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**“DESIGN OF A PORTABLE FRICTION
WELDING DEVICE FOR PLASTIC
PIPES”**

BY

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**DESIGN OF A PORTABLE FRICTION WELDING
DEVICE FOR PLASTIC PIPES**

by

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SUMMARY

The main objective of this dissertation is to carry out a survey on existing methods for the welding of plastic pipes and in addition to choose the materials to design a portable friction welding device for plastic pipes. This machine will be based on a revolutionary friction welding method which refers to a range of techniques that rely on a relative motion between the thermoplastic parts to be joined. While a force is applied between them at the interface, the material is caused to heat and melt which will lead to the weld of the two parts.

The area of investigation is focused on the welding methods of plastics and in more thorough examination of the friction welding processes. This will lead to the best solution of the objective and by taking in consideration all the facts the machine will be designed. During my research I investigated an interesting device at CNE Technology which was the first machine of its kind that was build globally and gave results that were very impressive. My model is going to be pretty similar to it and it will be able to provide in industry faster throughput production times specifically when the work takes place out of the workshop.

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CONTENTS

	Page
SPECIMEN	i
ABSTRACT	ii
ACKNOWLEDGMENTS	iii
CONTENTS	iv
LIST OF FIGURES/TABLES	vi
ABBREVIATIONS	vii
<u>CHAPTER 1 - INTRODUCTION TO THE PROJECT</u>	1
1.1 AIMS AND OBJECTIVES	1
1.2 HISTORICAL APPROACHES	1
1.3 METHODOLOGY	2
<u>CHAPTER 2 - THEORY OF PLASTIC WELDING</u>	3
2.1 INTRODUCTION	3
2.2 WELDABILITY of PLASTICS	8
2.3 COMPARISON of METHODS	10
2.4 CONCLUSION	11
<u>CHAPTER 3 - FRICTION WELDING</u>	12
3.1 INTRODUCTION	12
3.2 BENEFIT	12
3.3 HISTORY OF FRICTION WELDING	13
3.4 TECHNIQUES	14

<u>CHAPTER 4 –DESIGN OF FRICTION WELDING DEVICE</u>	36
4.1 SELECTION OF PROCESS	36
4.2 DESIGN CHARACTERISTICS AND SPECIFICATIONS	36
4.3 MOTOR CHARACTERISTICS	37
4.4 GEARBOX CALCULATIONS	39
4.5 SELECTION of MATERIALS	40
<u>CHAPTER 5 - DISCUSSION & CONCLUSION</u>	41
<u>REFERENCES</u>	42
<u>APPENDICES</u>	43
APPENDIX A: ENGINEERING DRAWINGS	43
APPENDIX B: CNE TECHNOLOGY PAPERS	47
APPENDIX C: BOSTON GEARS LTD CATALOG	50

LIST OF FIGURES/TABLES

Table 2.1: Weldability of Thermoplastic materials	9
Table 2.2: Advantages & Disadvantages of Welding Processes	10
Figure 3.1: Process of spin welding	14
Figure 3.2: The phases of the spin welding process	15
Figure 3.3: The principle of linear vibration welding	20
Figure 3.4: Taillights joined by linear friction welding	20
Figure 3.5a: Typical Linear Vibration Welding machine	22
Figure 3.6: Linear Vibration Welding Melt Phases	24
Figure 3.7: An example of a typical linear friction welding machine	24
Figure 3.8: Typical Joints achieved with Vibration welding	26
Figure 3.9: A series of enclosed orbital weld heads	27
Figure 3.10: Basic parts/terminology of friction stir welding	32
Figure 3.11: Friction Stir Welding close-up	34
Figure 3.12: joints that can be achieved with Friction stir welding	34
Table 4.1: Specifications of motor	38
Figure 4.1: Gearbox schematic diagram	39

ABBREVIATIONS

FW: Friction Welding

FSW: Friction Stir Welding

PVC: Polyvinyl Chloride

PA: Polyamides

RPM: Revolutions Per Minute

FSSW: Friction Stir Spot Welding

FSP: Friction Stir Processing

RSW: Resistance Spot Welding

GTAW: Gas Tungsten Arc Welding

TWI: The Welding Institute

ABS: Acrylonitrile Butadiene Styrene

ASA :Acrylic-Styrene-Acrylonitrile

CA: Cellulose Acetate

CAB: Cellulose Acetate Butyrate

CAP: Cellulose Acetate Propionate

POM: PolyOxy-Methylene

PA: PolyAmide

PBT: PolyButylene Terephthalate

PC: PolyCarbonate

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ABS: Acrylonitrile Butadiene Styrene
ASA :Acrylic-Styrene-Acrylonitrile
CA: Cellulose Acetate
CAB: Cellulose Acetate Butyrate
CAP: Cellulose Acetate Propionate
POM: PolyOxy-Methylene
PA: PolyAmide
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