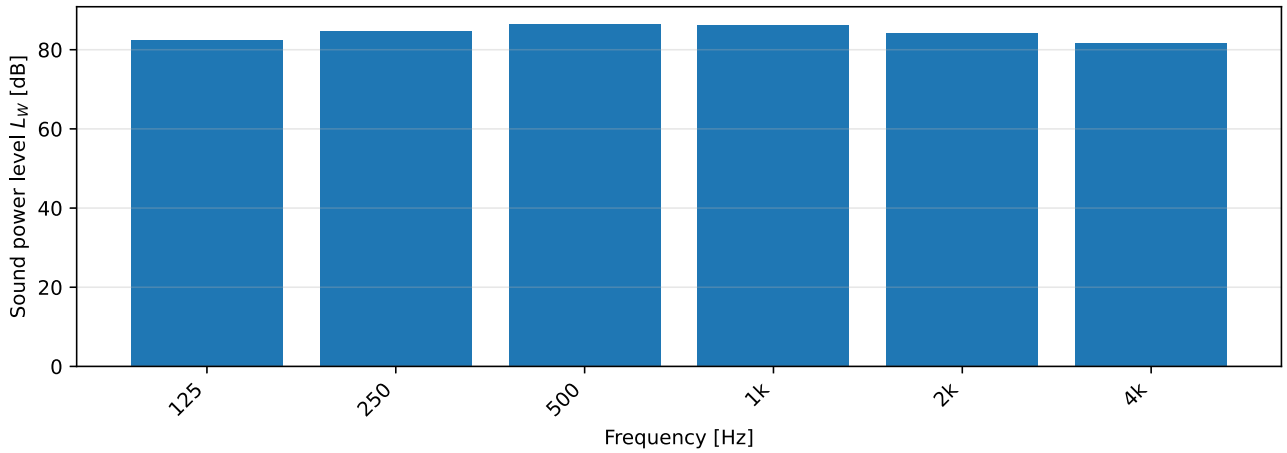
Sound power determination

Determination of the sound power level from the normal sound intensity scanned over a surface enclosing the source (ISO 9614-2:1996, engineering grade (accuracy grade 2)).

Client:	Example manufacturing plant	Noise source:	Hydraulic power pack (floor-standing)
Test environment:	Machine hall with steady background noise	Instrumentation:	Class 1 p-p intensity probe (IEC 61043), s/n 0042
Temperature [°C]:	21	Relative humidity [%]:	45
Ambient pressure [kPa]:	101.1	Date of test:	2026-07-21

Octave-band sound power levels

f [Hz]	L_W [dB]
125	82.6
250	84.8
500	86.5
1000	86.2
2000	84.3
4000	81.8



Sound power level L_{WA} = **90.9 dB(A)** re 1 pW

Total L_W = 92.5 dB re 1 pW
Measurement surface S = 3.00 m^2
Determination grade: engineering grade (accuracy grade 2)

Result vs requirement: L_{WA} = 90.9 dB(A), declared limit ≤ 93.0 dB(A) → **PASS**

$L_W = 10\ \lg(P/P_0)$, with the total power P the sum of the segment partial powers $P_i = I_{n,i}\ S_i$, P_0 = 1 pW (ISO 9614-2:1996 Eq. 6/12/13). Surface pressure-intensity indicator F_{pI} = –1.8 to 3.0 dB, negative-partial-power indicator $F_{+/-}$ = 0.0 dB, dynamic capability L_d = 5.0 dB (bias factor K = 10 dB).

A band reaches engineering grade when $L_d > F_{pI}$, $F_{+/-} \le 3$ dB and the two sweeps repeat within the ISO 9614-2:1996 Table 2 limit s per segment; survey grade drops the $F_{+/-}$ criterion (Annex B). The A-weighted L_{WA} sums the determinable bands only: a band with net power P ≤ 0 is not determinable (clause 9.2), and a band failing criterion 1 and/or 2 is omitted (clause 10.6 b). Levels are referenced to the reference sound power 1 pW.

Laboratory: Phonometry reference example
Report no.: EXAMPLE-9614
Date: 2026-07-21
Notes: Intensity-scanning method over a box surface (ISO 9614-2:1996, engineering grade 2).
Operator: phonometry Signature: _____

■ The results relate only to the tested specimen.

Generated by phonometry.