

UPM-Kymmene Otepää OÜ

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PR4425-Y05

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ENVIRONMENTAL NOISE STUDY

UPM-Kymmene Otepää OÜ Plywood Mill, Otepää



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1 INTRODUCTION

UPM-Kymmene Otepää OÜ has a plywood mill in Otepää, Estonia. Some residents in the area have previously experienced the log feeding table causing disturbing noise. In 2024, a new log feeding table was built at the mill. At the same time, a noise barrier was built near the feeding table.

The results of the previous noise study are presented in the report PR10465-Y02 (Promethor Ltd, 26.6.2022). This report presents the results of measurements taken in December 2024 and February 2025.

The noise measurements were carried out and the report was written by J. Kankare and A. Metsämäki.

2 THE FACTORY AREA AND SURROUNDING REGION

The plywood mill is located west of the Otepää city center at Tehase 2 (Figure 1). The nearest inhabited buildings are approximately 100 meters away from the border of the factory site. The first major concentration of buildings (beginning of the town center) is approximately 600 meters away to the east.

Environmental noise was measured in residential areas closest to the mill in February 2025. Measurement points 1-11 are shown on the map in Figure 1. Measurement points 1-7, 9 and 11 are near residential buildings. Measurement points 8 and 10 are located near residential areas. Information about the measurement locations is presented in Table 1.

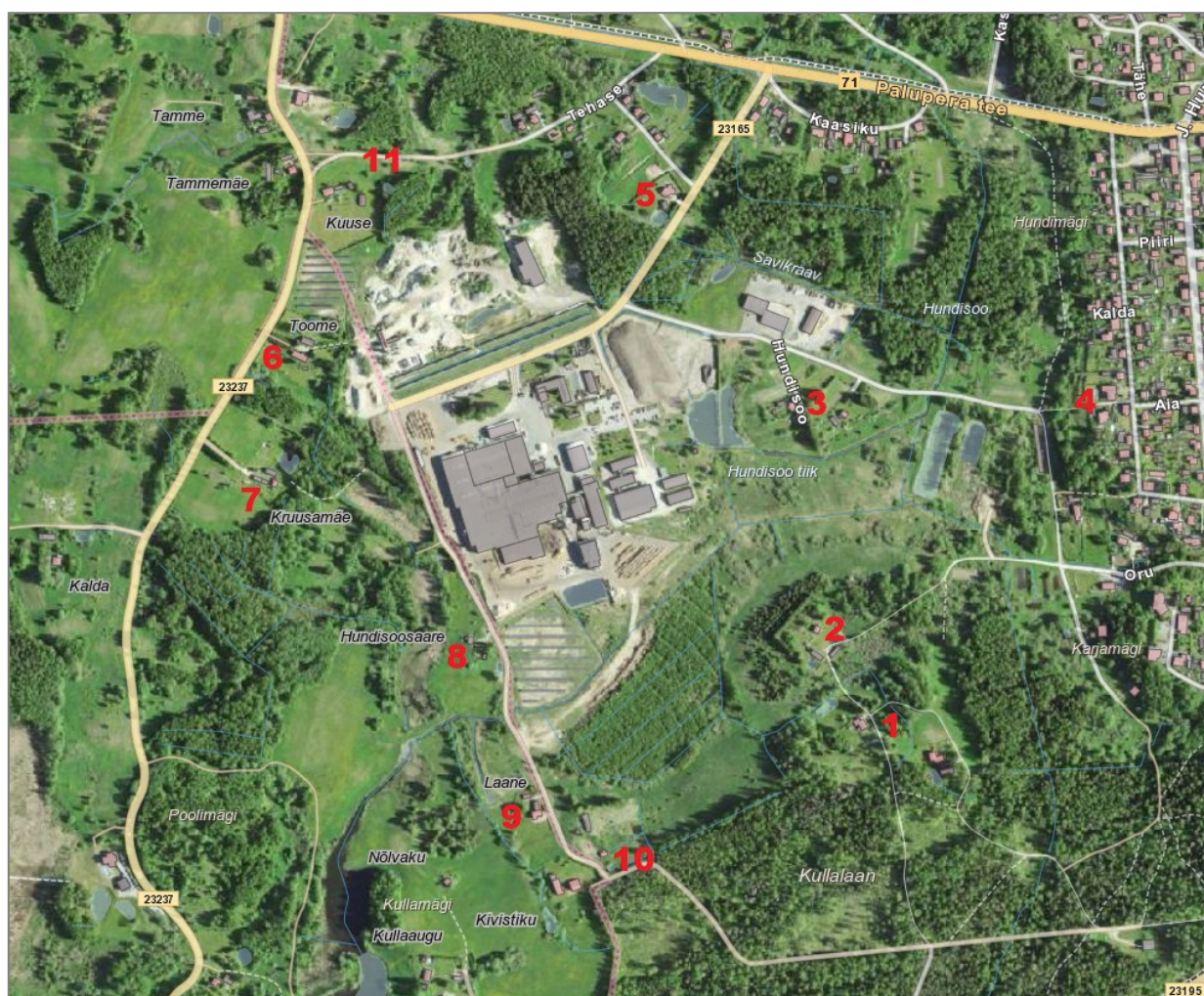


Figure 1. Environmental noise measurement points 1-11 near the factory.

Table 1. Measurement points

Measurement point	Property identifier	Addresss	
1	55601:006:0020	Hundisoo tn 5	Residential building
2	55601:006:0050	Hundisoo tn 1	Residential building
3	55601:001:0040	Hundisoo tn 3	Residential building
4	63601:001:0311	Kalda tn 8–10	Residential building
5	55601:001:0150	Tehase tn 2a	Residential building
6	63601:001:0118	Toome kinnistu	Residential building / Industrial estate
7	63601:001:0960	Kruusamäe kinnistu	Residential building
8	63601:001:1970	Hundisoosaare kinnistu	Uninhabited
9	63601:001:0780	Laane kinnistu	Residential building
10	55601:006:0080	Aakre metskond 49	Uninhabited
11	63601:001:0123	Tehase tn	Residential building

3 NOISE REGULATIONS

Standard noise levels are given in Regulation No. 71 of the Minister of the Environment (16.12.2016) "Environmental noise and noise level Methods of measurement, determination and assessment" (Appendix 1, Regulation No. 29 of the Minister of the Environment (26.5.2020)). The levels are given separately for day and night and are shown in Table 2.

Table 2.

		Müra piirväärtus $L_{pA,eq,T}$		Müra sihtväärtus $L_{pA,eq,T}$	
Müra liik, ühik		Liiklusmüra [dBA]	Tööstusmüra ^{3,4} [dBA]	Liiklusmüra [dBA]	Tööstusmüra ^{3,4} [dBA]
Müra kategooria	Aeg ²				
I kategooria – virgestusrajatiste maa-alad ehk vaiksed alad	päev	55	55	50	45
	öö	50	40	40	35
II kategooria – haridusasutuste, tervishoiu- ja sotsiaaltootmis- ja elamumaa-alad, maatulundusmaa, õuealad, rohealad	päev	60 65 ¹	60	55	50
	öö	55 60 ¹	45	50	40
III kategooria – keskuse maa-alad,	päev	65 70 ¹	65	60	55
IV kategooria – ühiskondlike hoonete maa-alad	öö	55 60 ¹	50	50	45

¹ müratundliku hoone teepoolsel küljel;
² päeva- ja ööaeg on vastavalt 7.00–23.00 ja 23.00–7.00;
³ tehnoeadmete ning äri- ja kaubandustegevuse tekitatava müra piirväärtusena rakendatakse tööstusmüra sihtväärtust;
⁴ ehitusmüra piirväärtusena rakendatakse kella 21.00–7.00 asjakohase müra kategooria tööstusmüra normtasel;
⁵ impulssmüra piirväärtusena rakendatakse asjakohase müra kategooria tööstusmüra normtasel. Impulssmüra põhjustavad tööd, näiteks lõhkamine, rammimine jne, võib teha tööpäevadel kella 7.00–19.00.

4 ENVIRONMENTAL NOISE MEASUREMENTS

4.1 Measurement points

The locations of measurement points 1-11 are shown in Figure 1 and Table 1. Measurement points 1-7, 9 and 11 were near residential areas. Measurement point 6 is located in an industrial area. Measurement point 8 was located in an abandoned, degraded area near a demolished house and point 10 was located in the northwestern part of property 55601:006:0080.

Appendix 1 presents information about measuring points, location and the measurement results.

4.2 Equipment and methods

Sound level measurements were made with a Rion NL-52 sound level meter. Rion NL-52 meets the requirements of standards IEC 60651 and IEC 60804.

The measuring device was checked with a Rion NC-75 calibrator.

The A-weighted sound pressure level L_p was measured with the time constant "fast". The microphone was placed at a height of 1.5 meters above ground.

4.3 Weather conditions

Weather conditions at the measuring times are represented in appendix 1.

4.4 Description of the factory operation and noise during the measurements

Factory operation

The factory operated normally during the measurements. Measurements were made at nighttime (except for the measurement at point 4).

Background noise

During most of the measurement periods there was no background noise that would affect the results. Traffic caused some background noise to the measurement point 4.

4.5 Measurement results

The measurement results, noise levels caused by factory operations and noise level limit values are presented in Table 3. Noise level caused by the factory operations is comparable to the limit value.

The results and observations for each measurement point are also presented in Appendix 1.

Table 3. Measurement results

Measure- ment point	Date	Time	Measurement result $L_{Aeq,T}$ [dB(A)]	Noise level caused by the factory $L_{Aeq,T}$ [dB(A)]	Impulse noise	Limit value, daytime $L_{Aeq,7-23}$ [dB(A)] nighttime $L_{Aeq,23-7}$ [dB(A)]
1	19.2.2025	23:41–23:56	40	40	No	45
2	19.2.2025	23:23–23:38	42	42	No	45
3	19.2.2025	23:00–23:15	45	45	No	45
4	19.2.2025	21:13–21:18	40	39	No	60
5	20.2.2025	23:06–23:11	40	40	No	45
6	20.2.2025	23:45–23:50	43	43	No	50
7	20.2.2025	23:53–23:58	39	39	No	45
8	20.2.2025	0:33–0:37	38	38	No	45
9	20.2.2025	0:26–0:29	45	45	No	45
10	20.2.2025	0:08–0:23	43	43	No	45
11	20.2.2025	23:25–23:30	44	44	No	45

5 NOISE MODELLING

5.1 Measurements of the noise emissions

Noise emissions from noise sources were measured on 15th and 16th of December in 2024 and on 20th and 21st of February in 2025.

5.1.1 Equipment and methods

The measurements were performed with a Rion NL-52 sound level meter. The sound power levels were determined using standard NT ACOU 080 (Nordtest, Industrial plants: Noise emission).

5.1.2 The sound power levels

The noise sources are represented in appendix 3 and table 4. The locations of the noise sources are represented in appendix 4.

Table 4.

Number	Noise source	Sound power level L_{WA} [dB]	Operating hours
1A	Aspiration system 1, fan	102	24 h
1B	Aspiration system 1, pipe	97	24 h
2	Loader	95	24 h
3	Loading and unloading logs to and from stacks of logs	98	7:00–23:00
4	Boiler house, steam pipe	78	24 h
5	Boiler house, steam pipe	91	24 h
6	Pump station	83	24 h
7	Pump station	92	24 h
8A	Log sorting line	92 per meter = 111	7:00–23:00
8B	Log infeed table	109	7:00–23:00
9	Aspiration system 3	86	24 h
10	Aspiration system 6	103	24 h
11	Aspiration system 4	101	24 h
11A	Aspiration system 5	104	24 h
12	Fan	94	24 h
13	Sanding line ventilator / blower	102	24 h
14	Log infeed table	80	24 h
15	Fan	82	24 h
16	Compressed-air station	83	24 h
17	Four large, angled ventilation outlets	88	24 h
18	Fan	84	24 h
19	Woodchip pipeline	89 per meter = 106	24 h
20	Two ventilation outlets	97	24 h
21	Two angled ventilation outlets	91	24 h
22	Cooler (a radiator and a fan)	98	24 h
23	Cooler (saag 1 jahutus)	95	24 h
24	Fan	91	Daytime 8 h and nighttime 4 h.
25	Fan	92	24 h
26	Cooler	95	24 h
27	Fan	94	24 h
28	Fan	97	24 h
29	Crusher inside the building	96	24 h

5.2 Calculation method

Noise modeling was made with DatAkustik Cadna -noise modeling software using Nordic prediction method.

Table 5.

Parameter	Value
Calculation grid	5 m x 5 m
Calculation height	2 m
Acoustic hardness of the ground	Water 0 (hard) Factory site 0,5 (semi soft) Environment 1 (soft)
Reflection factor for buildings	0,2
Number of reflections	1

5.3 Noise levels

Noise maps are represented as appendix 2A and 2B.

According to noise maps

- daytime equivalent sound pressure level is about 40...50 dB(A) at the residential buildings
- nighttime equivalent sound pressure level is about 40...48 dB(A) at the residential buildings.

Road traffic outside the factory site has not been taken account in noise modeling.

6 CONCLUSIONS

The Minister of the Environment's regulation sets the average nighttime noise limit value for industrial noise in residential areas at 45 dB(A). Based on the noise measurements carried out, it can be stated that the operations of the UPM Kymmene OÜ's mill do not cause noise levels higher than the limit value in residential areas. At measurement point 6, the residential building is in an industrial area and the 45 dB(A) limit value does not apply to it.



At measurement point no. 7, the result of computational modelling is 47 dB(A) (noise map 2B). To reduce the noise level, noise abatement measures must be implemented at least for noise source no. 10.

Noise abatement of noise source no. 14 (log infeed table) has been very successful. Noise source no. 14 is now very quiet. In addition, noise in residential areas is not impulsive at nighttime.

7 INFORMATION

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Measurement data

Number:	1		
Measuring point:	Residential building 55601:006:0020		
Address:	Hundisoo tn 5		

Factory operation during measurements	
UPM-Kymmene Otepää OÜ	The factory operated normally.

Equipment and results	
Equipment and methods	Rion NL-52, time constant fast, A-weighted
Limit value:	
Day, $L_{Aeq,7-23}$	60 dB(A)
Night, $L_{Aeq,23-7}$	45 dB(A)
Date and time	19.2.2025 at 23:41–23:56
Measurement result L_{Aeq}	40
Noise level L_{Aeq} caused by the factory	40
Noise sources	Fans.
Background noise	-
Impulse noise	No

Weather conditions					
Date	Temperature	Wind speed	Wind direction	Cloud cover	Tailwind
19.2.2025 at 23:00	-14 °C	1 m/s	To southeast	0/8	Yes

Measurement data



Number:	2		
Measuring point:	Residential building 55601:006:0050		
Address:	Hundisoo tn 1		

Factory operation during measurements	
UPM-Kymmene Otepää OÜ	The factory operated normally.

Equipment and results	
Equipment and methods	Rion NL-52, time constant fast, A-weighted
Limit value:	
Day, $L_{Aeq,7-23}$	60 dB(A)
Night, $L_{Aeq,23-7}$	45 dB(A)
Date and time	19.2.2025 at 23:23–23:38
Measurement result L_{Aeq}	42
Noise level L_{Aeq} caused by the factory	42
Noise sources	Fans and loaders.
Background noise	-
Impulse noise	No

Weather conditions					
Date	Temperature	Wind speed	Wind direction	Cloud cover	Tailwind
19.2.2025 at 23:00	-14 °C	1 m/s	To southeast	0/8	Yes

Measurement data



Number:	3		
Measuring point:	Residential building 55601:001:0040		
Address:	Hundisoo tn 3		

Factory operation during measurements	
UPM-Kymmene Otepää OÜ	The factory operated normally.

Equipment and results	
Equipment and methods	Rion NL-52, time constant fast, A-weighted
Limit value:	
Day, $L_{Aeq,7-23}$	60 dB(A)
Night, $L_{Aeq,23-7}$	45 dB(A)
Date and time	19.2.2025 at 23:00–23:15
Measurement result L_{Aeq}	45
Noise level L_{Aeq} caused by the factory	45
Noise sources	Fans.
Background noise	-
Impulse noise	No

Weather conditions					
Date	Temperature	Wind speed	Wind direction	Cloud cover	Tailwind
19.2.2025 at 23:00	-14 °C	1 m/s	To southeast	0/8	Sidewind

Measurement data

Number:	4		
Measuring point:	Residential building / Street area 63601:001:0311		
Address:	Kalda tn 8–10		

Factory operation during measurements

UPM-Kymmene Otepää OÜ

The factory operated normally.

