

White Paper

ASCS Ambient Sound Control System

for
Legal Recording purposes

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1. Objective

Safety is the most important parameter in Air Traffic environment.

Systems and measures providing safety can be defined in 3 groups:

- a) Training and education
- b) Systems and measures that prevent accidents to happen
- c) Systems that contribute to reconstruct the critical situations in order to identify what actually happened and to provide clues on what must be improved in order to avoid such critical situations in the future

To the last mentioned group belong Legal Recording systems that today are mandatory for recording and storing of voice communication and radar data.

Lately, new elements such as the “at the glass” recording of video from the displays/screens at each CWP (Controller Working Position) and of the Ambient (background) Sound are finding their way of implementation as highly valuable complements to the today’s mandatory Legal Recording of voice communication and radar data.

The recording of Ambient Sound is filling the “gaps” on situation and decision making prior to an officially recorded conversation over radio or telephone.

Therefore, the recording of Ambient Sound is an important element in the reconstruction of an event.

From ICAO Annex 11:

3.3.3 Recommendation.

Air traffic control units should be equipped with devices that record background communication and the aural environment at air traffic controller work stations, capable of retaining the information recorded during at least the last twenty-four hours of operation. Note.— Provisions related to the non-disclosure of recordings and transcripts of recordings from air traffic control units are contained in Annex 13, 5.12.

2. Design requirements

For successful result, the designer and supplier of such system must combine experience and capabilities in the fields of electro-acoustics and ATC technical and operational requirements.

The nature of the Ambient Sound Control system calls for the same degree of technical and operational requirements as the Legal Recording systems it shall be connected to.

2.1 Design elements

- Selection of best location for each group of microphones covering a pre-defined area. This electro-acoustical design shall be done on the background of site survey or at least based on detailed drawings of the spaces to be covered by microphones. An active co-operation with the user will secure optimal electro-acoustical and esthetical results.
- Selection of appropriate microphone types for the chosen locations
- Automatic processing of audio signal from each logical microphone group for best speech intelligibility
- Noise Cancelling digital audio signal processing for increased speech clarity and reduction of unwanted background noise
- Decentralized topology of multiple audio processing units for reduced cabling and increased system availability
- Creation of logical microphone groups shall provide possibility for reduced number of audio outputs to be recorded and consequently of the required number of new tracks in the Legal Recording system the Ambient Sound Control system will be connected to, while maintaining the logical identification of the audio sources and optimal speech intelligibility delivered at the Legal Recording system. Alternatively, the system may still allow each microphone to have own audio output, although this will not take full advantage of such system's capabilities.
- Possibility for duplication of the system's topology for complete redundancy
- Complete modularity that allows changes and additions anywhere at any time
- BITE – Continuous self-testing and monitoring of the involved electronics with error messages sent via Ethernet network to Remote Control and Monitoring System.
- SNMP agent
- Password protected access to Remote Control and Monitoring System
- Possibility to send the audio from each logical microphone group processing unit as line level analogue audio signal or as VoIP via Ethernet network for remotely and/or centrally located Legal Recording equipment



3. Ambicon ASCS

- The **A**mbient **S**ound microphone **C**ontrol **S**ystem for legal recording done right.

Ambicon® ASCS is result of many years experience in the fields of electro-acoustics and ATC's voice communication and legal recording.

Ambicon® ASCS is a professional solution for ATC application developed in cooperation with ANS provider. Compared to simple microphone solutions, Ambicon® ASCS provides superior audio signal quality, background noise cancelling, BASS - Best Audio Signal Selection, redundancy, password protected remote access for set-up and maintenance, networking capabilities, SNMP agent and more.

In May 2009 the first Ambicon ASCS system has been put in full operation covering one nation's all airports and ACC/APP centres with central control for configuration and maintenance. It is including all the design elements outlined in section 2 of this document.

The Ambicon® ASCS will be publicly presented for the first time at the ATC Global 2010 show in Amsterdam in March 2010 at the stand H808 with demonstration of Ambisoft® Management and Control software and Ambinet® networking software.

Ambicon®, Ambisoft® and Ambinet® are brand names and registered trade marks of ISO 9001 certified company MediaTech Ltd, Bratislava, Slovak Republic a leading specialist in electro-acoustics and professional audio systems and solutions.



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