

Ref: P4133/L03/MR (email attachment)

12 April 2021

To:	Michael Kavanagh	of:	EWA
Cc:		of:	

Dear Michael

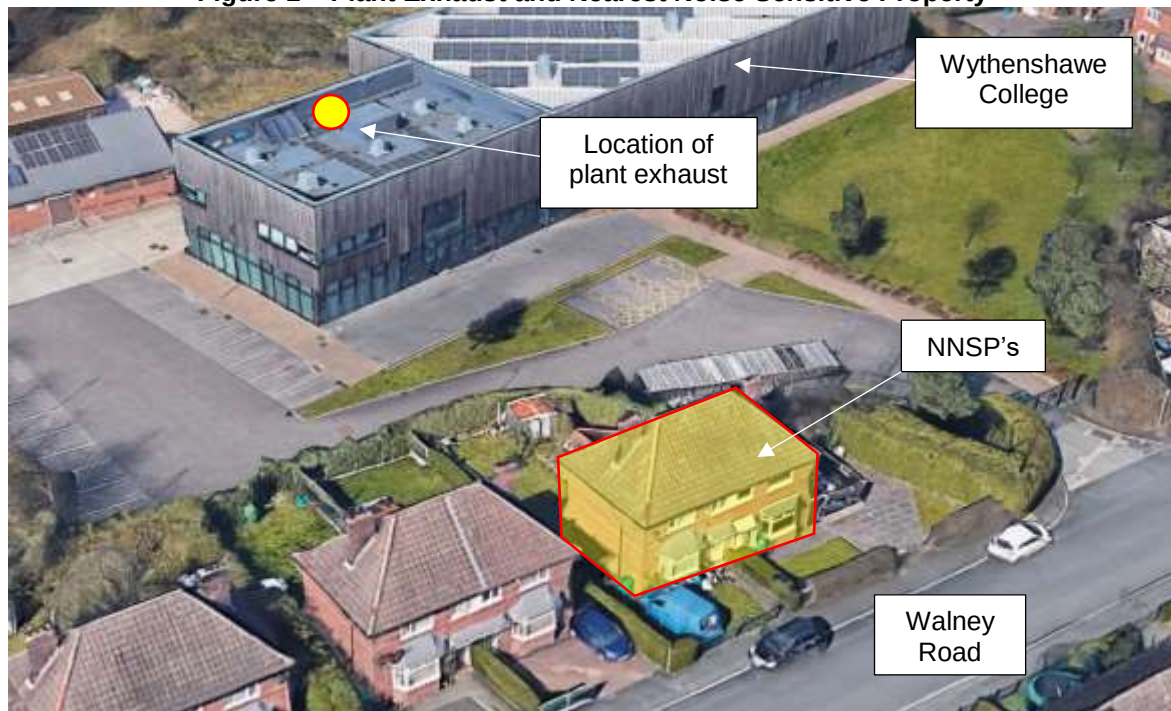
Wythenshawe College – Plant Assessment

Presented below is AEC's acoustic assessment of the new mechanical services plant at Wythenshawe College, Manchester based on the provided technical data.

Site Description and Noise Climate

Wythenshawe College is located in a residential area with nearby properties located on Walney Road, Woodend Road and Woodhouse Lane. The new plant exhaust is on the south east façade of the college and is highlighted on Figure 1, below. The nearest noise sensitive properties (NNSP's) are located on Walney Road and are also highlighted on Figure 1, below.

Figure 1 – Plant Exhaust and Nearest Noise Sensitive Property



© Google Maps 2021

The NNSP's are approximately 45m from the exhaust on the roof of the college. The parapet on the roof of the college also provides screening to the NNSP's as seen in Figure 2, below.

Figure 2 – Barrier Attenuation to the Nearest Noise Sensitive Property



© Google Maps 2021

Based on noise level measurements presented in AEC's previous report (P4133/R1/AGB) dated 11 August 2020 the background noise level in this area is approximately 40dBL_{A90} . This is a worse case noise level (slightly lower than typical) as it was measured during a period of travel restrictions due to the Government's national lockdown.

Assessment

BS 4142:2014 '*Methods for rating and assessing industrial and commercial sound*' (BS4142), provides guidance on assessing noise from industrial sources. This standard provides a method of assessing plant noise (called the specific noise level) by comparing it to the existing background noise level, without the plant operating. A penalty is applied to the specific noise depending on the presence and intensity of any acoustic character (tonality, intermittency, impulsivity) to determine a noise 'rating level' ($L_{A,r,T}$).

