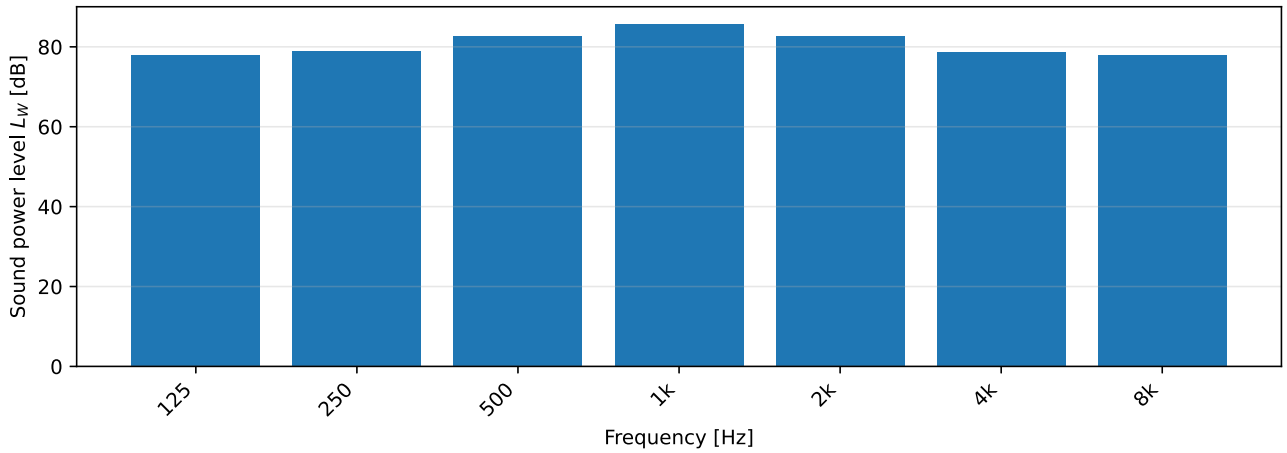
Sound power determination

Determination of the sound power level from sound pressure over an enveloping measurement surface in an anechoic or hemi-anechoic room (ISO 3745:2012, precision method, accuracy grade 1).

Client:	Example manufacturing plant	Noise source:	Mid-frequency-peaked machine (guide example)
Test environment:	Qualified anechoic room, 40-position hemisphere array	Date of test:	2026-08-05

Octave-band sound power levels

f [Hz]	L_p [dB]	L_W [dB]
125	70.1	78.0
250	71.2	79.0
500	74.7	82.6
1000	77.9	85.8
2000	74.7	82.6
4000	70.9	78.7
8000	70.1	78.0



Sound power level L_{WA} = 89.3 dB(A) re 1 pW

Total L_W = 90.1 dB re 1 pW
Expanded uncertainty U = 4.1 dB
Measurement surface S = 6.28 m²

$L_W = L_p + 10\ \lg(S/S_0) + C1 + C2 + C3$, $S_0 = 1$ m² (ISO 3745:2012 Eq. 14/15). Applied meteorological corrections C1 = –0.13 dB, C2 = 0.00 dB, C3 = 0.0 dB.

The A-weighted sound power level L_{WA} combines the band levels with the A-weighting band corrections of ISO 3745:2012 Annex C (Eq. C.1). Levels are referenced to the reference sound power 1 pW.

Laboratory: Phonometry reference example
Report no.: EXAMPLE-3745
Date: 2026-08-05
Notes: Precision grade: Annex E hemisphere array at r = 1 m, meteorological corrections at the 23 C / 101.325 kPa reference, expanded uncertainty from the Clause 10.5 example.
Operator: phonometry Signature: _____

■ The results relate only to the tested specimen.