

INTERNATIONAL STANDARD

ISO
6190

First edition
1988-12-15



INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Acoustics — Measurement of sound pressure levels of gas turbine installations for evaluating environmental noise — Survey method

*Acoustique — Mesurage des niveaux de pression acoustique dus aux installations à turbine
à gaz pour l'évaluation du bruit dans l'environnement — Méthode de contrôle*

Reference number
ISO 6190:1988 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6190 was prepared by Technical Committee ISO/TC 43, *Acoustics*.

Acoustics — Measurement of sound pressure levels of gas turbine installations for evaluating environmental noise — Survey method

1 Scope and field of application

1.1 Scope

This International Standard specifies a survey method for measuring sound pressure levels of a complete gas turbine installation at specified locations around the installation for the purpose of evaluating environmental noise.

It also outlines descriptions of factors influencing sound pressure levels around such an installation, which should be taken into consideration when specifications are being drawn up.

NOTE — It is not the purpose of this International Standard to give recommendations for the method of calculation of the sound power level of a complete installation. The determination of sound power levels for individual noise sources will be dealt with in a future International Standard.

1.2 Field of application

1.2.1 The method is applicable to land-based stationary installations powered by gas turbines in single or multiple arrangements.

The method may be applied, but is not limited, to gas turbines driving generators, compressors or pumps. It may include associated equipment, such as load equipment and, where applicable, waste heat recovery systems. The method is not applicable when the mechanical power output from the gas turbine(s) is only a small part of the total output of the installation.

1.2.2 Gas turbines used for propulsion of vehicles are excluded from this International Standard as are gas turbines installed in vehicles to provide electrical, pneumatic or mechanical power for their own internal use.

1.2.3 This International Standard may be used as a guide for methods of measurement of sound pressure levels from the gas turbine and its associated equipment, as defined in 1.2.1, but not for the specification of those sound pressure levels.

1.2.4 This International Standard does not provide information on calculation or measurement procedures in situations where knowledge of the noise level is required at distances in excess of 200 m, since physical phenomena affecting sound

propagation are complex and variable. In such cases, the uncertainties may exceed the values described in this International Standard.

2 References

ISO 266, *Acoustics — Preferred frequencies for measurements*.

IEC Publication 225, *Octave, half-octave and third-octave band filters intended for the analysis of sounds and vibrations*.

IEC Publication 651, *Sound level meters*.

IEC Publication 804, *Integrating-averaging sound level meters*.

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 sound pressure level, L_p , in decibels: Ten times the logarithm to the base 10 of the ratio of the mean square sound pressure of a sound to the square of the reference sound pressure:

$$L_p = 10 \lg \frac{p^2}{p_0^2} \quad \dots (1)$$

where

p is the root mean square sound pressure;

p_0 is the reference sound pressure (20 μPa).

3.2 equivalent continuous sound pressure level, L_{eq} , in decibels: The mean square sound pressure level during the measurement period:

$$L_{eq} = 10 \lg \frac{1}{T} \int_0^T \frac{p^2(t)}{p_0^2} dt \quad \dots (2)$$

where

$p(t)$ is the instantaneous sound pressure;

p_0 is the reference sound pressure (20 μPa);

T is the observation time, in seconds.