AMCA standard 300-08 “Reverberant room method for sound testing of fans”.



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IMPORTANT

This document is provided 'as is'. NOVENCO Building & Industry A/S reserves the right to changes without further notice due to continuous product development.

Some pictures in the catalogue show products with accessories fitted.

The fans are designed for continuous operation. The following kinds of operation may cause fatigue break in the impellers and endanger people.

- Operation in stall area
- Operation with pulsating counter pressure – called pump mode
- Operation with exceedingly starts and stops

If in doubt, NOVENCO should be contacted to assess the suitability of the fans.

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The ZerAx® manufacturing processes, technologies and designs are patented by Novenco A/S. Pending patents include Brazil no. BR-11-2012-008607-3, BR-11-2012-008543-3, BR-11-2012-008545-0, BR-11-2014-002282-8 and BR-11-2014-002426-0; Canada no. 2.777.140, 2.843.131 and 2.843.132; China no. 2012280037965.7; EU no. 10778838.2, 12740606.4 and 12740612.2; India no. 4140/CHENP/2012, 4077/CHENP/2012, 4073/CHENP/2012, 821/CHENP/2014 and 825/CHENP/2014; PCT no. EP2012/064908 and EP2012/064928; South Korea no. 10-2012-7012252, 10-2012-7012154, 10-2012-7012155, 10-2014-7005746 and 10-2014-7003829; and US no. 14/234.654. Pending designs include US no. 29/541.418 and 29/541.422.

Granted patents include Canada no. 2.777.141 and 2.777.144; China no. ZL2010800458842, ZL2010800460965, ZL2010800464275 and ZL2012800387210; EU no. 2488759 and 2488761; and US no. 8.967.983, 9.200.641, 9.273.696 B2 and 9.683.577. Granted designs include Brazil no. BR-30-2012-003932-0; Canada no. 146333; China no. 1514732, 1517779, 1515003, 1555664 and 2312963; EU no. 001622945-0001 to 001622945-0009 and 001985391- 0001; India no. 246293; South Korea no. 30-0735804; and US no. D665895S, D683840S, D692119S, D704323S, D712023S, D743018S, D755363S and D756500S.

The NovAx Basic jet fans manufacturing processes, technologies and designs are patented by Novenco A/S or NOVENCO Building & Industry A/S. Pending patents include United Arab Emirates no. 723/2011 and EU no. 10701831.9. Pending designs include United Arab Emirates no. 223/2009.

Granted patents include Denmark no. PR 1774428. Granted designs include EU no. 001069884-0001 to 001069884-0028.

The CGF jet fans designs are patented by Novenco A/S. Pending designs include United Arab Emirates no. 70/2010.

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NOVENCO Building & Industry A/S is certified in accordance with ISO 9001 and 14001.



All NOVENCO Building & Industry's products are designed, developed and manufactured in Denmark.

