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Ref : E3321-22

Date: 27th June 2022

Mr Justin Helm
Makin Metal Powders
Buckley Road
Rochdale
OL12 9DA

Justin

Ref:- New Spherical metal powder Extraction System

As discussed, I've looked at your requirement for new power extract system for the new single line Spherical Metal Powder Chamber to be installed directly next to the weigh bridge office.

Fan duty required is 4.67 m³/sec @ 4500 Pa Maximum fan temperature 70°C which includes the furnace extraction (built in and specified by the supplier as a 220mm diameter connection). And the discharge collection hood & cyclone. I have looked at the layout with the duct filter either located at the back of the building or the side. There is very little cost difference which would allow you to select the best location at a later date. The discharge from the over will be ducted via a cyclone to remove the highest concentration of dust from the system local to the production line.

The melting pot connection and exhaust from the cyclone will be linked together to form a single duct that will run to outside.

Outside we will install one of our Econoject 178 pulse jet filter units fitted with 144 glazed polyester needle felt bags. Our filter does not have explosion relief as you have informed us that the dust is not explosive. The filter will be supplied with an access ladder and hand rails to provide safe access for filter bag changing.

The clean side of the filter will be connected to the main conveying fan. We've selected our fan model CM9 600R6 with Backward curved impeller. The fan is directly driven at 2960rpm absorbing 24.2kW and fitted with a 30 kW Amtecs motor. The Motor will be IE3 efficiency class. I have attached in Appendix A the fan noise data. We have also included a discharge silencer to be installed in the discharge stack.

I have included an inlet taper and inlet flex similar to the existing ducting systems The inlet ducting will also be fitted with a floor bracket to hold the ducting in place and limit the flexible connection pulling in

I've also allowed for an outlet square to round to connect to the exhaust silencer and stack I have also assumed you would want us to install the fan and have allowed for this in our price.

Specification & Extent Of Supply

- 1 - Furnace connection
- 1 - Oven discharge collection Hood
- 1 - Pre-separation High efficiency cyclone complete with dust collection bin and isolation valve.
- 1 - Set of ducting. Ducting will be 2mm thick mild steel with power coat finish RAL 7032. The construction will be fully welded longitudinally seamed and tension clip joints every 2 meters.

On diameters above 225 mm the construction will be fully welded longitudinally seamed with flanged joints at a maximum of 6 meters centres. Bends and intersections will all be long radius to minimise wear

We also include all necessary supporting hangers manufactured from Unistrut, 10mm screwed rod and split band clamps.

- 1 - CM9 600R6 backward Laminar centrifugal fan direct driven by an 30kW 2960rpm 3ph IE3 TEFC motor.
- 1 - T178/12x12 pulse jet filter having a total of 178 m² of glazed TNF filter material. The filter media will be supported on 144 top removable cages. The filter unit is fitted with a pre-separation section, top plenum section c/w access doors, weather proofing, 1 dust collection hopper sections, air receiver tank and pulse sequence controller, access ladder and safety handrails.

Installation, commissioning and testing of all the above. Full set of UKAC / CE documentation and operator training for use of the system.

We have included the supply of access equipment for the duration of the installation and delivery of all materials to site.

PRICE

Our price for the supply and installation of the new Extract System described above is:

Total price is: **£ 118,800.00**

Value Added Tax

The price is exclusive of VAT, which will be charged extra at the standard prevailing rate at time of invoice.

Delivery

12 – 14 weeks from receipt of your official order, prepayment and all information enabling us to proceed.

Terms of Payment

25% Deposit payable with order.

70% Payable upon availability/delivery of goods.

5% Payable on completion of commissioning or 60 day from date of delivery invoice whichever is the earlier.

Client's Responsibilities

We have based our price on the following work and provisions being provided by you: -

- a. Any building and civil work including foundations, cutting of holes, weather proofing and making good.
- b. All necessary scaffolding and cranes (mobile access is included)
- c. All electrical starters and site wiring
- d. Off loading, site movement and storage of equipment
- e. All compressed air and water supplies.
- f. Any planning or building regulation applications.
- g. General waste disposal skips will be provided free of charge

The price is also based on the following assumptions: -

- 1. Free and continuous access to all working areas
- 2. Power supply for tools will be provided free of charge.
- 3. Installation will be carried out during normal working hours.

Validity

The price quoted is firm for the delivery period specified and is valid for acceptance for a period of 60 days from the date of this quotation. The receipt by Sellers of an order does not conclude a Contract to sell unless and until confirmed by Sellers in writing. Once confirmed in writing, the contents of this quotation will become an integral part of the contract documents, forming the description and extent of supply of the system and services described here in.