Equipment and results

Equipment and methods Rion NL-52, time constant fast, A-weighted

Limit value:

Day, $L_{Aeq,7-23}$ 60 dB(A)

Night, $L_{Aeq,23-7}$ 45 dB(A)

Date and time 19.2.2025 at 21:13–21:18

Measurement result L_{Aeq} 40

Noise level L_{Aeq} caused by the factory 39

Noise sources Fans, loaders and log infeed table (noise source 8B) for sorting line (noise source 8A).

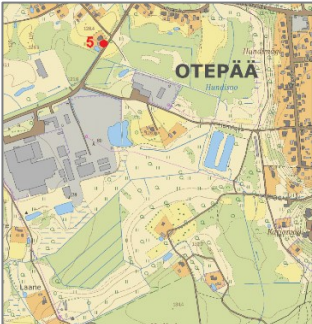

Background noise Road traffic.

Impulse noise No

Weather conditions

Date	Temperature	Wind speed	Wind direction	Cloud cover	Tailwind
19.2.2025 at 21:00	−12 °C	1 m/s	To southeast	0/8	Sivewind

Measurement data

Number:	5		
Measuring point:	Residential building		
Address:	55601:001:0150 Tehase tn 2a		



The photo was taken in 2021.

Factory operation during measurements	
UPM-Kymmene Otepää OÜ	The factory operated normally.

Equipment and results	
Equipment and methods	Rion NL-52, time constant fast, A-weighted
Limit value:	
Day, $L_{Aeq,7-23}$	60 dB(A)
Night, $L_{Aeq,23-7}$	45 dB(A)
Date and time	20.2.2025 at 23:06–23:11
Measurement result L_{Aeq}	40
Noise level L_{Aeq} caused by the factory	40
Noise sources	Fans and aspiration systems.
Background noise	-
Impulse noise	No

Weather conditions					
Date	Temperature	Wind speed	Wind direction	Cloud cover	Tailwind
20.2.2025 at 23.00	-5 °C	1 m/s	To north	6/8	Yes

Measurement data

Number:	6		
Measuring point:	Residential building		
Address:	63601:001:0118 Toome kinnistu		

The photo was taken in 2021.

Factory operation during measurements

UPM-Kymmene Otepää OÜ The factory operated normally.

Equipment and results

Equipment and methods Rion NL-52, time constant fast, A-weighted

Limit value:

Day, $L_{Aeq,7-23}$ 60 dB(A)

Night, $L_{Aeq,23-7}$ 45 dB(A)

Date and time 20.2.2025 at 23:45–23:50

Measurement result L_{Aeq} 43

Noise level L_{Aeq} caused by the factory 43

Noise sources Fans and aspiration systems.



Background noise -

Impulse noise No

Weather conditions

Date	Temperature	Wind speed	Wind direction	Cloud cover	Tailwind
20.2.2025 at 23:00	−5 °C	1 m/s	To north	6/8	Yes

Measurement data

Number:	7		
Measuring point:	Residential building		
Address:	63601:001:0960 Kruusamäe kinnistu		

The photo was taken in 2021.

Factory operation during measurements

UPM-Kymmene Otepää OÜ The factory operated normally.

Equipment and results

Equipment and methods Rion NL-52, time constant fast, A-weighted

Limit value:

Day, $L_{Aeq,7-23}$ 60 dB(A)

Night, $L_{Aeq,23-7}$ 45 dB(A)

Date and time 20.2.2025 at 23:53–23:58

Measurement result L_{Aeq} 39

Noise level L_{Aeq} caused by the factory 39

Noise sources Fans and aspiration systems.

Background noise -

Impulse noise No

Weather conditions

Date	Temperature	Wind speed	Wind direction	Cloud cover	Tailwind
20.2.2025 at 23:00	−5 °C	1 m/s	To north	6/8	Sidewind

Measurement data

Number:	8		
Measuring point:	Uninhabited		
Address:	63601:001:1970 Hundisoosaare kinnistu		

The photo was taken in 2021.

Factory operation during measurements

UPM-Kymmene Otepää OÜ The factory operated normally.

Equipment and results

Equipment and methods Rion NL-52, time constant fast, A-weighted

Limit value:

Day, $L_{Aeq,7-23}$ 60 dB(A)

Night, $L_{Aeq,23-7}$ 45 dB(A)

Date and time 20.2.2025 at 0:33–0:37

Measurement result L_{Aeq} 38

Noise level L_{Aeq} caused by the factory 38

Noise sources Fans and loaders.

Background noise -

Impulse noise No

Weather conditions

Date	Temperature	Wind speed	Wind direction	Cloud cover	Tailwind
20.2.2025 at 0:30	-16 °C	1 m/s	To southeast	0/8	Yes

Measurement data

Number:	9		
Measuring point:	Residential building 63601:001:0780		
Address:	Laane kinnistu		

Factory operation during measurements	
UPM-Kymmene Otepää OÜ	The factory operated normally.

Equipment and results	
Equipment and methods	Rion NL-52, time constant fast, A-weighted
Limit value:	
Day, $L_{Aeq,7-23}$	60 dB(A)
Night, $L_{Aeq,23-7}$	45 dB(A)
Date and time	20.2.2025 at 0:26–0:29
Measurement result L_{Aeq}	45
Noise level L_{Aeq} caused by the factory	45
Noise sources	Fans.
Background noise	-
Impulse noise	No

Weather conditions					
Date	Temperature	Wind speed	Wind direction	Cloud cover	Tailwind
20.2.2025 at 0:30	-16 °C	1 m/s	To southeast	0/8	Yes

Measurement data

Number:	10		
Measuring point:	Uninhabited		
Address:	55601:006:0080 Aakre metskond 49		

Factory operation during measurements	
UPM-Kymmene Otepää OÜ	The factory operated normally.

Equipment and results	
Equipment and methods	Rion NL-52, time constant fast, A-weighted
Limit value:	
Day, $L_{Aeq,7-23}$	60 dB(A)
Night, $L_{Aeq,23-7}$	45 dB(A)
Date and time	20.2.2025 at 0:08–0:23
Measurement result L_{Aeq}	43
Noise level L_{Aeq} caused by the factory	43
Noise sources	Fans and loaders.
Background noise	-
Impulse noise	No

Weather conditions					
Date	Temperature	Wind speed	Wind direction	Cloud cover	Tailwind
20.2.2025 at 0:30	-16 °C	1 m/s	To southeast	0/8	Yes

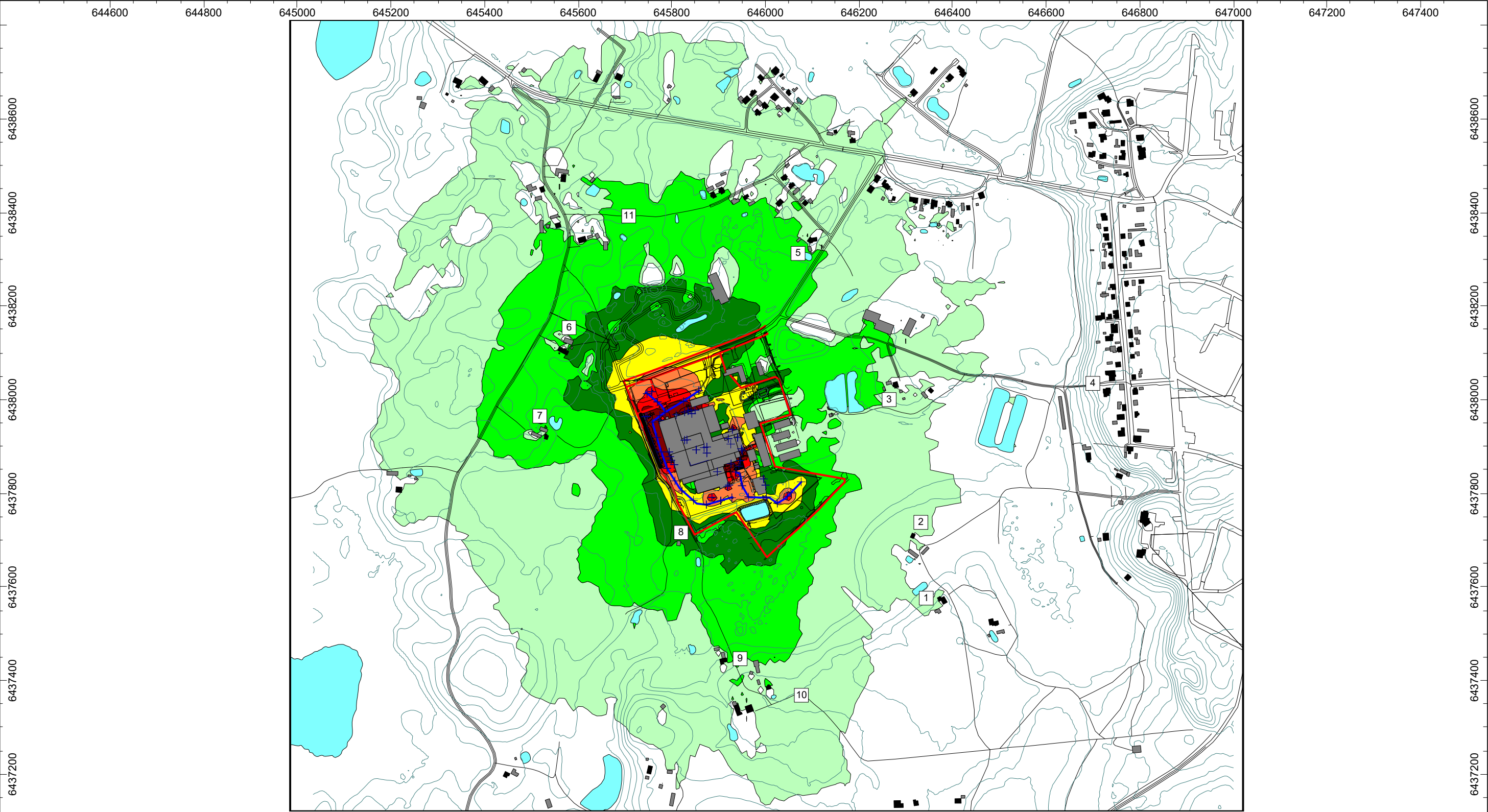
Measurement data

Number:	11		
Measuring point:	Residential building		
Address:	63601:001:0123 Kuuse kinnistu		

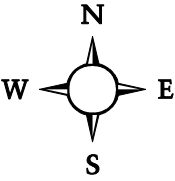
Factory operation during measurements	
UPM-Kymmene Otepää OÜ	The factory operated normally.

Equipment and results	
Equipment and methods	Rion NL-52, time constant fast, A-weighted
Limit value:	
Day, $L_{Aeq,7-23}$	60 dB(A)
Night, $L_{Aeq,23-7}$	45 dB(A)
Date and time	20.2.2025 at 23:25–23:30
Measurement result L_{Aeq}	44
Noise level L_{Aeq} caused by the factory	44
Noise sources	Fans and aspiration systems.
Background noise	-
Impulse noise	No

Weather conditions					
Date	Temperature	Wind speed	Wind direction	Cloud cover	Tailwind
20.2.2025 at 23:00	-5 °C	1 m/s	To north	6/8	Yes



Appendix
2A



- > 40 dB(A)
- > 45 dB(A)
- > 50 dB(A)
- > 55 dB(A)
- > 60 dB(A)
- > 65 dB(A)
- > 70 dB(A)

PR4425-Y05

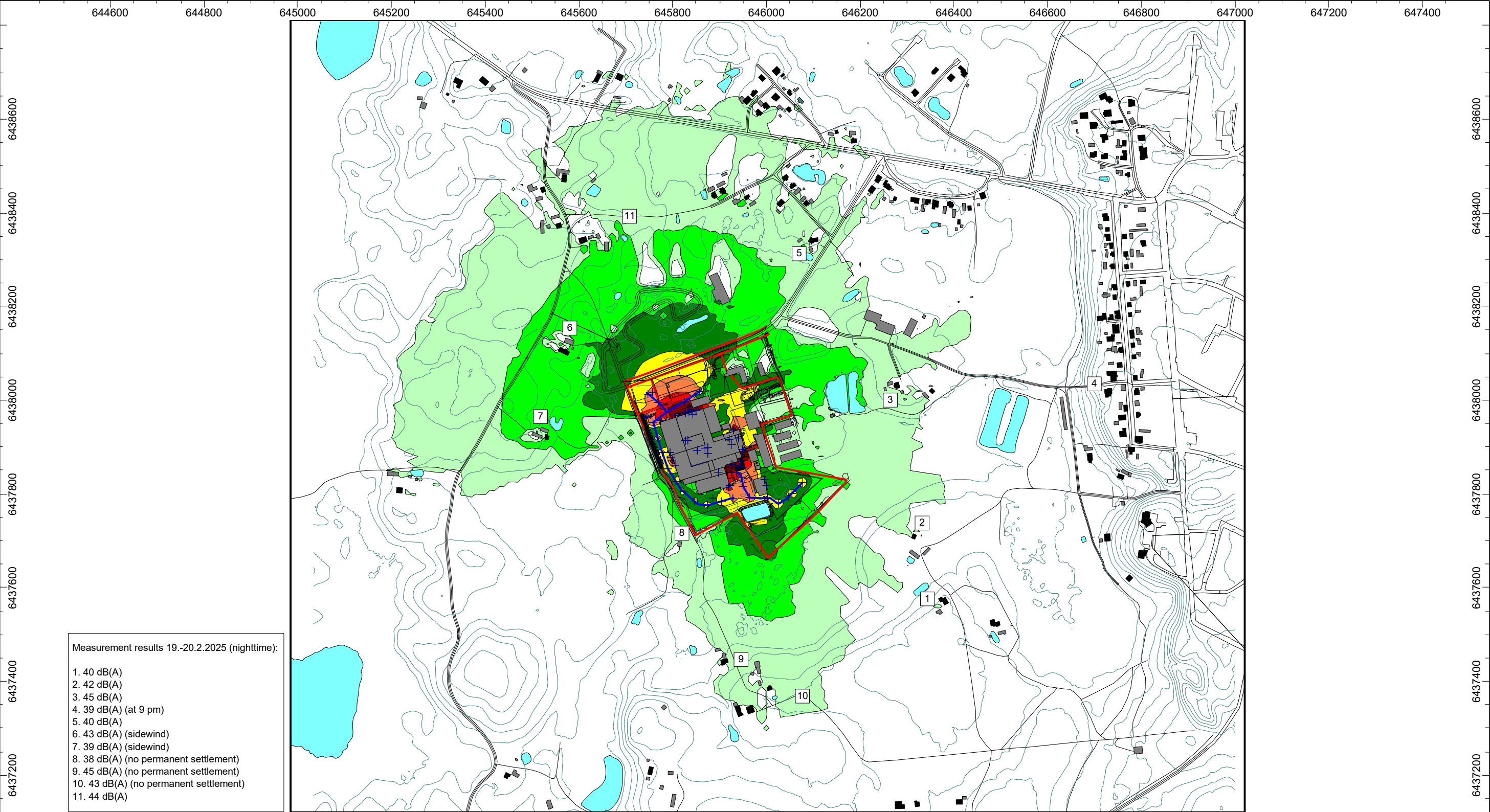
Scale
1:8250 (A3)

Calculation height
2 m above ground

Environmental noise study.
UPM-Kymmene Otepää OÜ Plywood Mill, Otepää.
Equivalent sound pressure level LAeq7-23 [daytime].
Status 2/2025.


