SOUNDPROOFING SYSTEMS FOR COOLING TOWERS

Over the last years the realization of industrial and civil plants put a growing emphasis on the evaluation and restraint of the noise impact. Specifically for the cooling towers this issue is of some importance; for this reason SCAM T.P.E. developed inside its organization the ability of prediction and control of the acoustic emissions.

The experience achieved in this field led SCAM T.P.E. to apply an advanced calculation program for the acoustic impact of its cooling towers through the collaboration of companies specialized in creating solutions for the acoustical restraint.

The cooling tower is an equipment made up of an ensemble of sound sources characterized by different spectral trends set in different positions. In its acoustic analysis SCAM T.P.E. estimates three main sound sources: the impeller rotation in the fan group, the reverberation in the tower body at the same frequencies emitted by the group and the impact produced by the water on its free surface.

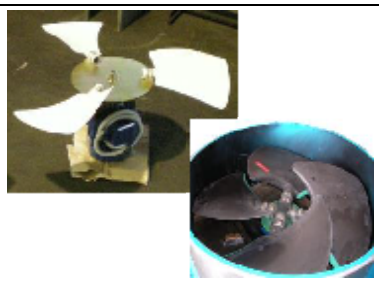
For the calculation of the result of the PWL sound power level generated (ISO 3746-3744), it is considered the sum of the volume and the tower sources; thus ensuring the sound pressure medium level (intended as the logarithmic sum of the levels in n° measurement positions on various heights) equal to the sound pressure value indicated at requested distance by the envelope of the whole reference source, then along the perimeter and in coverage (outside flow) in free field.

The acoustic impact of all cooling towers can be reduced with appropriate silencing options, by considering that the low-medium frequencies (higher for the fan group) go through long distances bypassing the obstacles, meanwhile the medium-high frequencies (engraving for the water sound) are reduced by distance and by possible barriers. Basing on specific acoustic requirements, SCAM T.P.E. is able to support customer in the technical-economic optimization of the more suitable solution according to receipt real point and to requested values, by referring to standards and regulations in use.

SCAM T.P.E. package towers are realized with a direct mechanical coupling between engine and fan with the resulting advantage of reducing noise due to transmission organs lack, and the installation of the motor inside the diffuser (apart

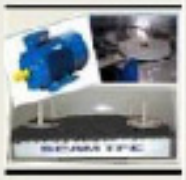
SCAM TOWERS PACKAGE EQUIPMENT S.r.l.
Corso Torino 91/C – 10090 Buttigliera Alta – TO – Italy
Phone + 39 011 9330411 - Fax + 39 011 9330412
@mail: info@scamtpe.it - Web site: www.scamtpe.it

from the indirect transmission towers version TTP/TTS). The noise reducing process can be effected in gradual steps of growing soundproofing impact:

1) LOW AND VERY LOW ACOUSTIC EMISSIONS FAN (SCAMAIR-ST or SCAMAIR-SX type) with “NACA” profile, asymmetric, twisted blades or stretched “elephant ear” profile	
2) HIGH POLARITY ENGINE in order to reduce the impeller spin rate in the fan group	
3) SCAMAT ANTI-ROAR OF WATER IN BASIN MAT with PP or PVC panels, installed on a supporting frame or floating on the water free surface	
4) INSULATOR SOUNDPROOFING WALLS (TAS version) sandwich type in polystyrene (22 mm. thick) covered by FRP or by plate, galvanized and painted with SCAMBOND/HYB cycle	
5) CIRCULAR OUTLET SILENCER SCAM/GV or SCAM/SV WITHOUT OR WITH OGIVE installed on diffuser (ask for specific technical sheet for further insights)	
6) ASPIRATION SOUNDPROOFING SEPTUMS SCAM/LVR-ST made up of soundproofing, water repellent, anti putrefaction material with a low percentage in water absorption and possible waterproofing membrane. Septums are supported by a frame in galvanized steel or in aluminum easily removable	

7) VDI SYSTEM inverter with integrated management software to be positioned on tower board and/or in remote location (it is supplied already wired without extra costs for additional control panels) in order to control the impeller speed in the fan vis-à-vis the temperature of the water coming out of the tower. In this way you can take advantage of wet bulb temperature variation during the normal seasonal cycle and in day/night cycle.	

In order to optimize these solutions SCAM T.P.E. provided to prepare some soundproofing packages as described here below:

Version		Soundproofing packages components
LN		**Silenced version with high polarity motor and low acoustic emissions fan (with VDI version it is used standard engine)**
SLN		**LN silenced version + SCAMAT fall attenuators in basin**
SSLN1		**SLN super silenced version + expulsion circular silencers**
SSLN2		**SSLN1 super silenced version+aspiration septums silencers (NO SCAMAT)**
VDI		**Option inverter parameterized and wired on tower board or in remote position IP66 with isolator**