

Item	Quant.	Description	Unit price €	Total price €
01		<p>General Requirements The jet fans should be manufactured in a sturdy and robust manner. To avoid corrosion the jet fans and the mounting structure should be manufactured in stainless steel 1.4571 (V4A). The fans should be exchangeable.</p> <p>The jet fans should be designed to run in both directions. The volume flow has to reach at least 97,5% of the forward mode duty. In the event of emergency it should be possible to change the direction with a deenergized period of 15 seconds.</p> <p>Under normal duties the jet fan has to be constructed to run at temperatures between -20 and +40°C. In the event of fire the jet fan has to withstand a temperature up to 400°C for 90 minutes. In order to prove this, for the relevant parts like impeller, motor, terminal box and terminals a heat test according to EN 12010-3 of a complete unit has to be conducted. The test must be certified by an independent laboratory. Testing of single parts e.g impeller blades is not valid or sufficient. If the manufacture could not provide a sufficient certificate the costs for a heat test has to be included in the quoted prices.</p> <p>Casing The casing and the motor support should be manufactured from heavy construction 6mm stainless steel. To avoid corrosion in cracks the flanges have to be formed at the fan casing (no welded construction). Welds must be continuous. The external terminal box in stainless steel 1.4571 is heavy duty and corrosion resistant in IP65.</p> <p>Impeller The impeller is made of corrosion-resistant, cast aluminium. The nucleus of the hub is made from stainless steel 1.4571. The impeller is directly mounted onto the motor shaft. Strong steel bolts have to be cast in the aluminium blade to ensure the necessary stability in case of fire. To ensure a high efficiency the blades should be profiled. The blade angle is adjustable at standstill. The impeller has to be carefully statically and dynamically balanced (min. G6.3).</p> <p>Silencers Due to corrosion protection, all components of the silencers are</p>		

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		<p>manufactured in stainless steel 1.4571. At the inlet and the outlet side, an aerodynamically shaped cone has to be provided. All welds are continuous. Corrosion in cracks must be avoided. The isolation material is non-flammable mineral wool, which is fitted between the outer casing and the perforated sheet. The dimensioning of the silencers should be done according to specified sound pressure level. For silencer lengths above 1,5D measures to prevent swing must be implemented.</p> <p>Motor For jet fans, 3 phase, fully enclosed, squirrel cage motors according to IEC standards in IP 55 should be used. To reach a well balanced cooling and air stream, the motor design is IMB5 or IMB14. The motor support with integrated guide vanes is welded on the fan casing. The electrical start will be direct on line in voltage operation 400V +/- 5%.</p> <p>The isolation class is H. The motors are suitable to withstand 400°C for 90 minutes. A certificate from the motor manufacturer is required.</p> <p>The bearings are lubricated for life. The bearing lifetime is min. 20000 hours. The halogen free and flame resistant power cables are connected to the external terminal box.</p> <p>Performance reversible Jet Fan</p> <table> <tr><td>Thrust</td><td>N</td></tr> <tr><td>Air density</td><td>kg/m³</td></tr> <tr><td>Volume flow</td><td>m³/s</td></tr> <tr><td>Outlet velocity</td><td>m/s</td></tr> <tr><td>Speed</td><td>min⁻¹</td></tr> <tr><td>Max. el. power consumption</td><td>kW</td></tr> <tr><td>Sound pressure 45° 3m free field</td><td>dB(A)</td></tr> </table> <p>Dimensions</p> <table> <tr><td>max. outer diameter</td><td>mm</td></tr> <tr><td>Size</td><td>mm</td></tr> </table> <p>Materials</p> <table> <tr><td>Fan casing</td><td>1.4571</td></tr> <tr><td>Impeller seawater resistant</td><td>cast aluminium</td></tr> <tr><td>Connection Blade/hub</td><td>steel bolt</td></tr> <tr><td>Silencer casing</td><td>1.4571</td></tr> <tr><td>Perforated sheet</td><td>1.4571</td></tr> </table>	Thrust	N	Air density	kg/m ³	Volume flow	m ³ /s	Outlet velocity	m/s	Speed	min ⁻¹	Max. el. power consumption	kW	Sound pressure 45° 3m free field	dB(A)	max. outer diameter	mm	Size	mm	Fan casing	1.4571	Impeller seawater resistant	cast aluminium	Connection Blade/hub	steel bolt	Silencer casing	1.4571	Perforated sheet	1.4571		
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Project
Component **Reversible Jet Fan**

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Item	Quant.	Description	Unit price €	Total price €
		Technical Data el. motor		
		Manufacturer ATB, ABB, WEG, NIDEC, or equivalent		
		Size		
		Design	IMB5 /IMB14	
		Power	kW	
		Voltage	V	
		Frequency	Hz	
		Operation	DOL	
		Rated current	A	
		Start up time:	s	
		Efficiency	%	
		Power factor		
		Protection	IP55	
		Isolation class	H	
		Bearing life time	min. 20.000 h	
		Manufacturer	WITT&SOHN	
		Type		
		Accessories		
		The jet fans should be equipped with the following accessories.		
		Mounting structure		
		The jet fans would be mounted in parallel to the tunnel axis at the ceiling. The mounting structure is made of stainless steel 1.4571 in a welded construction. Between the mounting structure and jet fan, suitable vibration attenuators have to be provided.		
		Safety wires		
		In case the mounting structures collapse, the fan is secured from falling down by safety wires, made from stainless steel 1.4401. A slack of about 10 mm must be kept.		
		Tear of guard		
		The mounting structure is guarded against tear of by a inductive proximity switch in IP65.		



Tunnel Ventilation

Project
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Item	Quant.	Description	Unit price €	Total price €
		Options <ul style="list-style-type: none">○ Thermistor protection (3 PTC)○ Thermistor protection (3 Pt100)○ Monitoring of the bearing temperatures (PTC)○ Monitoring of the bearing temperatures (Pt100)○ Space heater○ Certified calculation note for mounting structure including calculation for case of fire○ Anchor bolts in 1.4401○ Anchor bolts in 1.4529○ Halfenscrew in 1.4401○ Halfenscrew in 1.4529○ Vibration control at fan casing○ Service switch in IP65○ Temperature sensor○ Outlet guide vanes○ Protection grills○ Banana-Jet-Design		

DIN ISO 9001 zertifiziert



Accredited by the Dutch Council for Certification

WITT & SOHN
IGW Ventilatoren