9.4.2025





Measurement results 19.-20.2.2025 (nighttime):

- 1. 40 dB(A)
- 2. 42 dB(A)
- 3. 45 dB(A)
- 4. 39 dB(A) (at 9 pm)
- 5. 40 dB(A)
- 6. 43 dB(A) (sidewind)
- 7. 39 dB(A) (sidewind)
- 8. 38 dB(A) (no permanent settlement)
- 9. 45 dB(A) (no permanent settlement)
- 10. 43 dB(A) (no permanent settlement)
- 11. 44 dB(A)

Appendix 2B	<div><div>> 40 dB(A)</div><div>> 45 dB(A)</div><div>> 50 dB(A)</div><div>> 55 dB(A)</div><div>> 60 dB(A)</div><div>> 65 dB(A)</div><div>> 70 dB(A)</div></div>	PR4425-Y05	Scale 1:8250 (A3)	Calculation height 2 m above ground
		Environmental noise study. UPM-Kymmene Otepää OÜ Plywood Mill, Otepää. Equivalent sound pressure level LAeq23-7 [nighttime]. Status 2/2025.		
<div><div>N</div><div>W</div><div>E</div><div>S</div></div>		9.4.2025	PR  METHOR	

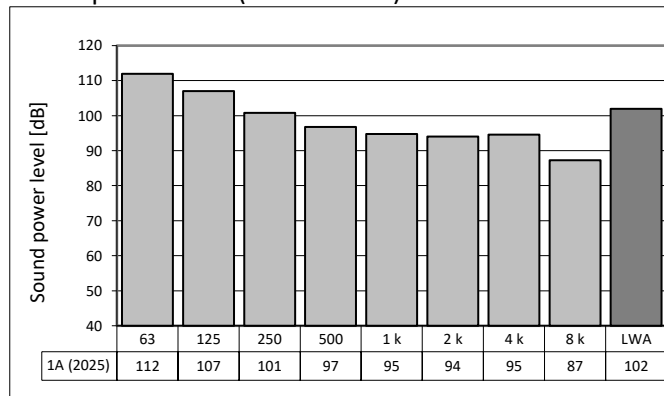
Noise source:

Number:	1A
Location:	
Noise source:	Aspiration system 1, fan
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	5 m
Directivity:	
Comments:	Operating 24 hours per day.

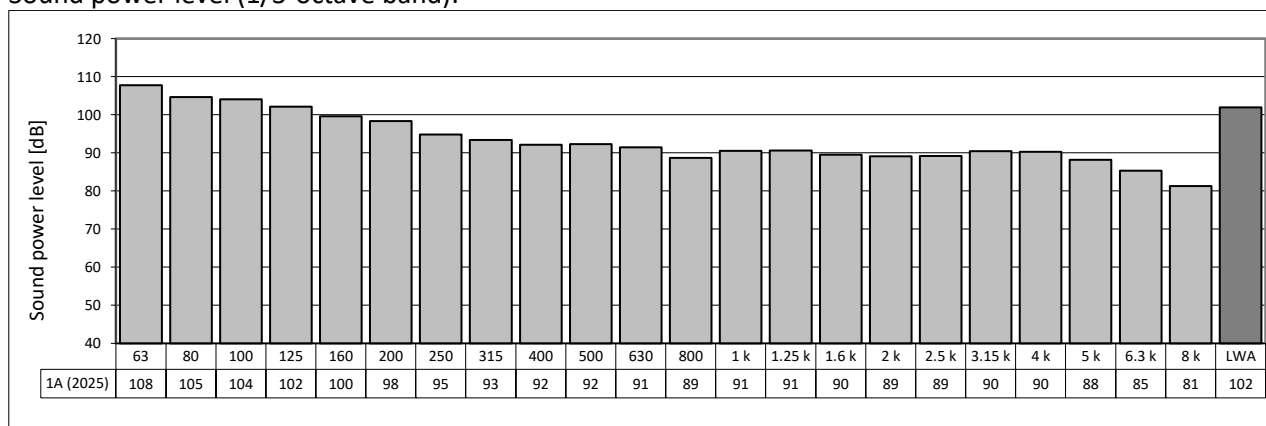
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



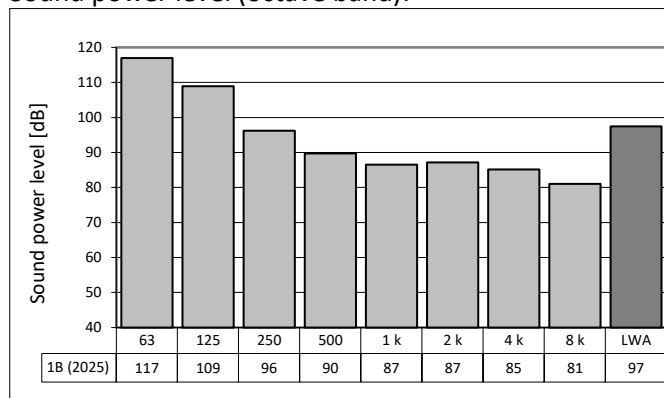
Noise source:

Number:	1B
Location:	
Noise source:	Aspiration system 1, pipe
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	1,5 m
Directivity:	To the north (to the east and west -6 dB(A) and to the south -15 dB(A)).
Comments:	Operating 24 hours per day.

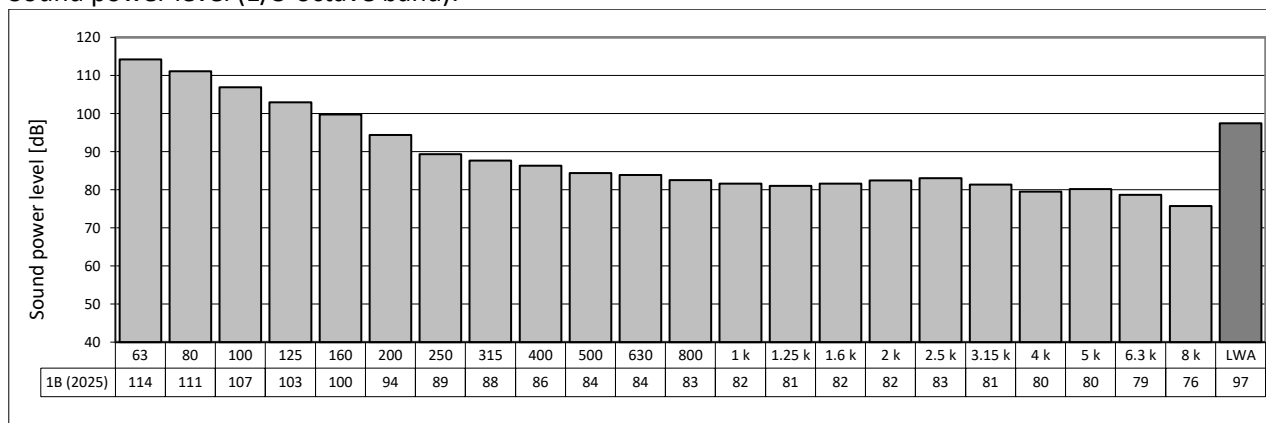
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



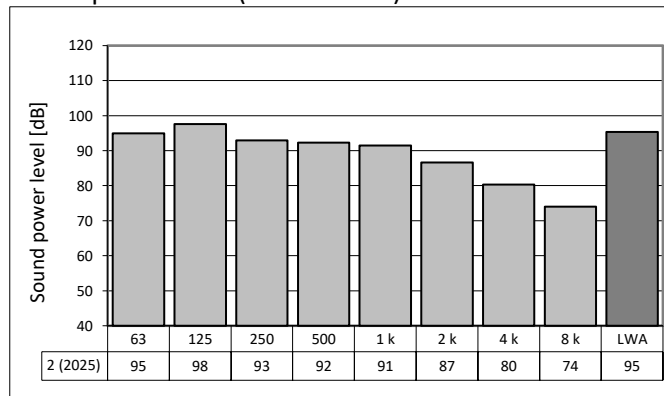
Noise source:

Number:	2
Location:	Around the factory area
Noise source:	Loader
Noise description:	Not impulsive wideband noise coming mainly from the engine of the loader.
The height of the acoustic center point:	3 m
Directivity:	
Comments:	Produces noise approximately 50 % of its operating time. Operating 24 hours per day.

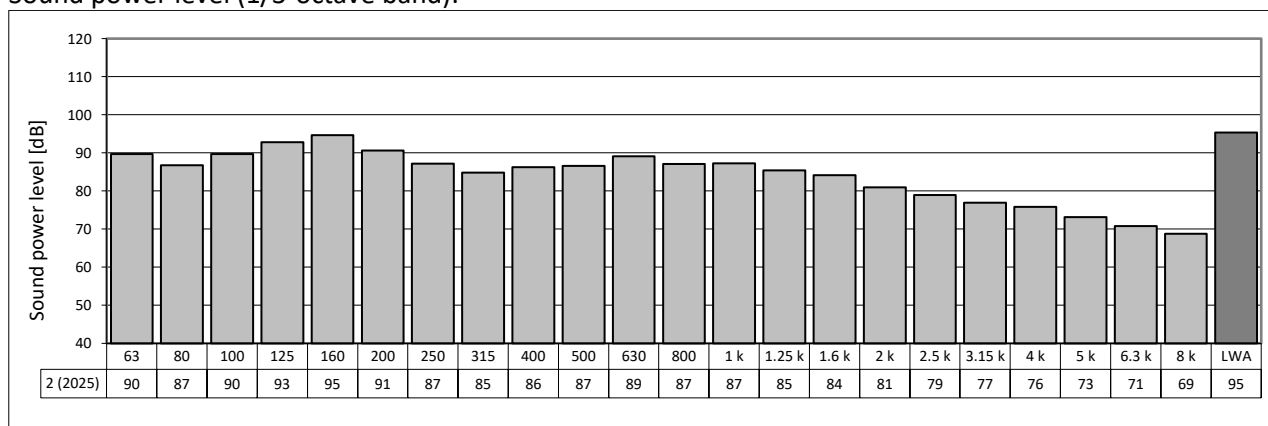
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



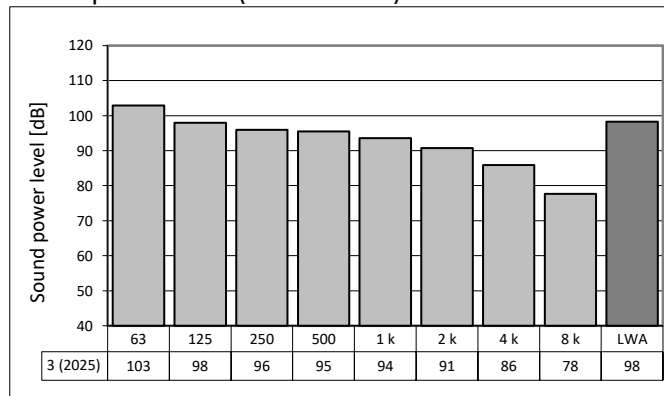
Noise source:

Number:	3
Location:	At the north and south side of the factory area
Noise source:	Loading and unloading logs to and from stacks of logs
Noise description:	Not impulsive wideband noise coming mainly from the engine of the vehicle.
The height of the acoustic center point:	4 m
Directivity:	
Comments:	Operating hours from 07:00 to 23:00 (Monday – Friday).

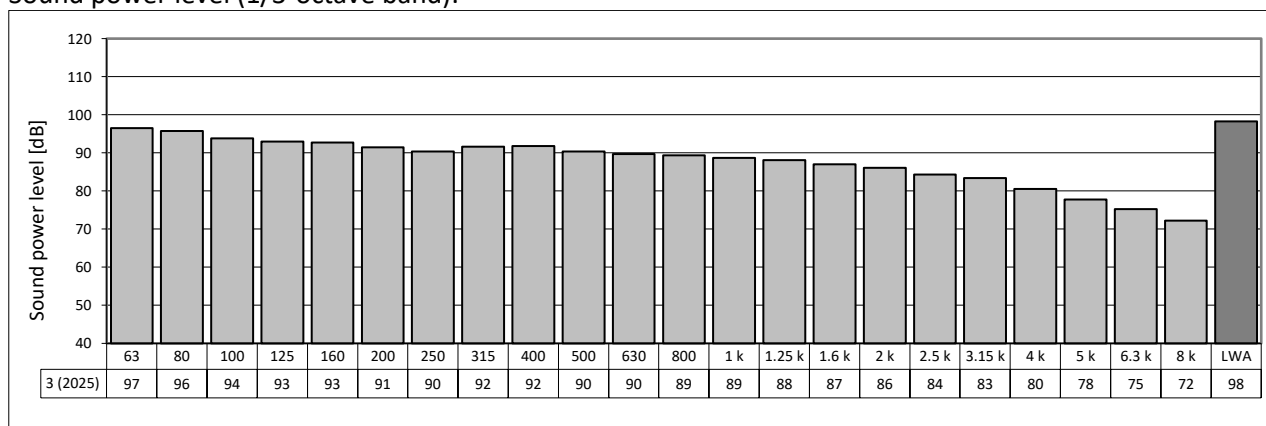
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



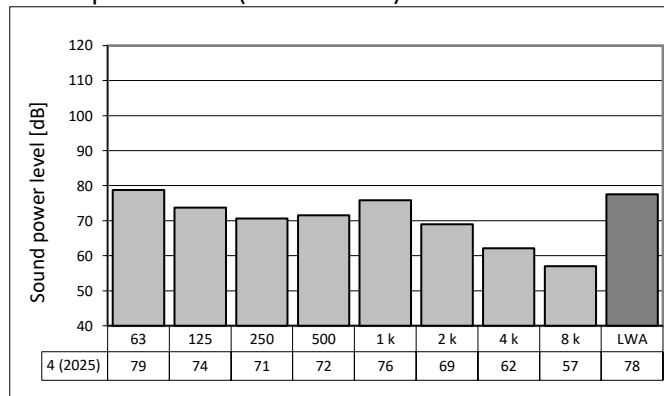
Noise source:

Number:	4
Location:	Boiler house
Noise source:	Lower steam pipe at the east side wall
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	4 m
Directivity:	To the east
Comments:	The left one in the picture. Operating 24 hours per day.

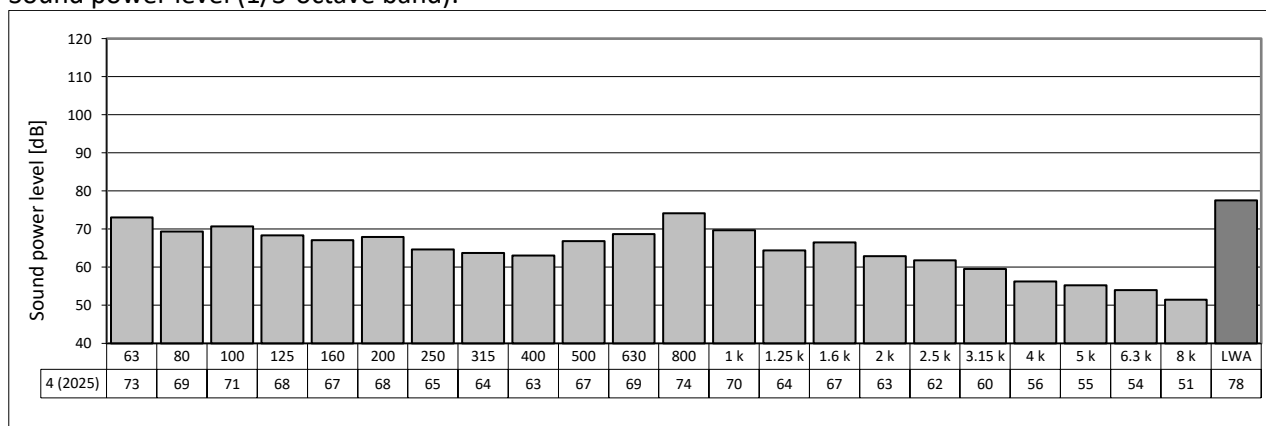
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



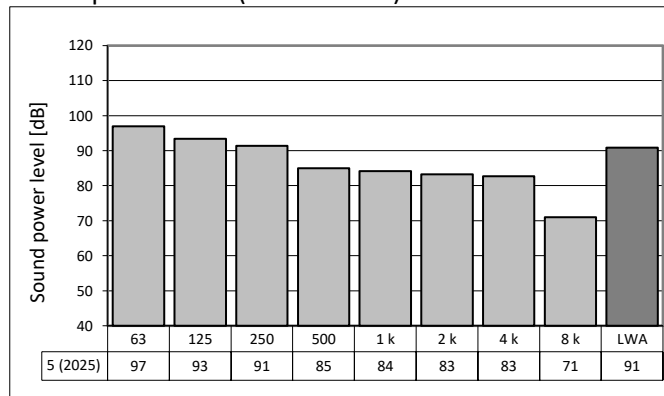
Noise source:

Number:	5
Location:	Boiler house
Noise source:	Upper steam pipe at the east side wall
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	15 m
Directivity:	To the east
Comments:	The right one in the picture. Operating 24 hours per day.

