Dedication

This thesis research . It be dedicates to my wife, my children, my Parents and all my friends.

Acknowledgement

Alhamdulillah , thank to Allah S.w.T because of his blessing and truth ,I finally finish my research successfully .In completed this research , I was met with many people that help me a lot until I successfully write this thesis. There are many problem occur during my research work. However, this not a big matter cause .I have many reference from my senior and lecturer from my faculty.

First, I would like to express my heartily gratitude to my supervisor **Dr.Ala-Aldin Awouda** for guidance and enthusiasm gives thought out the progress of this research.

My appreciation also goes to my family who has been so tolerant and supports me all these time of year.

Finally, my research would not be carried out smoothly without the continuing support and encouragement given by my lecturers, tutors, and diploma degree student. I would like to express my since are gratitude to them especially for their helping during the time in need.

Abstract

This research is explain to develop the automatic control system to control the water losses in distribution system during flow to costumers. It depends upon microcontroller and pressure sensors .The ASK module to send data from distribution system to PC.

Proteus software and programming language CodeVisionAVR is used to design the simulation circuit . Microcontroller will take the correct action using the information provided from pressure Sensor. This research is enables to build a fully Automatic Detection of water losses in valves and the status is monitored and transmitted using a wireless communication system.

An encouraged results have been obtained which show that an excellent the system can be used in controlling and detecting the water loss in pipes.

مستخلص

☒ هذا البحث يوضح تطوير نظام التحكم الآلي للسيطرة على الفاقد من المياه في نظام توزيع شبكة المياه خلال تدفقها إلى الزبائن.بستخدام متحكم دقيق و حساس لضغط الماء.

بحيث تكون نظام التحكم قادر على الربط بين محطة المياه و جهاز الكمبيوتر.

باستخدام برنامج محاكاة بروتيوس ولغة البرمجة (CodeVisionAVR). بحيث متحكم دقيق يعمل في تحكم المعلومات الواردة من حساس ضغط المياه. ويرسل البيانات باستخدام وحدة الترددات اللاسلكية (ASK). هذه الدائرة لها القدرة في كشف فقدان المياه في الصمامات ويتم رصد حالة وٌإرسال البيانات باستخدام نظام الاتصالات اللاسلكية (ASK).

وقد توصل البحث لنتائج تشجع علي استخدام هذا النظام في السيطرة والكشف عن فقدان المياه في الأنابيب.

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TABLE OF CONTENTS

RESEARCH TITL	**I**
DECLARATION OF PSM II REPORT	**II**
DECLARATION	**III**
SUPERVISOR APPROVAL	**Iv**
DEDICATION	**V**
ACKNOWLEDGMENT	**IV**
ABSTRACT	**V**
TABLE OF CONTENTS	**VII**
LIST OF TABLES	**X**
LIST OF FIGURES	**X**
LIST OF ABBREVIATIONS	**XI**
LIST OF APPENDICES	**XII**

Chapter 1:-

1.1 Overview

1.2 Problem Statement

1.3 Research Aim

1.4 Methodology

1 .5 Objective

1.6 Scope of work

Chapter 2:-

2.1- Literature Review

2.2 Dimension of Water Losses in Distribution Networks

2.3. Water Distribution Pattern

2.4Major Factors Contributing to High Levels of Water Loss in Turkey.

2.4.1 Water Loss Management.

2.4.1 Leakage monitoring with District Meter (DMA).

2.4.2 Leakage Monitoring and Control.

2.4.3. Pressure Management through Distribution System.

2.4.4 Economical Dimension of Water loss.

Chapter 3:

3.1 Microcontroller Atemga32

3.2 Operation amplifier

3.4 Pressure sensor

3.5 Amplitude Shift keying (ASK)

3.6 Voltage Regular

3.7 Servo DC motor

3.8 LCD module

Chapter 4 :-

4.1 The Simulation results

Chapter 5 :

5.1Conclusion& Recommendation

LIST OF TABLES

Table		Page
Table3.1:	Absolute maximum rating ……	31
Table4.1:	The range of the sensor……...	52
Table4.2:	Voltage range of the sensor……..	52
Table4.3:	The level of pressure are three…….	53
Table4.4:	Valve situation has three states(DC servomotor)	53
Table4.5:	The truth Table of three sensors and Valves……	54

