Project
Component **Reversible Jet Fan**

Item	Quant.	Description	Unit price €	Total price €
01		**General Requirements** The jet fans should be manufactured in a simple and sturdy 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. 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 de-energized period of 15 seconds. 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 250°C for 90 minutes. In order to prove this, for the relevant parts like impeller, motor, terminal box and terminals a heat test 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 suitable certificate, then the costs for a heat test must be included in the quoted prices. **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. **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). **Silencers** Due to corrosion protection, all components of the silencers are manufactured in stainless steel 1.4571. At the inlet and the		

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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.

Motor
For jet fans, three-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%.

The isolation class is H. The motors are suitable to withstand 250°C for 90 minutes. A certificate from the motor manufacturer is required.

The bearings are lubricated for life. The bearing lifetime is min. 40000 hours. The halogen free and flame resistant power cables are connected to the external terminal box.

Performance reversible Jet Fan

Thrust	N
Air density	kg/m³
Volume flow	m³/s
Outlet velocity	m/s
Speed	min^{-1}
Max. el. power consumption	kW
Sound pressure 45° 3m free field	dB(A)

Dimensions

max. outer diameter	mm
Size	mm

Materials

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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		Technical Data el. motor		
		Manufacturer — Siemens 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. 40.000 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.	_____,___	_____,___

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		Options o Thermistor protection (3 PTC) o Thermistor protection (3 Pt100) o Monitoring of the bearing temperatures (PTC) o Monitoring of the bearing temperatures (Pt100) o Space heater o Certified calculation note for mounting structure including calculation for case of fire o Anchor bolts in 1.4401 o Anchor bolts in 1.4529 o Halfenscrew in 1.4401 o Halfenscrew in 1.4529 o Vibration control at fan casing o Service switch in IP65 o Temperature sensor o Outlet guide vanes o Protection grills o Banana-Jet-Design		