Based on the previously measured background noise level of 40dBL_{A90} it is recommended that the target should be to achieve a specific noise level of 35dBL_{Aeq} at the NNSP (5dB below the background noise level).

The fan noise data for exhaust unit on the roof is provided in Figure 3, below. Calculations based on this data, duct distance, distance to the NNSP and the barrier provided by the college's parapet demonstrate that the fan noise level at the NNSP should not exceed 35dBL_{Aeq} . At the highest fan speeds the predicted level is equal to 35dBL_{Aeq} . Therefore, there is no need for additional mitigation via an attenuator. However, a short (300mm) attenuator providing a nominal sound reduction of say 5-8dBA insertion loss, could be allowed for. This would give more tolerance in case the fan was to regularly run at a high-speed setting, and/or if the fan was to be regularly turned on and off during the day.

I trust the above is clear and of assistance at this stage, however, if you have any queries please give me a call.

Yours sincerely

Michael Ridley

Checked by:

Figure 3 – Technical Data Sheet

Technical leaflet
160949/001 | 2019-03

Nederman
IMPROVING YOUR WORKSPACE

TECHNICAL DESCRIPTION, FAN N40, 50 HZ

TECHNICAL DATA

Article no:	14510123
Capacity:	400 - 4000 m ³ /h
Motor power:	2,2 kW
Speed:	2880 rpm
Voltage:	200-240/380-420 V
Phase:	3 ~
Frequency:	50 Hz
Current at market voltage:	7,9/4,56 A
Degree of protection:	IP 55
Weight:	29 kg

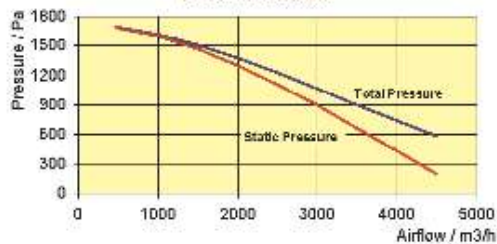
Nederman N40 is a centrifugal fan designed for use with NEDERMAN extraction products. The fan can also be mounted on a stand which is available as an accessory.



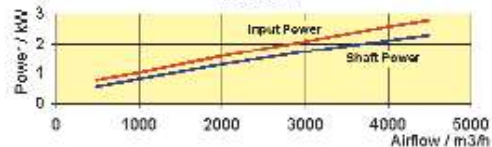
- Working temperature: max. 60 °C
- Ambient temperature: -30°C to +40°C
- Impeller with radial tip blades
- Material:
 - Fan casings: sheet metal steel
 - Impeller: sheet metal steel
- Surface treatment: epoxypolyester powder paint
- The fan is manufactured in accordance with the following standards or other normative documents: 98/37/EC, 73/23/EEC and 89/336/EEC.

The graphs are according to ducts connected to the inlet and exhaust side of the fan. Air density = 1,2 kg/m³

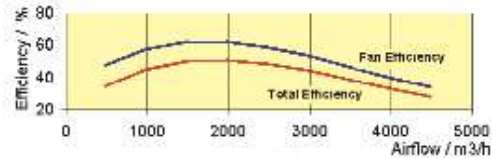
FAN DIAGRAM



POWER

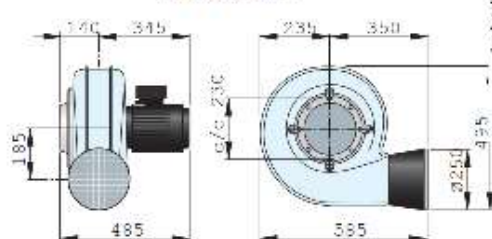


EFFICIENCY



The efficiency concerns the fan without a motor.

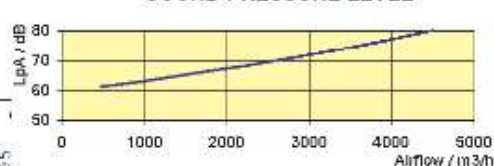
DIMENSIONS



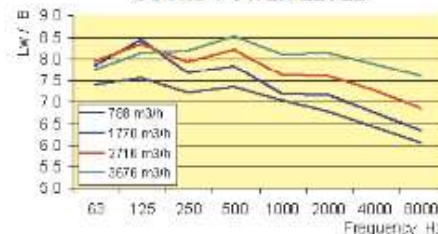
WARNING!

Risk of fire or explosion! The fan must not be used in an environment with danger of explosion or for transport of inflammable or explosive gases.

SOUND PRESSURE LEVEL



SOUND POWER LEVEL



According to ISO 11203.