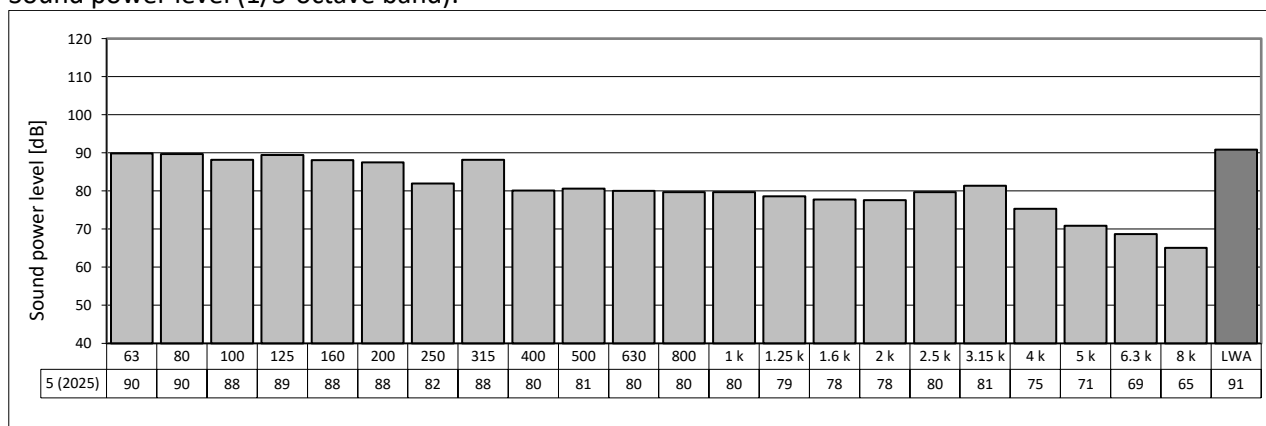
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



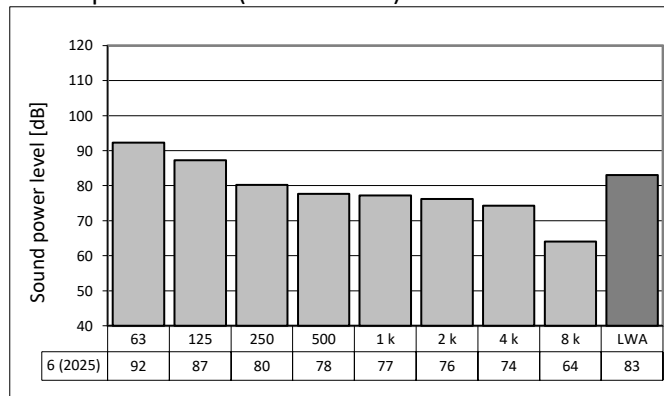
Noise source:

Number:	6
Location:	Pump station
Noise source:	Noise from inside
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	2 m
Directivity:	To the east
Comments:	Noise measured doors closed. Opening the door increases the noise level approximately 15 dB at the measuring point. Operating 24 hours per day.

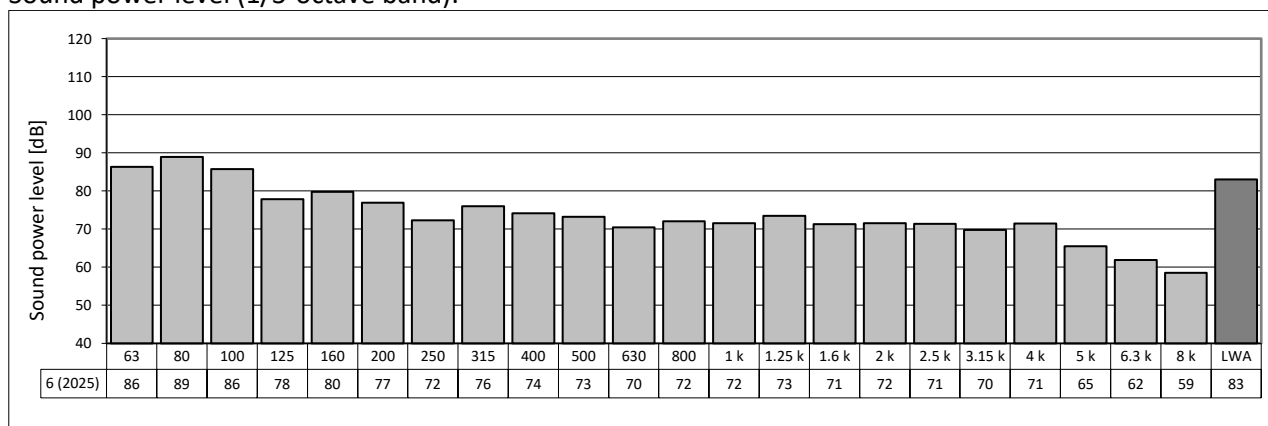
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



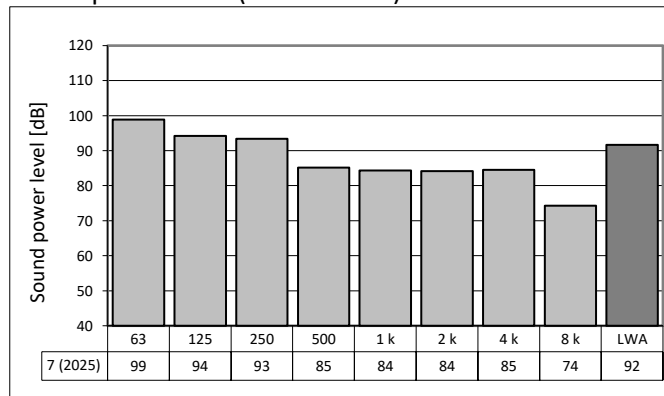
Noise source:

Number:	7
Location:	Pump station
Noise source:	Noise from inside
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	3 m
Directivity:	To the south
Comments:	Operating 24 hours per day.

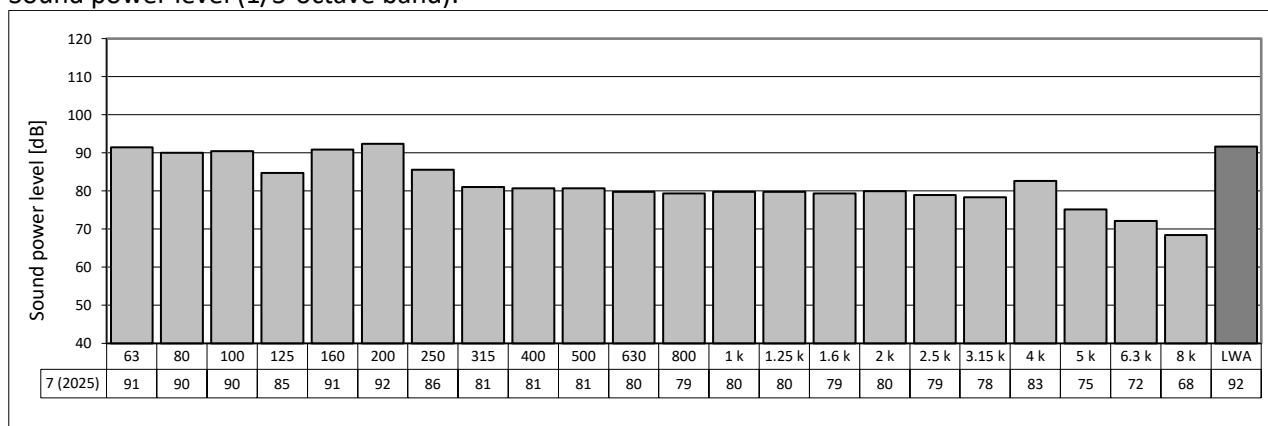
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



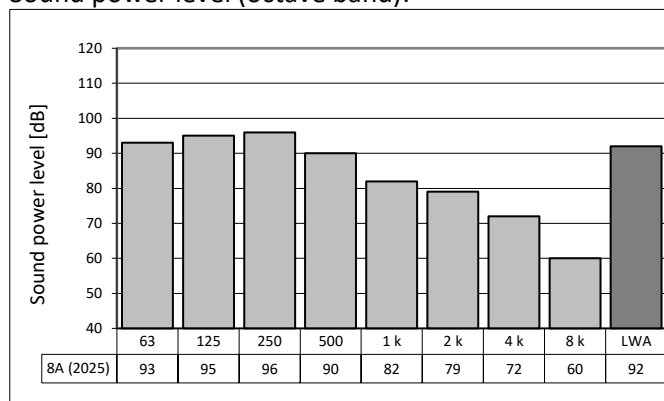
Noise source:

Number:	8A
Location:	Log sorting line
Noise source:	Log sorting line
Noise description:	Impulsive wideband noise coming from the sorting line itself and additionally from the thumping logs.
The height of the acoustic center point:	3 m
Directivity:	
Comments:	A line source of approximately 85 meters with operating hours from 7:00 to 23:00 (960 min). Produces noise approximately 50 % of its operating hours (480 min). A sound barrier has been installed next to the sorting line.

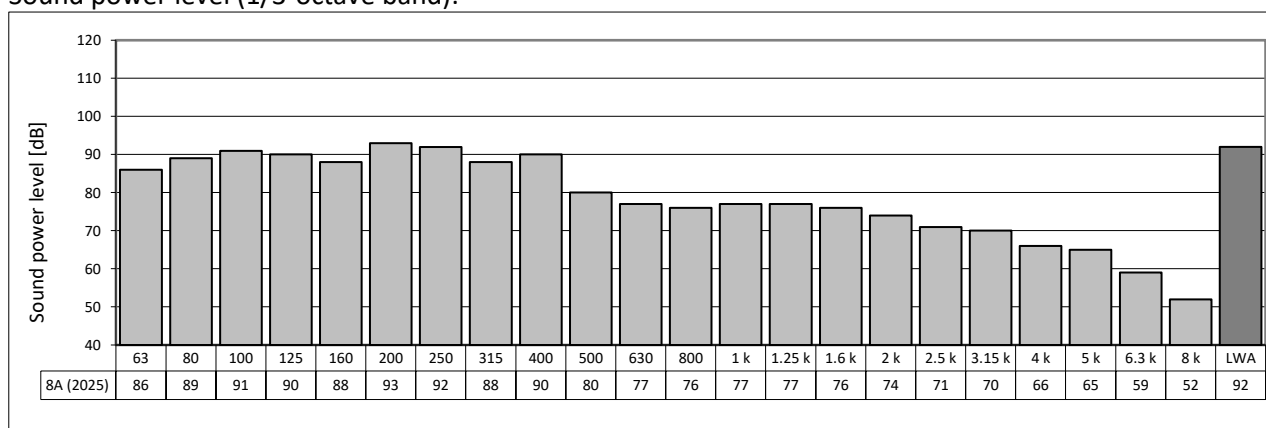
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



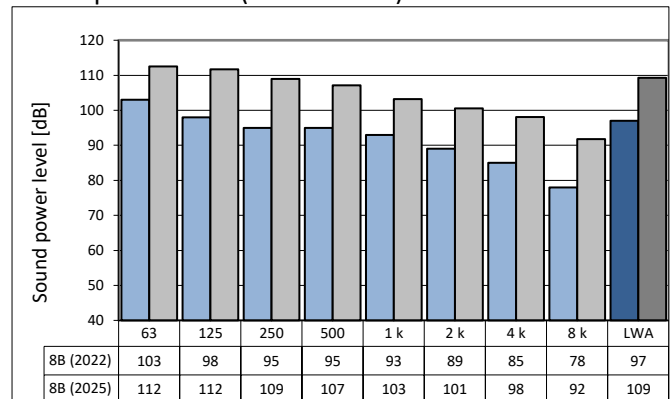
Noise source:

Number:	8B
Location:	Log sorting line
Noise source:	Log infeed table
Noise description:	
The height of the acoustic center point:	3 m
Directivity:	
Comments:	Operating hours are from 7:00 to 23:00 (960 min). Produces noise approximately 50 % of its operating hours (480 min).

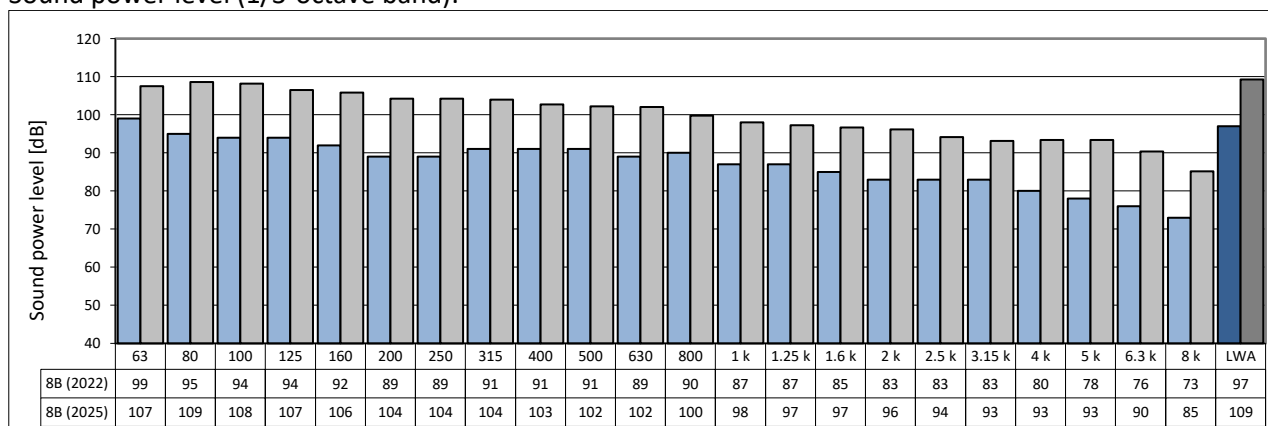
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



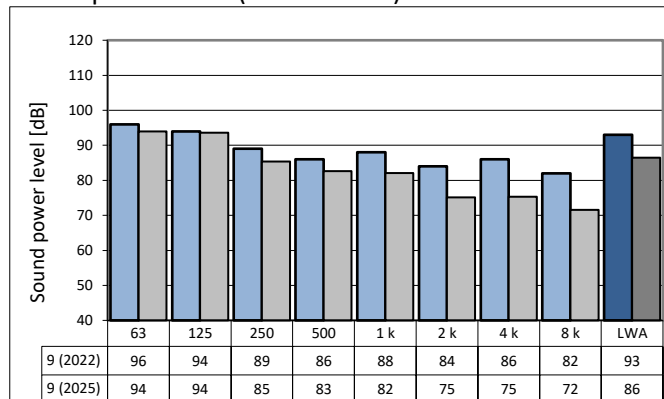
Noise source:

Number:	9
Location:	
Noise source:	Aspiration system 3
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	2 m
Directivity:	
Comments:	Operating 24 hours a day.