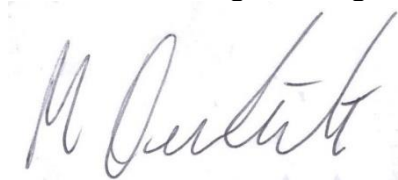
Terms and Conditions of Sale

Any contract arising out of this quotation will be subject to AirFor Engineering Limited Standard Terms and Conditions of Sale, a copy of which will be forwarded upon request. Unless otherwise agreed in writing, the terms and conditions of this agreement shall apply to any order places by the Customer. In the event of any inconsistency between these terms and those passing between the parties these terms shall prevail. No variation of the terms shall be allowed unless expressly accepted in writing.

I trust you will find our quotation of interest, if you need any further information, please do not hesitate to contact me.

For and on behalf of:

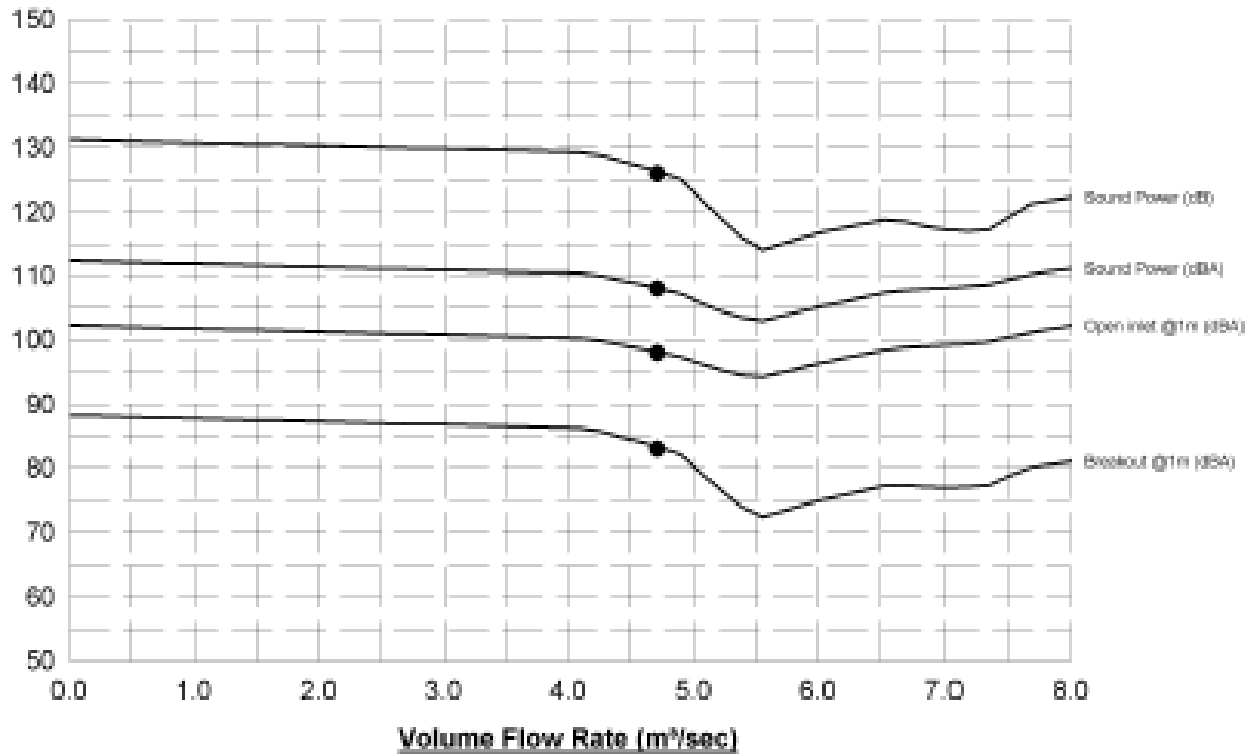
AirFor Engineering Ltd



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Mik Ostapjuk
Sales Manager

Appendix A Fan noise data

Noise level dB/dBA



Noise Spectrum Figures at operating point

	63Hz	125Hz	250Hz	500Hz	1 KHz	2 KHz	4 KHz	8 KHz	O/All
Sound Power radiated into duct (dB):-	126	115	114	102	98	95	88	81	126
Sound Power radiated into duct (dBA):-	100	99	105	99	98	96	89	80	108
Sound Pressure open inlet @ 1m (dBA):-	83	86	95	91	90	88	81	72	98
Sound Pressure open inlet @ 3m (dBA):-	73	76	85	81	80	78	71	63	89
Breakout Sound Pressure @ 1m (dBA):-	82	75	75	63	56	50	49	38	83
Breakout Sound Pressure @ 3m (dBA):-	72	65	65	53	48	41	39	28	74

Motor Sound Pressure @ 1m (dBA):- 83 Fan & un-muffled motor @ 1m (dBA):-86 Fan & muffled motor @ 1m (dBA):-83