

Client: George Koch Sons Europe  
Quote Ref: P11959/R0/GEW.  
Site: BAe Systems, Samlesbury.  
Date: 13 December 2022.  
Originator: Glenn Williams.  
Date of Survey 07 December 2022.



## P11959-R0 SCRUBBER DESIGN

### 1.0.0 Fume Scrubbing Unit:

1.1.1 It is proposed by the client to use the existing process line fume extraction fan and scrubbing unit, details listed below.

1.1.2 Existing Scrubbing Tower	NHE serial number not know.
Design Airflow Volume	50,850m <sup>3</sup> /hr. (see existing exhaust fan unit).
Tower Diameter	3100mm.
Tower Velocity	1.86m/sec. (at 50,850m <sup>3</sup> /hr.).
1.1.3 Random Packing	38mm PP Pall Ring.
Packed Depth	2.5m.
Irrigation	Distribution Troughs fed by Parting Box all not of conventional design (see section 4.0.0 diagrams below).
Droplet Eliminator	Munters DV 270.
1.1.4 C/flow Liquid Rate	240m <sup>3</sup> /hr. (2off pumps operating).
Liquor/Gas Ratio	3.67:1.
Estimated Pressure Drop	550Pa/m of packing.
Estimated Scrubber PD	1380Pa (2off pumps operating).
1.1.5 Estimated Removal Efficiency	2off pumps operating.
HCL	98.0%.
Sulphuric	94.0%.
NOX/Nitric	72.0%.
1.1.6 C/flow Liquid Rate	360m <sup>3</sup> /hr. (3off pumps operating).
Liquor/Gas Ratio	5.51:1.
Estimated Pressure Drop	899Pa/m of packing.
Estimated Scrubber PD	2233Pa (3off pumps operating).
1.1.7 Estimated Removal Efficiency	3off pumps operating.
Not used due to;	High L/G ratio causing high PD resulting in excessive liquor hold-up and probable stalling of airflow.

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### 2.0.0 Re-circulation Pump Set:

2.1.1	Serial numbers	1008732/101, 102 & 106.
	Make	Serfilco.
	Model Reference	45-2036-M-IP65.
	Model Type	3x2-3SC-10.0-50.
2.1.2	Volume Flow Rate	120m <sup>3</sup> /hr./pump.
	Total Head	1.8bar.

### 3.0.0 Exhaust Fan Unit:

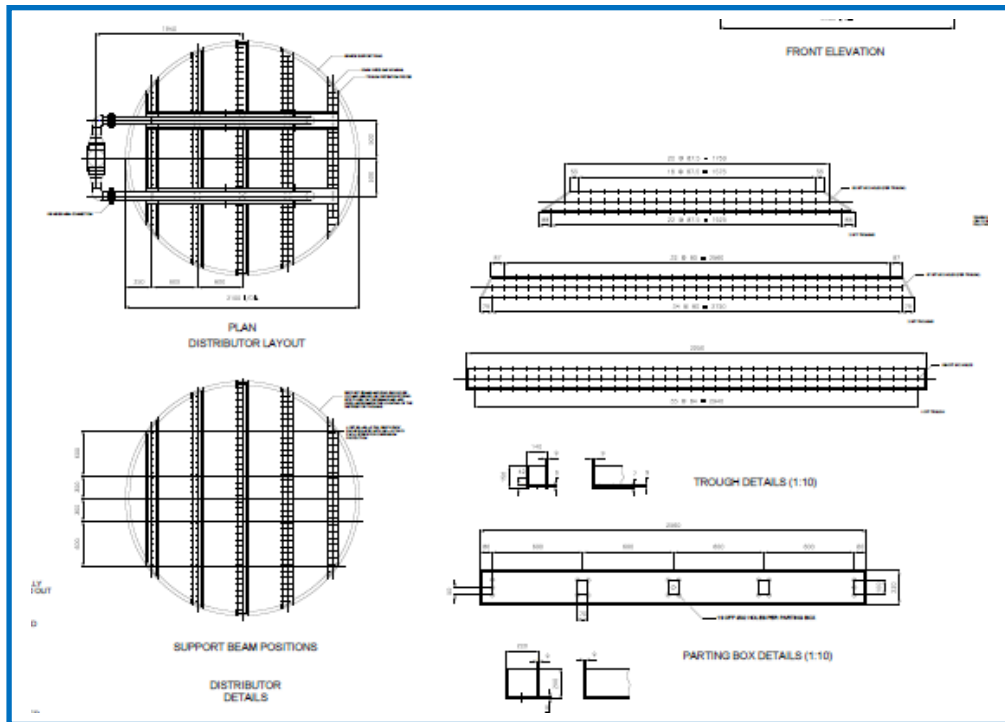
3.1.1	Operating Arrangement	Duty only.
	Make	Fan Systems
	Fan Serial Number	215018 2.1
	Fan Type	Centrifugal.
	Model	A-RNN8/900/1120/2.
3.1.2	Volume	50,850m <sup>3</sup> /hr.
	Pressure	2295Pa.
	Fan Speed	1260rpm.
	Absorbed Power	37.81kW.
	Impeller Type	Not known.
3.1.3	Case Material	316 st.st.
	Impeller Material	316 st.st.
3.1.4	Motor Voltage	415/3/50.
	Motor Type	B3 IP65
	Motor Speed	1475rpm
	Motor Power	45kW.
	Transmission	Vee Belt Driven.
3.1.5	Sound Power	88dB(A) SPL@1m (ducted).

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### 4.0.0 Diagrams:

#### 4.1.1 NHE Irrigation Distributor.



#### 4.1.2 Conventional Distributor.