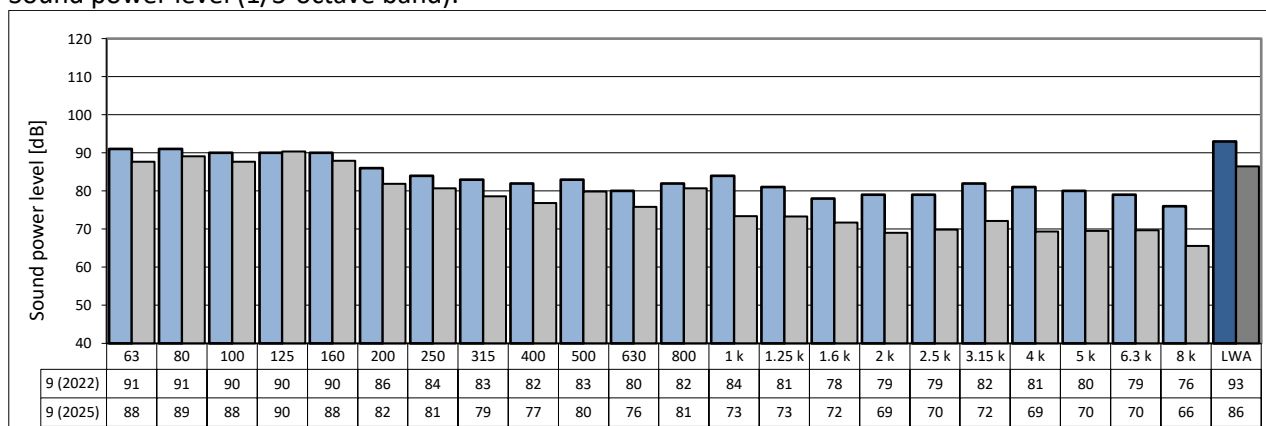
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



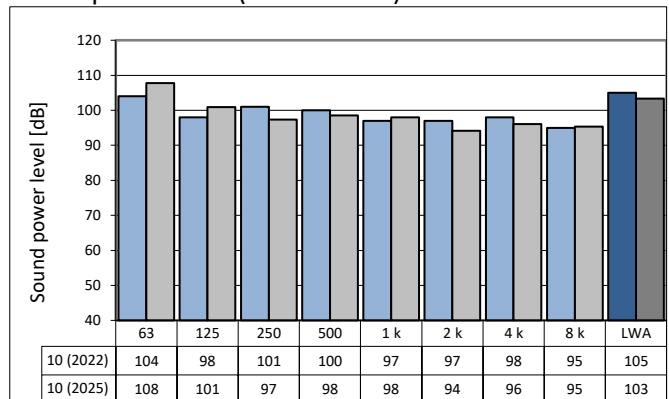
Noise source:

Number:	10
Location:	
Noise source:	Aspiration system 6
Noise description:	Static not impulsive wideband noise with rattling sounds from the pipes.
The height of the acoustic center point:	6 m
Directivity:	
Comments:	Operating 24 h a day

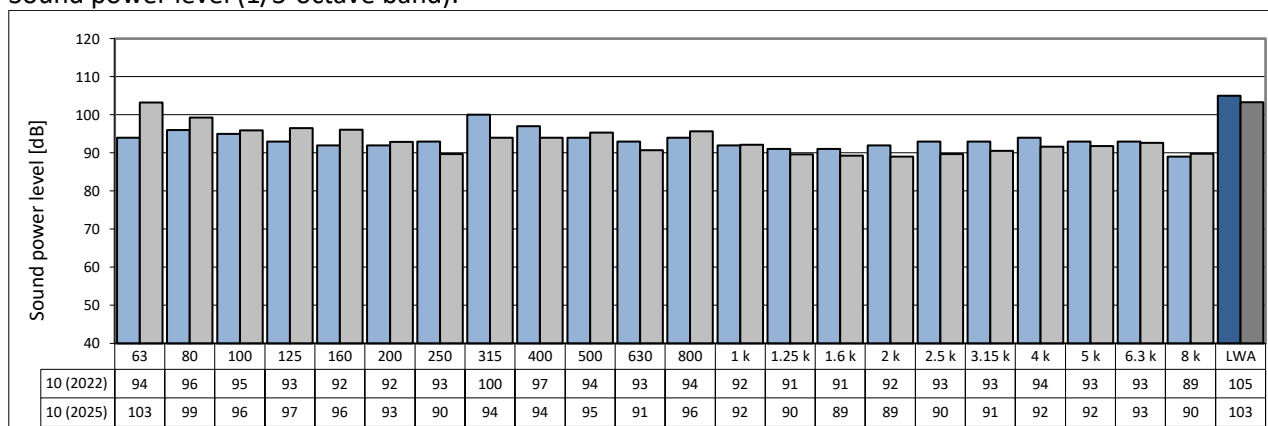
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



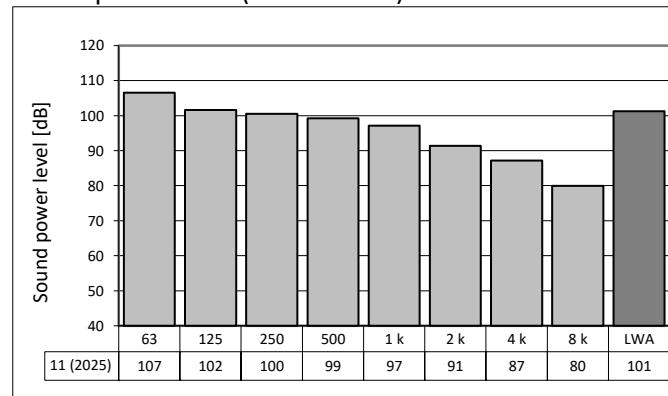
Noise source:

Number:	11
Location:	
Noise source:	Aspiration system 4
Noise description:	Static, not impulsive wideband noise from the fan.
The height of the acoustic center point:	1 m
Directivity:	
Comments:	Operating 24 hours a day.

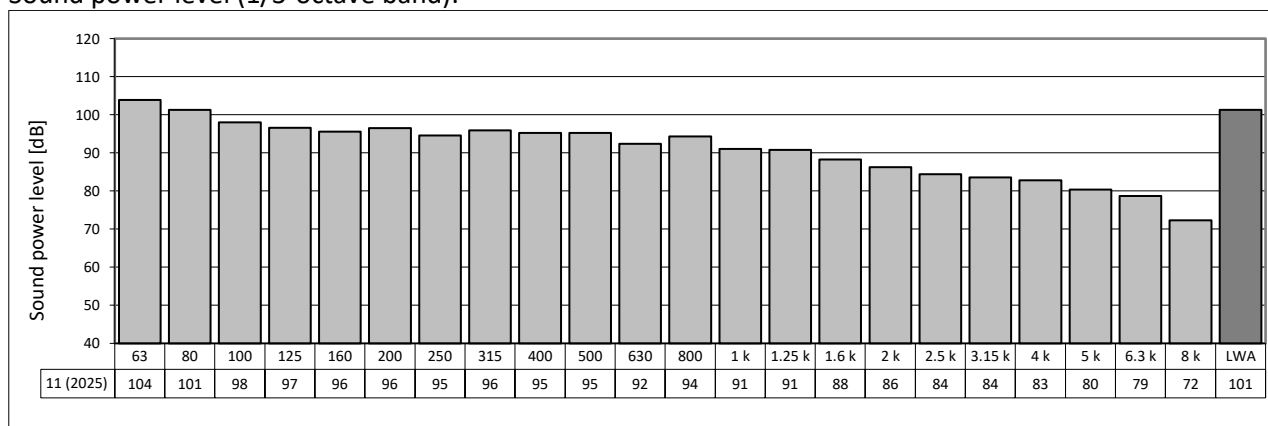
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



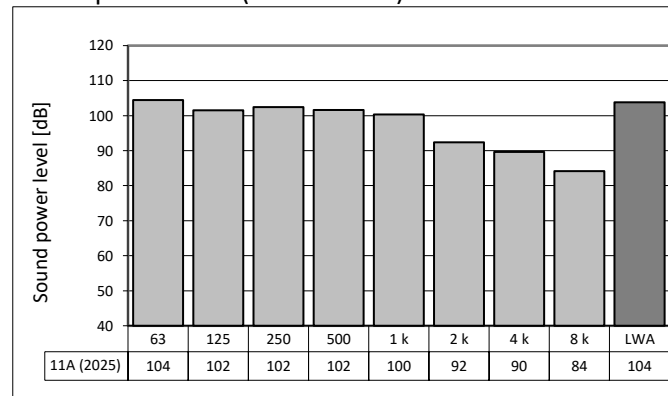
Noise source:

Number:	11A
Location:	
Noise source:	Aspiration system 5
Noise description:	Static, not impulsive wideband noise.
The height of the acoustic center point:	3 m
Directivity:	
Comments:	Operating 24 hours a day.

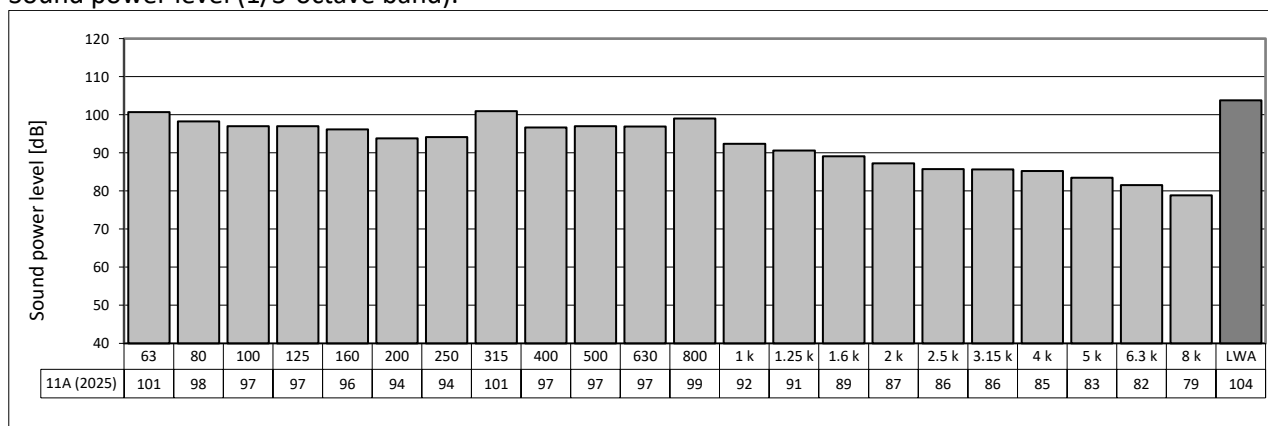
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



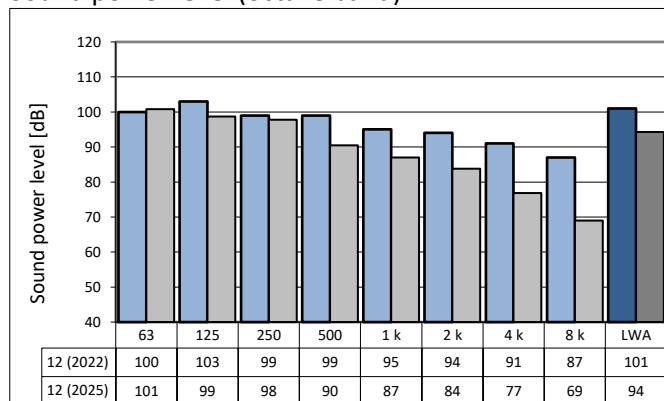
Noise source:

Number:	12
Location:	
Noise source:	Fan
Noise description:	Static not impulsive wideband noise from the fan.
The height of the acoustic center point:	1 m
Directivity:	
Sound reduction:	Noise insulation. Sound power level has decreased 7 dB(A).
Comments:	Operating 24 hours a day.

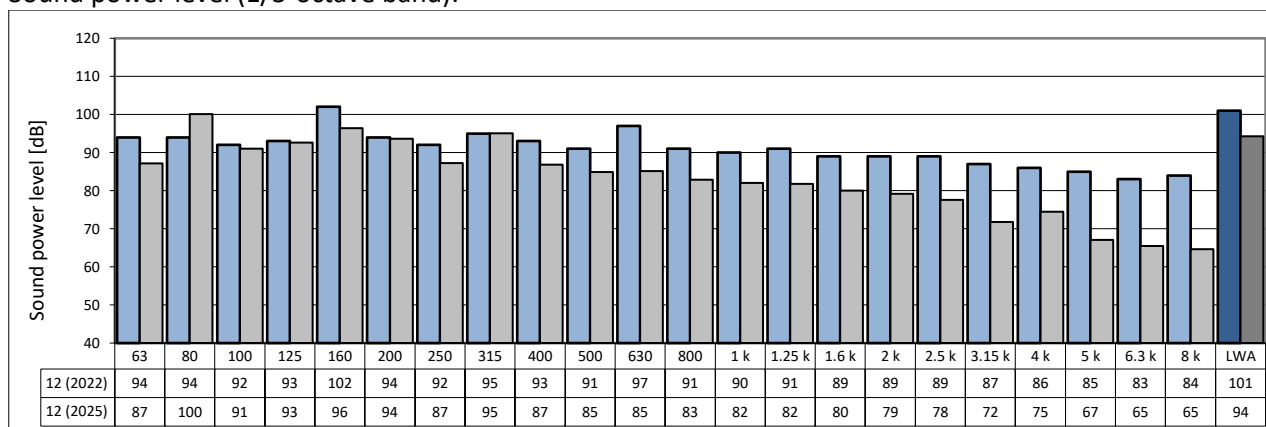
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



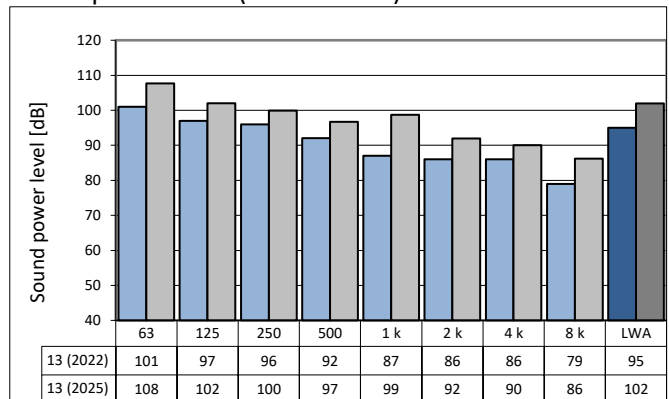
Noise source:

Number:	13
Location:	
Noise source:	Sanding line ventilator / blower
Noise description:	Static not impulsive wideband noise from the fan.
The height of the acoustic center point:	4 m
Directivity:	
Comments:	Operating 24 hours a day.

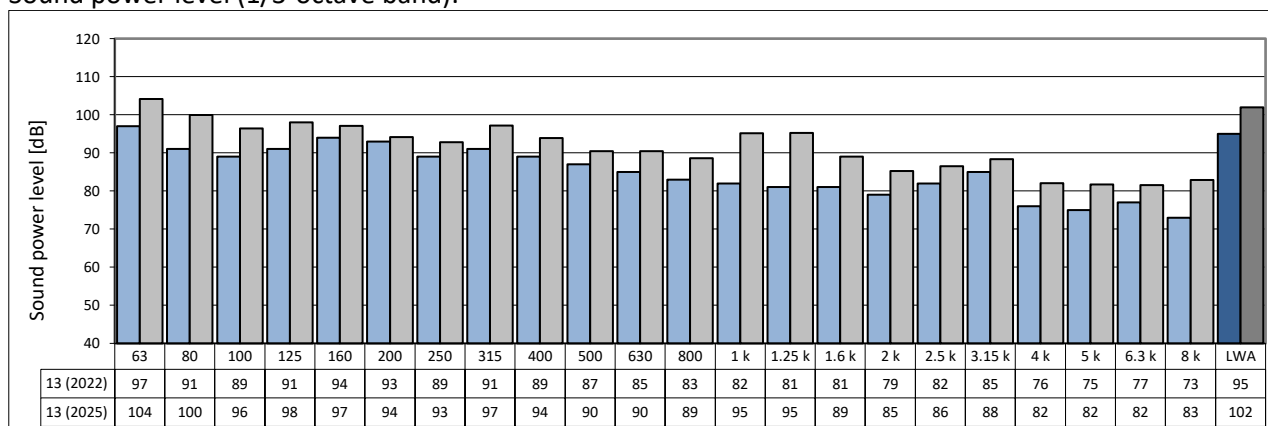
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



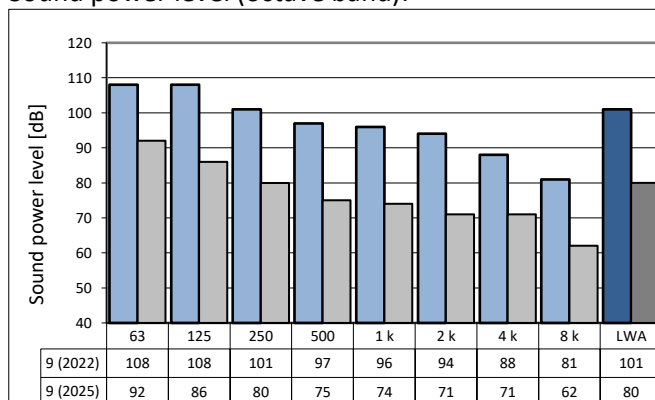
Noise source:

Number:	14
Location:	
Noise source:	Log infeed table
Noise description:	Very quiet because of the noise barriers. The new feeding table is also quieter than the one previously in use.
The height of the acoustic center point:	5 m
Directivity:	
Sound reduction:	New infeed table and noise barriers.
Comments:	<p>2022: The sound power level was 101 dB(A). Impulsive noise.</p> <p>2025: The sound power level is less than 80 dB(A). Determining the exact value is impossible due to background noise. Noise in the environment is not impulsive.</p> <p>The noise level has decreased by more than 20 dB(A).</p> <p>Operating hours 24 hours per day.</p> <p>In the diagrams, the sound power level (result of the year 2025) is set to 80 dB(A).</p>

