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NOISE MEASUREMENT IN AN INDUSTRY

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CHRYSOSTOMOU MARINOS

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NOISE MEASUREMENT IN AN INDUSTRY

BY

CHRYSOSTOMOU MARINOS

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To my family

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ABSTRACT

The goal of this project is to take noise measurements in an industry.

The project starts with a chapter which deals generally about noise. The second chapter is about noise measurement. Two machines were tested by an appropriate instrument and the results were compared against the American Standards for noise exposure. Finally the other two chapters are the effects of noise problems to people and control of noise in industry.

All the noise results were taken according to the ISO 3746:1979 (E).

INTRODUCTION

Noise is often defined as unwanted sound. The degree of unwantedness is however a psychological question and may range from moderate annoyance to various degrees of permanent hearing loss and will, furthermore, be rated differently by different observers.

It is therefore extremely difficult to answer the question: "What is gained by reducing this particular noise?" However it is generally recognized that the overall efficiency of human beings is considerably higher when they are performing their duties under satisfying and comfortable conditions than when they are constantly being irritated or annoyed by their surroundings. Also a certain degree of environmental quietness is a desirable quality in it self. People in general do not like to live in the immediate vicinity of an airfield or roads with heavy traffic or to work with machines with heavy noise.

Most countries nowadays, have regulations for how to measure noise and what sound levels are allowable in each particular case and the user is referred to these regulations for more information. Noise reduction in machines is one of the main branches in the field of acoustics. The control of noise must be considered at all stages of the design and engineering of airports, aircraft, buildings and industrial machinery.

Persons regularly exposed to noise, can develop hearing loss of varying sevently. Due to this hearing loss their understanding of speech, perception of everyday acoustic signals or appreciation of music may be impaired. With the exception of exposure to blast, high impulse and extremely high levels of steady noise permanent impairment of the

hearing organ takes time and is progressive over months or decades of exposure.

For an individual person, it is not possible to determine precisely which changes in hearing threshold level are caused by noise and which changes are caused by other factors. So the data of the various standards, ISO, BS, DIN, American and others, might provide additional means for estimating the most probable causes in audiological diagnosis. However for a large population exposed to a specific noise, changes in the statistical distributions of hearing threshold levels can be determined.

The standards are intended to meet the need for rating noises of industrial origin, and also other forms of noise not particularly in industrial areas, with respect to their effects on persons living in the vicinity. They give tentative proposals for a method of measuring a noise, together with a set of corrections covering a commonly occurring range of environmental conditions, in order to predict whether the noise in question is likely to give rise to complaints. In general, a noise is liable to provoke complaints whenever its level exceeds by a certain margin that of the pre-existing background noise or when it attains a certain absolute level.

Therefore to be able to effectively control noise it is necessary that the noise is measured objectively according to more or less internationally standardised procedures and that the measured results are evaluated against predetermined criteria for acceptance.