

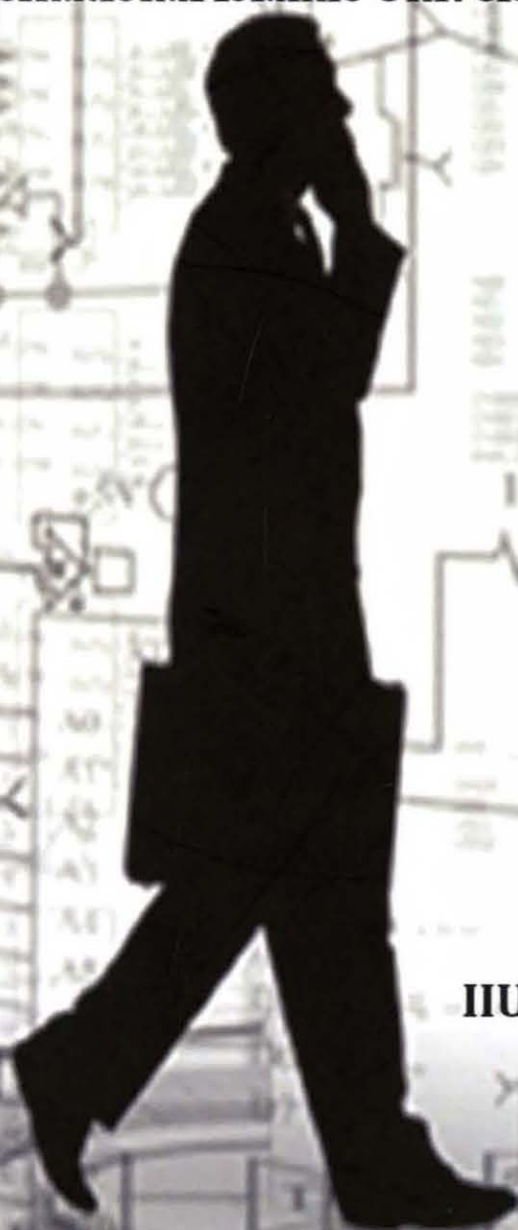
PRINCIPLES OF TRANSDUCER DEVICES AND COMPONENTS

Edited by

Sheroz Khan, International Islamic University Malaysia

Jalel Chebil, International Islamic University Malaysia

Othman O Khalifa, International Islamic University Malaysia



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Chapter 23

PERFORMANCE IMPROVEMENT OF SENSORS RESPONSE USING PIECE-WISE NON-LINEAR (PWL) A/D AND PULSE-WIDTH MODULATION (PWM) A/D TECHNIQUES

ISMAILA TIJANI, SHEROZ KHAN

23.1. INTRODUCTION

Sensor generally refers to a device that measures or detects a real world condition or parameter such as temperature, speed, pressure etc, and converts the condition into an analog or digital representation. Different methods based on varying physical properties are been employed for different parameters.

For instance, pressure is been measured either by comparing it with a known force or its effect on an elastic element is measured (deflection measurement) [1]. Among the well-known principles for pressure measurement are; by the use of a thin membrane or diaphragm, because a diaphragm tends to deflect under pressure [2], use of capacitor whose characteristics is varied with changes in the apply pressure, and also in another method the piezoresistance effect of silicon is been used to sense the change in stress [3,4]. A typical characteristic response of capacitive pressure sensor is shown in Figure 23.1 [4], relating the measured with correspond voltage output.

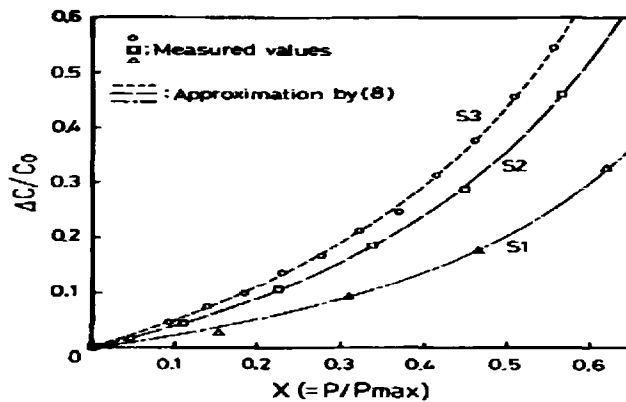


Fig. 23.1: Capacitance Change of Diaphragm Sensors As A Function Of Applied Pressure.