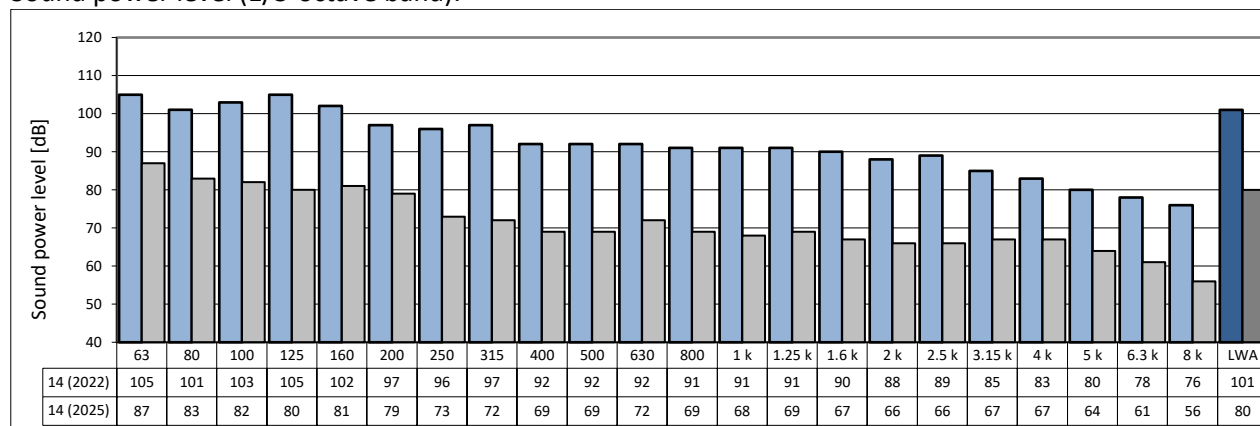
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



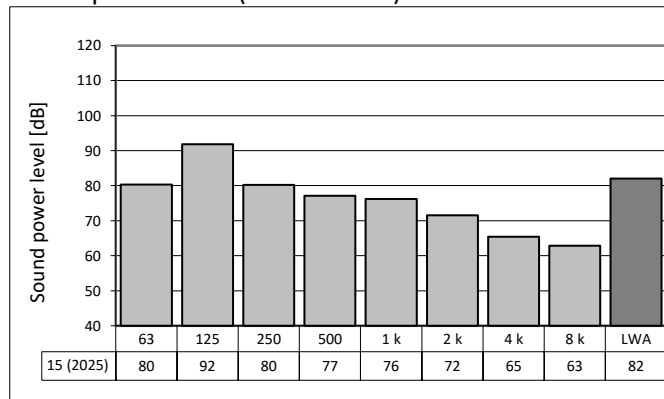
Noise source:

Number:	15
Location:	
Noise source:	Fan
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	2 m
Directivity:	To the west
Comments:	Operating 24 hours per day.

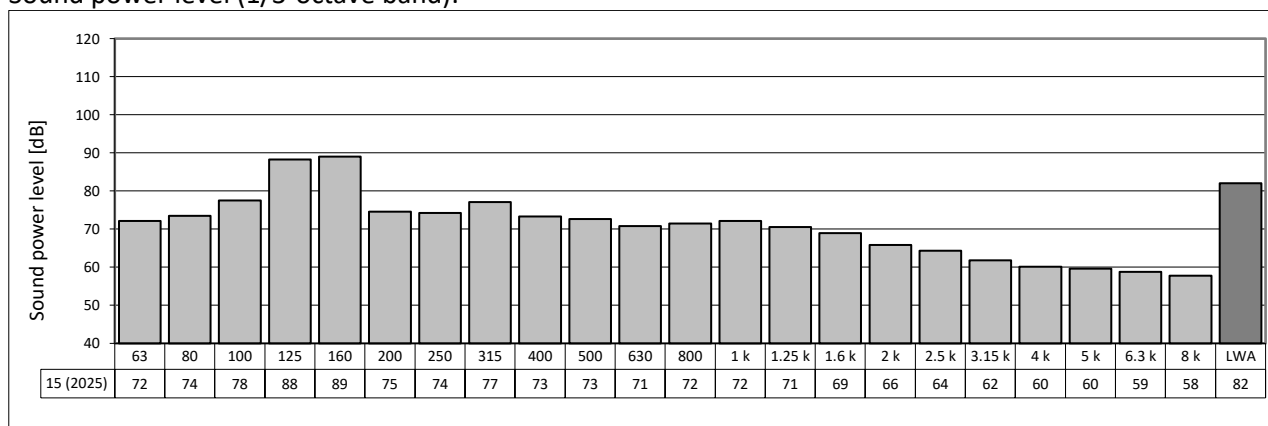
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



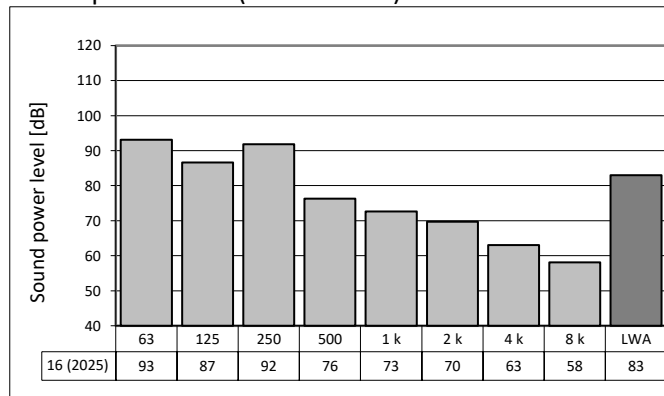
Noise source:

Number:	16
Location:	
Noise source:	Compressed-air station
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	3 m
Directivity:	To the west
Comments:	Operating 24 hours per day.

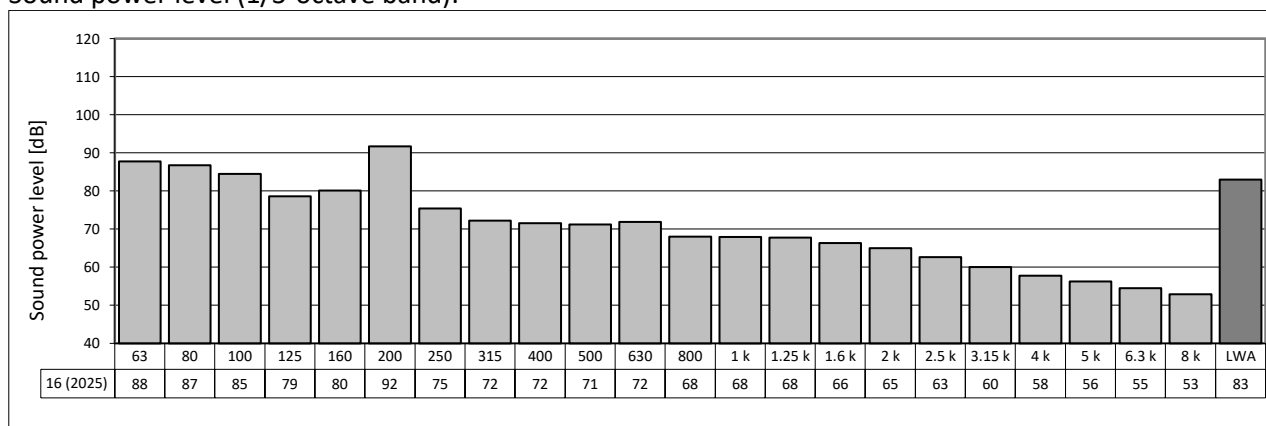
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



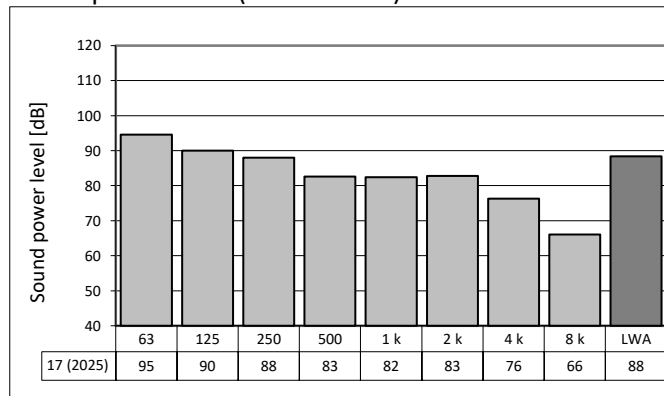
Noise source:

Number:	17
Location:	
Noise source:	Four large, angled ventilation outlets
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	2 m
Directivity:	To the northeast and west
Comments:	Operating 24 hours per day.

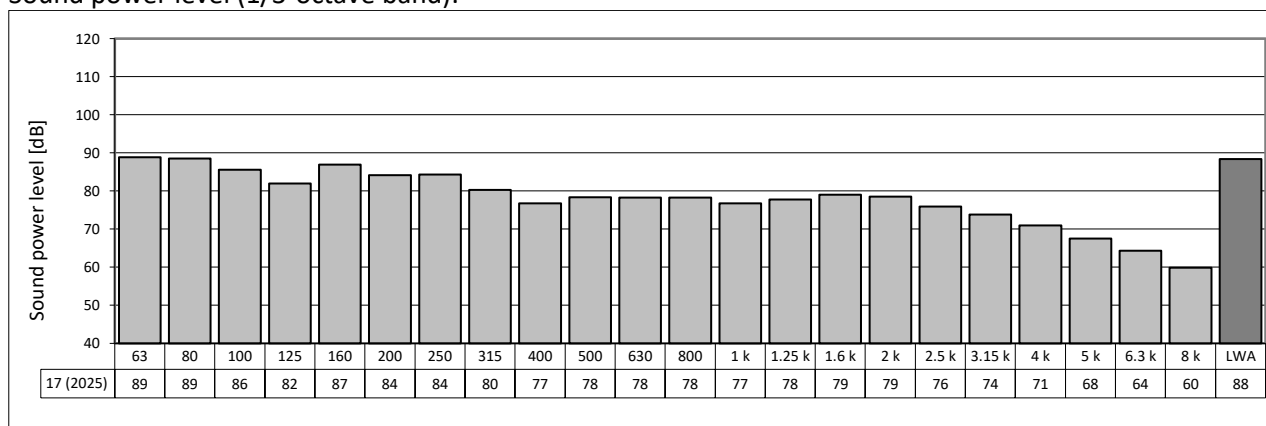
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



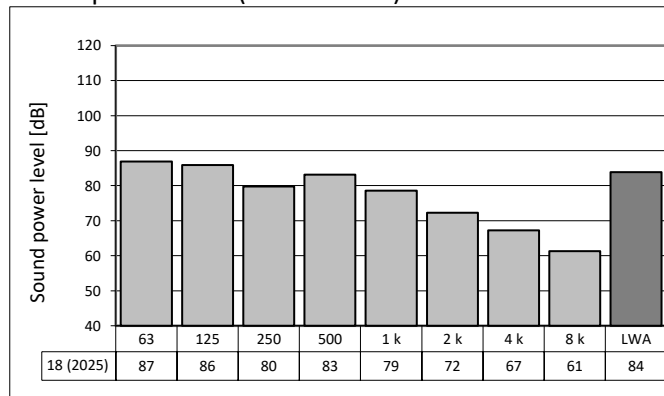
Noise source:

Number:	18
Location:	
Noise source:	Fan
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	1 m
Directivity:	To the east
Comments:	Operating 24 hours per day.

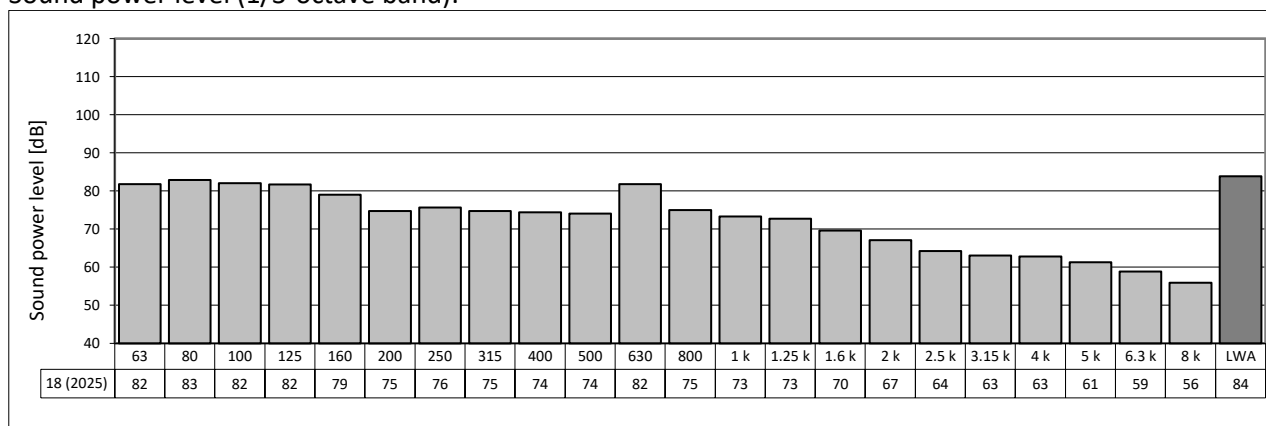
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



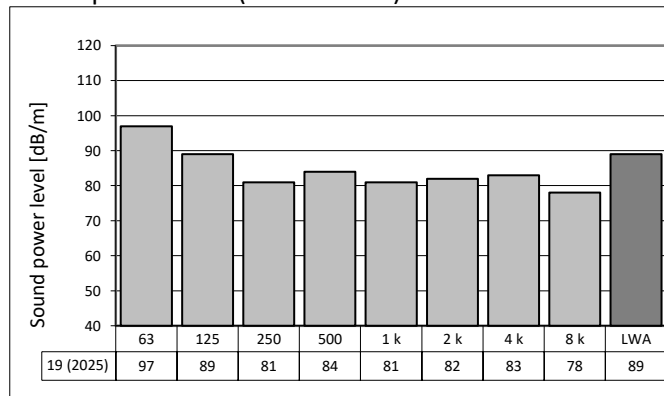
Noise source:

Number:	19
Location:	
Noise source:	Woodchip pipeline
Noise description:	Not impulsive wideband noise coming from material running through the pipeline.
The height of the acoustic center point:	1 m
Directivity:	
Comments:	The length of the pipeline is approximately 50 meters. Operating 24 hours per day.

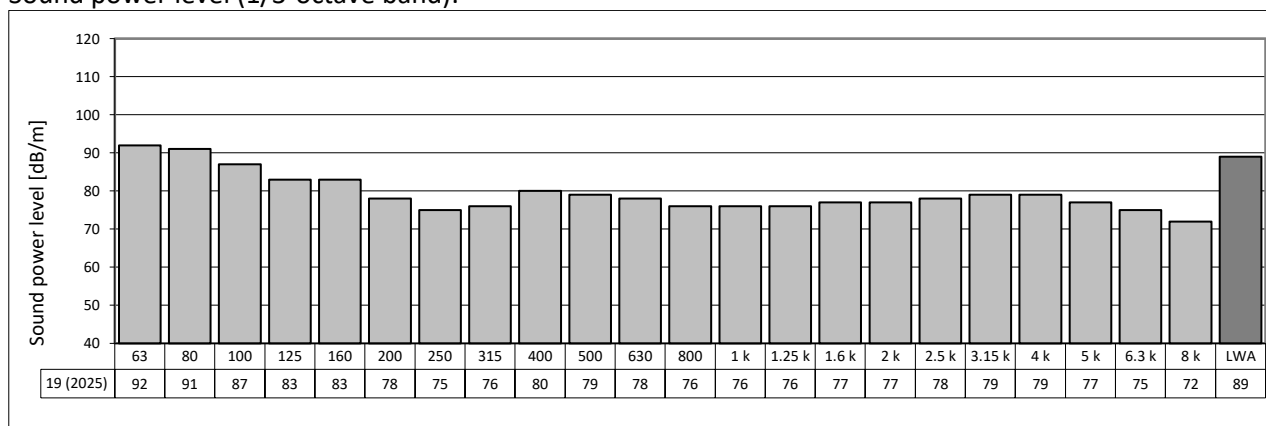
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



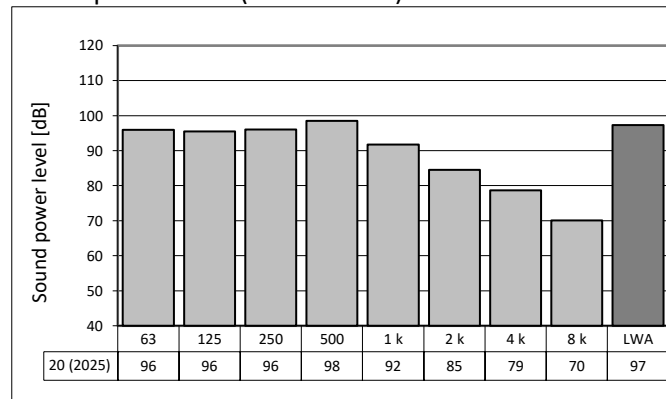
Noise source:

Number:	20
Location:	
Noise source:	Two ventilation outlets
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	1,5 m
Directivity:	
Comments:	Operating 24 hours per day.

