Sound Emissions Reduction

Sound emissions reduction

The increasing demand of noise impact reduction (both in civil and industrial field) during the last years led MITA Technical Department to the development of several technical solutions to reduce the sound emissions of its units.

The values related to the sound emissions of all MITA cooling towers are collected and measured in accordance with ISO 3744 and EN 13487(*) standards. The measurements had been made in cooperation with an acoustical consulting firm enrolled in the “Assoacustici” register.
MITA makes use of a computer program especially developed for its cooling towers in cooperation with a company experienced in developing noise reduction solutions and software for vibro-acoustic analysis.

MITA software for the calculation of sound levels
Cooling Towers

Sound Emissions Reduction

Measured sound power level report

Collected sound emissions
The main noise sources of a cooling tower are:

- The motor-fan group
- The circulating water.

The motor-fan group produces low-frequency sound emissions that spread in the distance; while the circulating water produces high-frequency noise which can be heard above all near the towers.

MITA offers specific solutions suitable to reduce the sound emissions produced by both these noise sources.

The silenced version of MITA cooling towers are equipped with:

- Low rpm electrical motors, directly coupled with special aerodynamic profile blades impellers
- Soundproof sheathing
- Water attenuators (polypropylene panels)
- Air inlet silencers.
## Sound Emissions Reduction

<table>
<thead>
<tr>
<th>Motor-fan group</th>
<th>Low rpm electrical motors (with subsequent tip speed reduction of the blades).</th>
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<tbody>
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<td>Impellers (fans) with special blades profiles.</td>
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| Soundproof sheathing | Internal tower lining, sound proof material consisting of high density vulcanized rubber grains. |

| Water attenuators | Polypropylene panels, to deaden the noise of the falling water, fixed on a suitable hot dip galvanized frame. |

| Air inlet silencers | Air inlet silencers with soundproof material. Stainless steel frame. Silencers made of galvanized stell sheets or stainless steel; easy to remove. |
UNI EN ISO 3744 – Sound Power Level Assessment of the noise sources by means of measurements of sound pressure:

The standard requires that the unit leans on a reflecting plane surface and that the field is essentially free.
These test conditions can be easily achieved outdoor, far from walls and obstacles.

The method provides for a measurement of the sound pressure level gathered on a special given surface (grid) around the unit, in order to determine the sound power level.

UNI EN 13487 - Heat exchangers - Forced convection air cooled refrigerant condensers and dry coolers - Sound measurement - Annex C Standard method for calculating the sound pressure level.

The standard provides for the rules to calculate the average sound pressure level of the unit at a given distance.