Field experience on measurements with the Acoustic Camera

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1. INTRODUCTION

This paper describes some field experience on the use and measurement results of the Acoustic Camera manufactured by GFaI in Germany. By the use of Acoustic Camera in measurements it is possible to differentiate the contribution from different sources. Main measurements have been done on a Wind Power plant close to a road but also some other measurements will be considered. Finally there will be given some real-time hands-on tips and practice including playback of sound-tracks.

2. Acoustic Camera

The Acoustic Camera from GFaI is based on beamforming of a conventional delay-and-sum beamformer in the time domain.

$$P(t,\vec{r}) = \frac{1}{N}\sum_{i=1}^{N} p(t - \Delta_i(\vec{r})) \quad (1)$$

3. Outdoor measurements

Outdoor measurements have been done in 10 different positions, as well as complementary sound level meter measurements. Typically 32s of data have been sampled at 48 kHz and stored onto a hard-disc, and then the signal has been post analyzed.

3.1. Acoustic Photos

Down below is a sample of an Acoustic Photo which gives the source localization within an image.

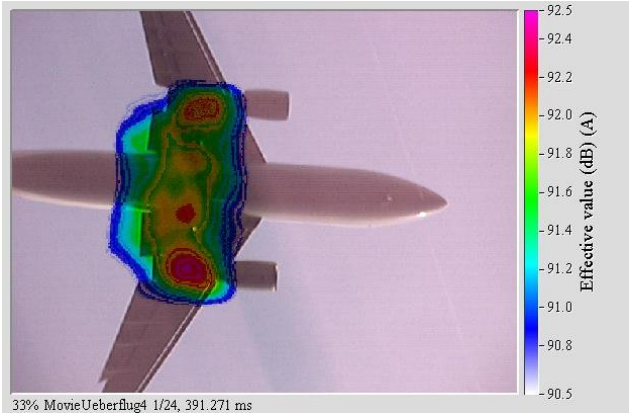

Figure 1: *Example of measurements on an aircraft.*

3.2. Acoustic Movies

If acoustic photos are stored in sequence as well as the still images are stored as a video then we will get what is called Movie-on-Movie. Samples will be played.

4. Results

Results will be compared with sound level meter measurements as well as stand alone to show the possibility to separate sources from ach other

5. CONCLUSIONS

By use of Acoustic Camera it is possible to separate sources even if it is not dominating the noise. Comparison with SLM-measurements shows good accuracy after applying correction.