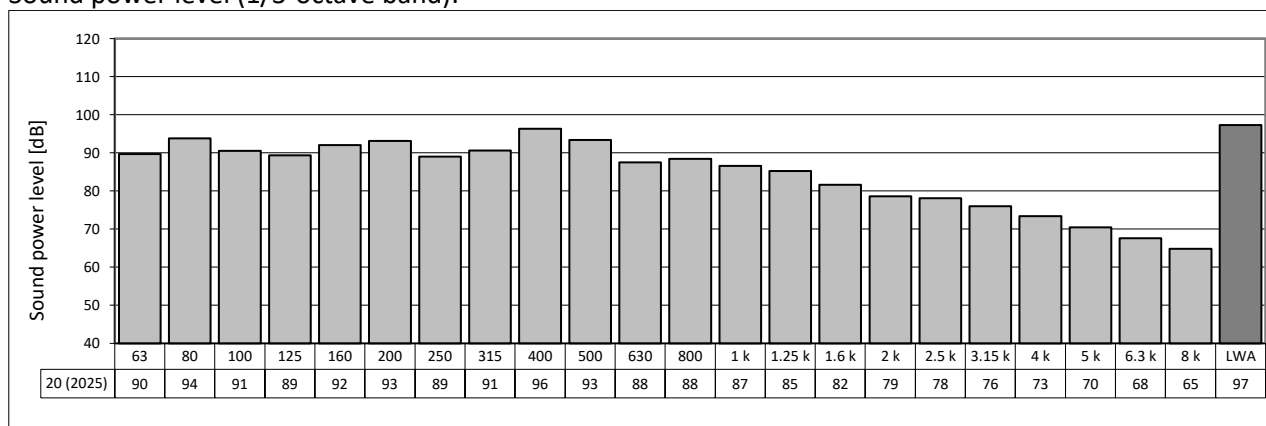
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



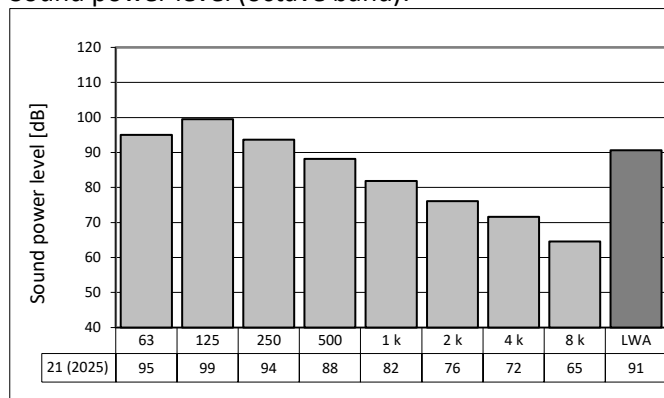
Noise source:

Number:	21
Location:	
Noise source:	Two angled ventilation outlets
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	1 m
Directivity:	To the east (to the south and north -7 dB(A) and to the west -10 dB(A)).
Comments:	Operating 24 hours per day.

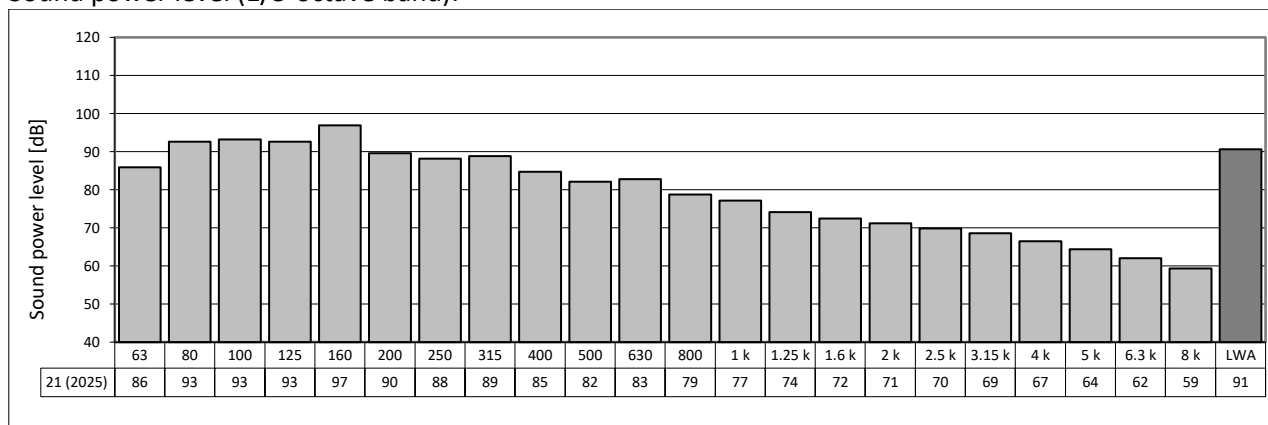
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



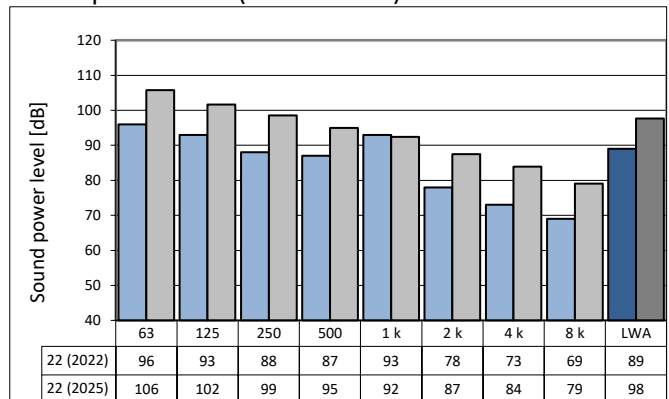
Noise source:

Number:	22
Location:	
Noise source:	Cooler (a radiator and a fan)
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	2 m
Directivity:	
Comments:	Operating 24 hours per day.

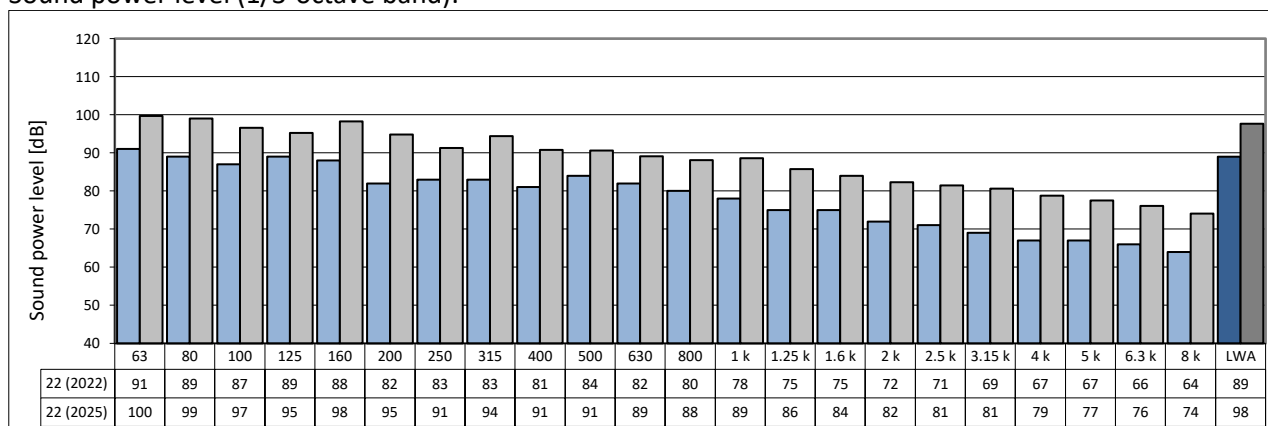
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



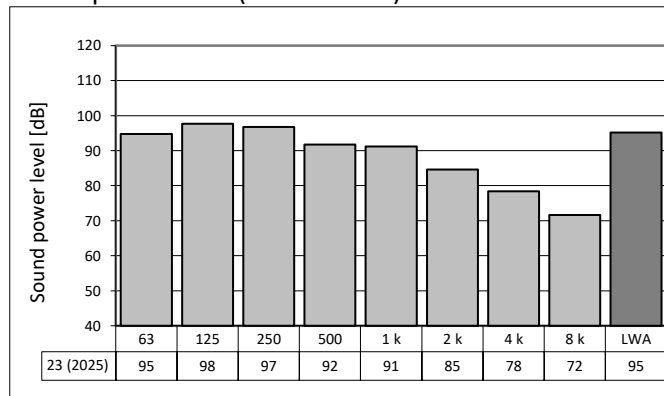
Noise source:

Number:	23
Location:	
Noise source:	Cooler (saag 1 jahutus)
Noise description:	Static not impulsive wideband noise coming from the fan.
The height of the acoustic center point:	1 m
Directivity:	To the west (to the north, east and south -5 dB(A)).
Comments:	Operating 24 hours per day.

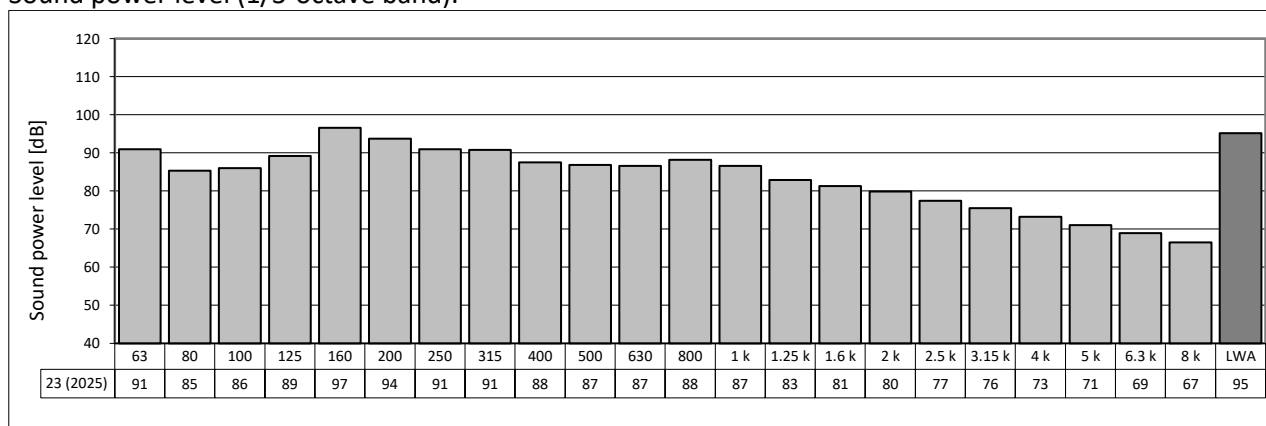
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



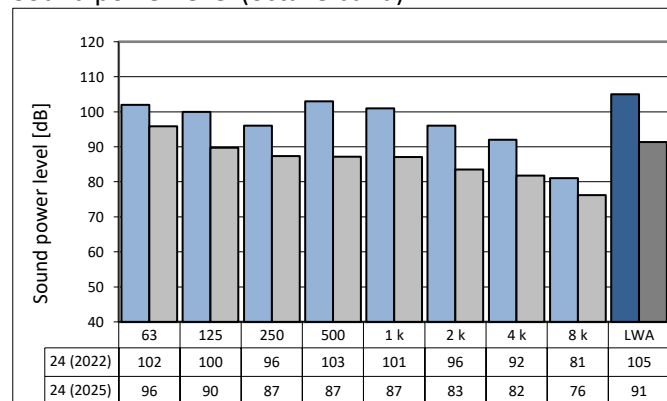
Noise source:

Number:	24
Location:	
Noise source:	Fan
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	1 m
Directivity:	To the west (to the north, east and south -3 dB(A)).
Sound reduction:	Muffler has been installed. The sound power level has decreased 11 dB(A).
Comments:	Operating hours daytime 8 h and nighttime 4 h.

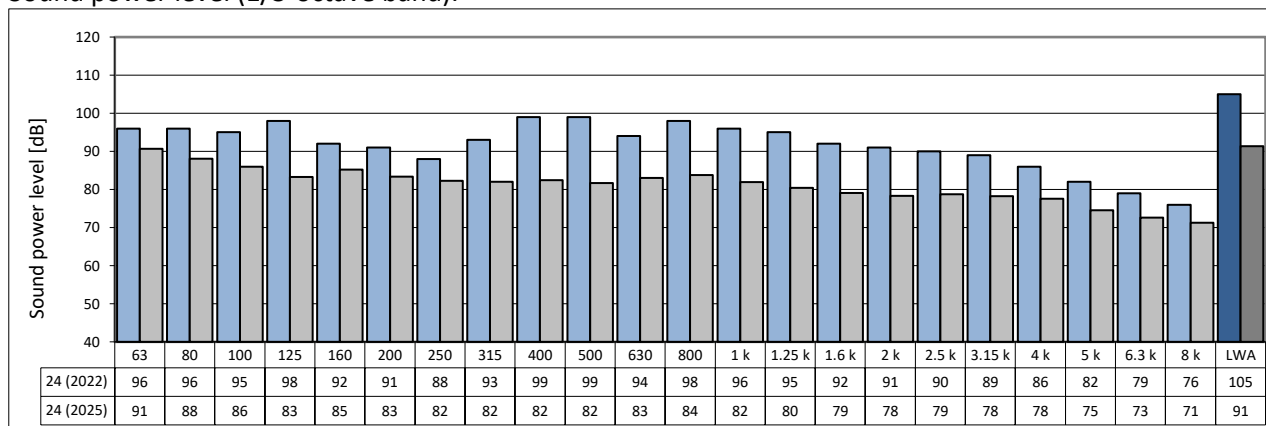
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



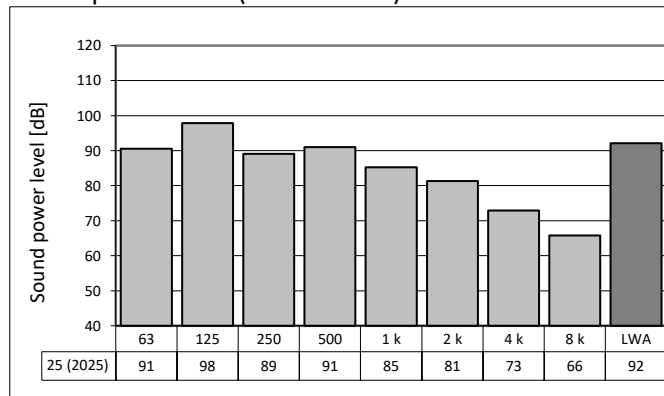
Noise source:

Number:	25
Location:	
Noise source:	Fan
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	1 m
Directivity:	
Comments:	Operating 24 hours per day.

