

As a simple example, an electric motor is modelled by a point source. This source description is based on the SET-module "E-Motor Standard 50Hz/3000rpm" the sound emission of which is generated from the motor's electric power P in kiloWatts (kW). The emitted sound power level calculates from the formula:

$$PWL = 68.5 + s + 11.5 \cdot \lg(P) \text{ in dB(A)} \tag{1}$$

where s is the spectral correction:

f (Hz)	31.5	63	125	250	500	1000	2000	4000	8000
s (dB)	-49.7	-37.7	-21.7	-11.7	-6.7	-4.7	-5.7	-10.7	-16.7

The resulting A-weighted PWL-spectrum for an electric motor of 30 kW electric power is:

f (Hz)	31.5	63	125	250	500	1000	2000	4000	8000
PWL (dBA)	35.8	47.8	63.8	73.8	78.8	80.8	79.8	74.8	68.8

which is displayed on the points source's data (Figure 2).

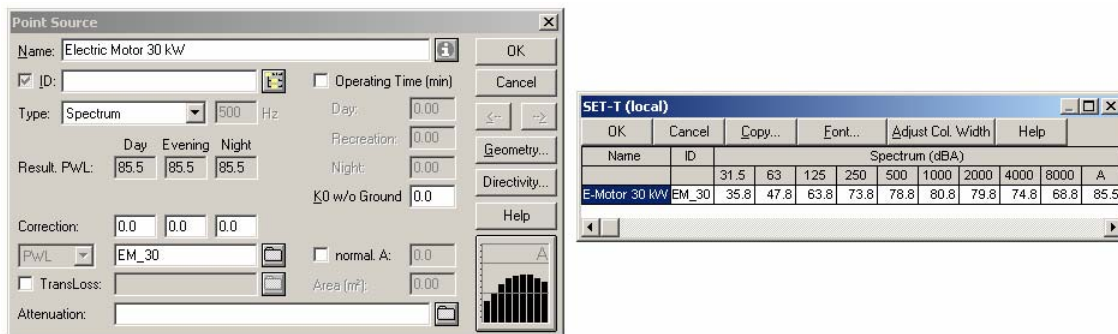


Figure 2 - Emission spectrum PWL in dB(A) of an electric motor.

This structure can also be applied to model even more complex systems (i.e. a sequence of SET-modules), where the sound power is generated, partly radiated and partly transmitted to other parts of the system. An example is a hose filter used for exhaust gas cleaning where noise is generated by motor and fan, as well as by the stack, the filter casing, and a pressure release valve (Figure 3). The emission of all sub-sources is calculated automatically from the relevant parameter, here from the volume flow in cubicmeter per hour.