LIST OF FIGURES

Figure		Page
Figure 2.1:	Water loss amount and rates of metropolitan city centers (p>5000,000)	12
Figure 2.2:	Water loss and province centers (100,000 p-500,000	14
Figure2.3:	Water loss and rates of province(P<100,000)	14
Figure 2.4:	Total water loss amounts and average water loss rates of city centers	15
Figure2.5:	Water distribution pattern of provincial centers	20
Figure 2.6:	Economical dimension of water loss ……	20
Figure 3.1:	Pin out Atemga32 ……..	24
Figure 3.2:	Offset Nulling Circuit ……..	31
Figure 3.3:	Unibody package sensor MPX4115A……..	33
Figure 3.4	Fully Integrated Pressure Sensor Schematic……..	37
Figure 3.5:	illustrates the absolute sensing chip in the basic chip	37

Figure 3.6:	Definition of Span, Full-Scale Output, Offset and Sensitivity……	38
Figure 3.7:	Effect of Offset Errors……	39
Figure 3.8:	Ask modulator and ASK Demodulator……..	40
Figure 3.9:	Ask transmitter and Receiver……	42
Figure 3.10:	Transmitter in circuit	43
Figure 3.11:	Receiver circuit using IC HT12D as shown above……	43
Figure 3.12:	Example of a linear regulator circuit	43
Figure 3.13	Figure 3.13 regulator	44
Figure 3.14:	DC servo motor equivalent circuit…….	48
Figure 3.15:	Controlling angular position of Servomotor using pulse……	46
Figure 3.15:	Show the servomotor……..	46
Figure 4.1:	: model (initial schemes)…….	55
Figure 4.2:	Simulation circuit of sensors ,microcontroller and servo DC motors……	57
Figure 4.3:	ASK Transmitter simulation circuit……..	57
Figure 4.4:	ASK Receiver simulation circuit…….	58
Figure 4.5:	Circuit diagram show Receiver (Ask) interface with Microcontroller At mega32 …….	58

Figure 4.6:	Circuit diagram show Transmitter (Ask) interface with Microcontroller At mega32	59
Figure 4.7:	Complete circuit of control and mitigate drinking water in distribution system……	59
Figure 4.8:	Show the angles of servo motor during reading of sensors…….	60
Figure 4.9:	Show reading of sensor one ……	60
Figure 4.10:	Show the value pressure in main valve…….	61
Figure 4.11:	The status of main valve when pressure is high……	61
Figure 4.12:	Show the reading of sensor two is medium pressure…	62
Figure 4.13:	Show the status of valve two is medium pressure ……	62
Figure 4.14:	Show the value pressure in valve two……..	63
Figure 4.15:	Show the status of valve three ……..	63
Figure 4.16:	Show the status of sensor three ……	64
Figure 4.17:	Show the value of pressure in valve three……..	64

ABBREVIATIONS

Symbol	Meaning	Page
ASK	Amplitude shift keying	7
PVC	Pressure valve control	53
IWA	International water association	9
AVR	Automatic Voltage Regular	7
ALC	Active leakage control	13
DMA	Leakage Monitoring With District meter Area	14
TSI	Turkish Statistical Institute	17
IEEE	Institute of Electric and Electronics Engineer	37
ADC	Analogue - Digital converter	24
GIS	Graphical information system	36
ALU	Arithmetic Logic Unit	23
MCU	Microcontroller Unit	24
CMOS	Complementary Metal Oxide Semiconductor	34
VFSO	Full Scale Output	32
VOFF	Voltage off set	32
VFSS	Voltage scale span	33
PMAX	Pressure maximum	36
PREF	Reference Pressure	37
SP	Sensor pressure	37
LCD	Liquid crystal digit	50
RF	Radio frequency	7
RISC	Reduce instruction set of computer	23
MIPS	Million instruction per second	23
CISC	Complex instruction set of computer	23
PWM	Pulse width modulation	49
CAS	Conditioning a signal circuit	53

APPENDICES

Appendix A	Program code using AVR	I
Appendix B	Characteristics of sensor	Vii
Appendix D	Datasheet ASK transmitter &Receiver	X