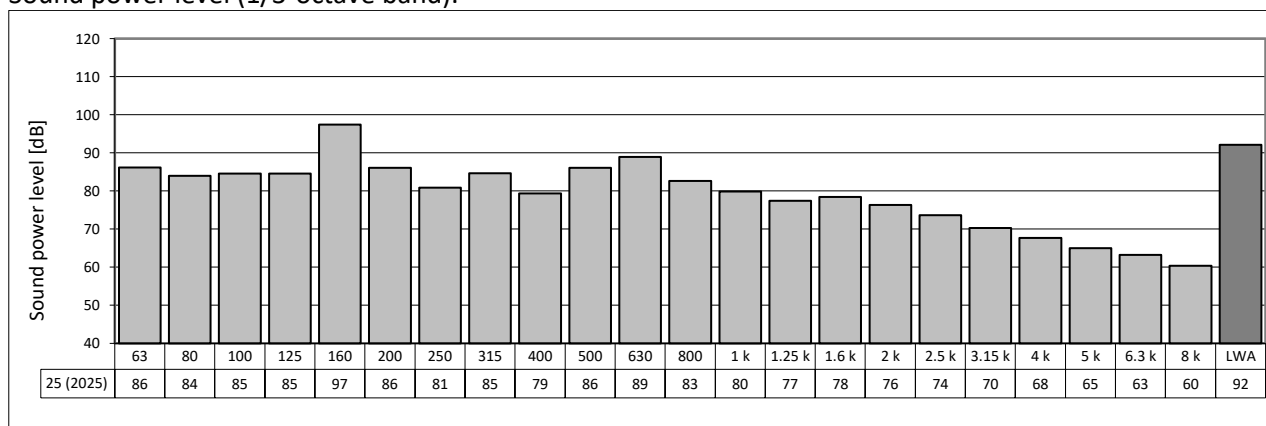
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



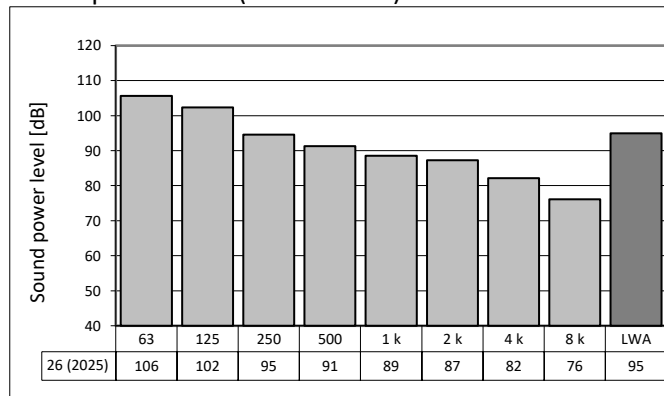
Noise source:

Number:	26
Location:	
Noise source:	Cooler
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	1 m
Directivity:	To the south (to the west and east -5 dB(A)).
Comments:	Operating 24 hours per day.

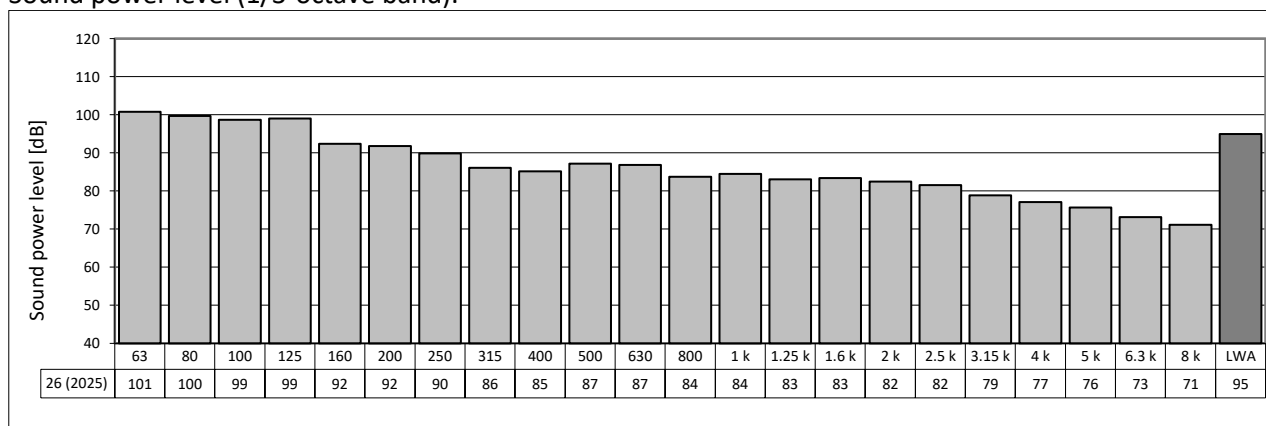
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



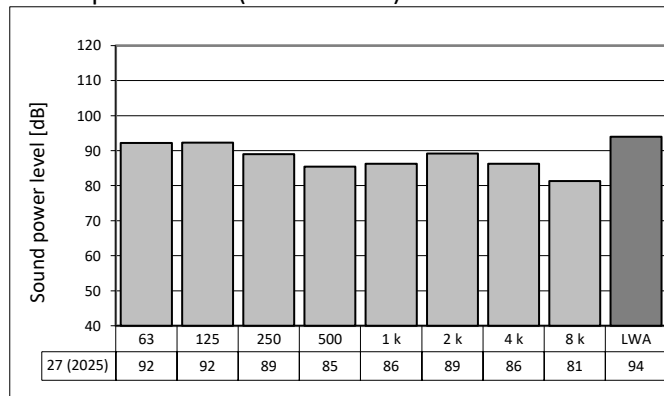
Noise source:

Number:	27
Location:	
Noise source:	Fan
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	3 m
Directivity:	
Comments:	Operating 24 hours per day.

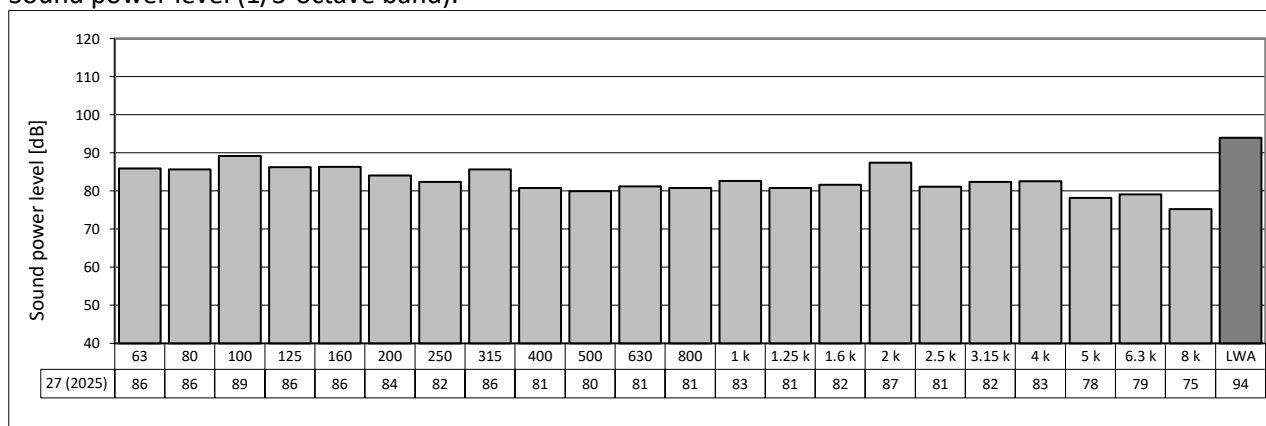
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



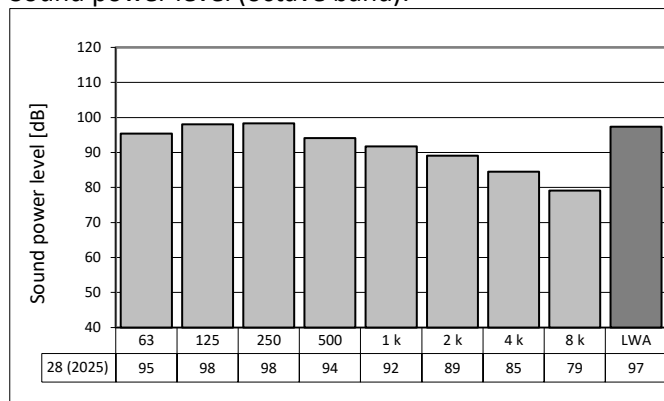
Noise source:

Number:	28
Location:	
Noise source:	Fan
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	1 m
Directivity:	To the south (to the east and west -5 dB(A) and to the north -8 dB(A)).
Comments:	Operating 24 hours per day.

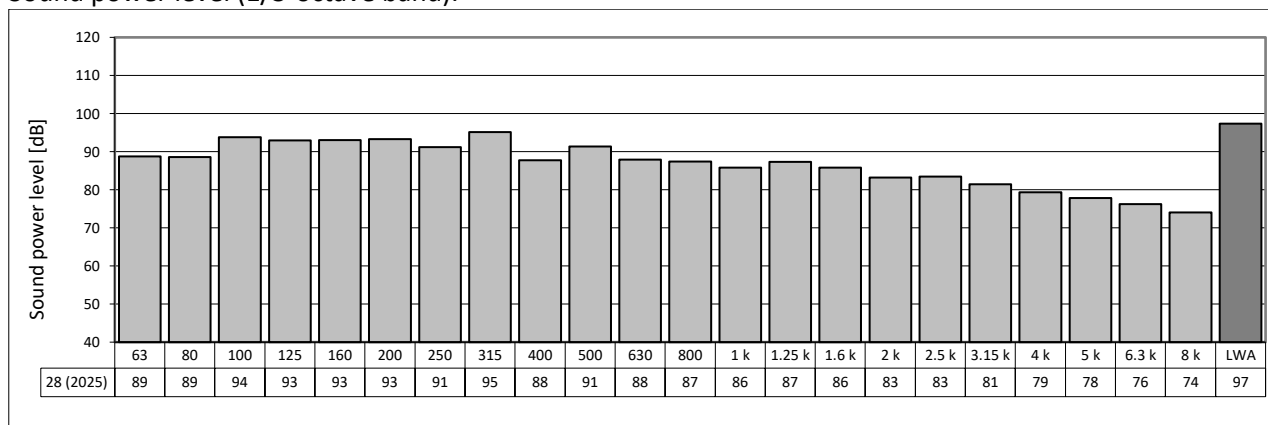
Photo of the noise source:



Sound power level (octave band):



Sound power level (1/3-octave band):



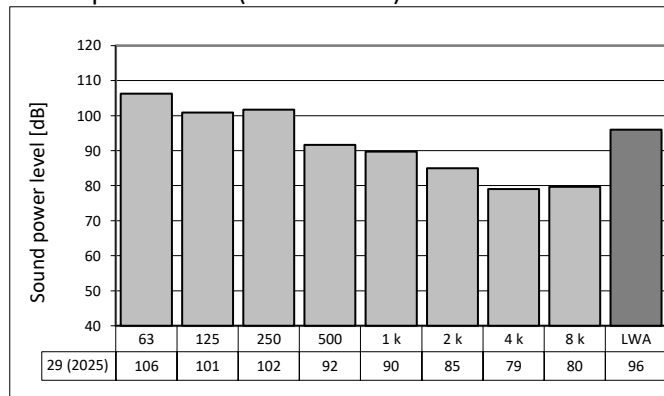
Noise source:

Number:	29
Location:	
Noise source:	Crusher inside the building
Noise description:	Static not impulsive wideband noise.
The height of the acoustic center point:	2 m
Directivity:	To the east.
Comments:	Operating 24 hours per day. Produces noise approximately 50 % of its operating hours (480 min).

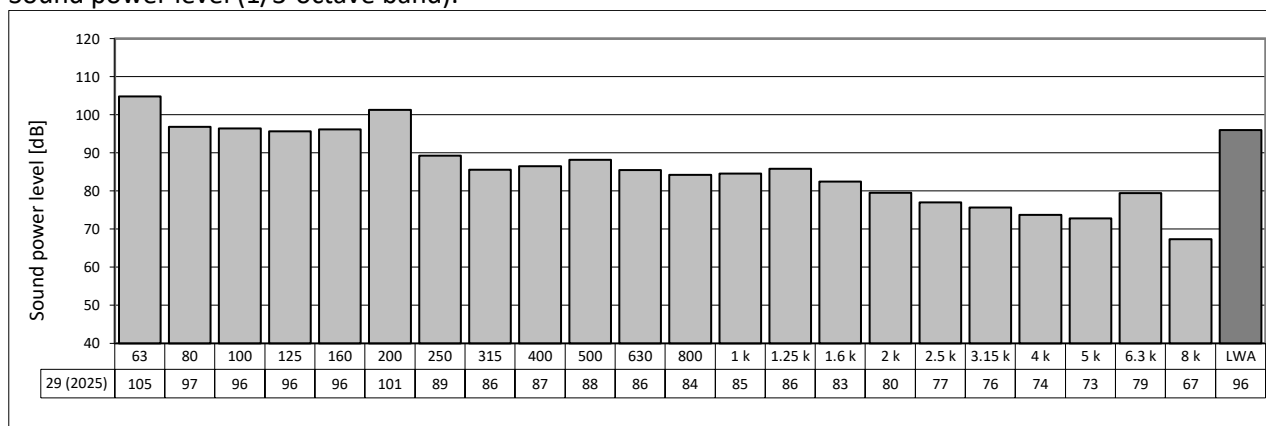
Photo of the noise source:

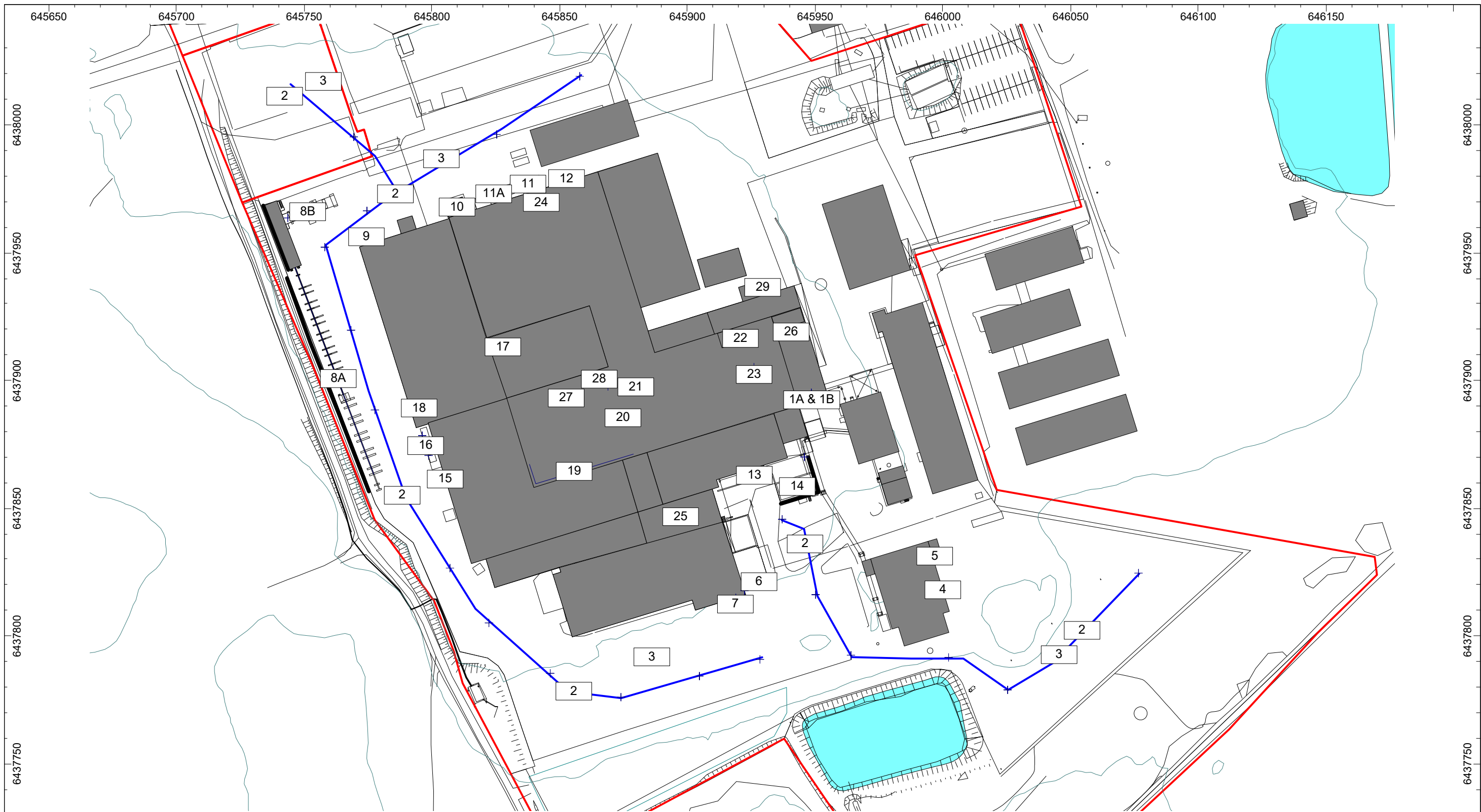


Sound power level (octave band):

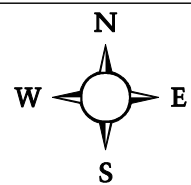


Sound power level (1/3-octave band):





Appendix
4



PR4425-Y05

Scale
1:1500 (A3)

Environmental noise study.
UPM-Kymmene Otepää OÜ Plywood Mill, Otepää.
Location of the noise sources.

9.4.2025

PROMETHOR