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**Developing a Low Pressure Blow Molding Machine for
Demonstration Purposes and Production of Plastic Bottles**

A thesis presented in partial fulfillment of the requirements
for the degree of

Master of Engineering

in

Mechatronics

at

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Bruno Hugener

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Abstract

Abstract

This thesis presents the research of packaging beer into plastic bottles and the design and manufacture of a low pressure bottle blow moulding machine for demonstration purposes. The machine will be used for the production of plastic bottles suitable for bottling brewed beer at the microbrewery at Massey University Palmerston North.

Premanufactured PET preforms have proven to be the most convenient and promising choice for the fabrication of blown bottles. Basic tests to understand the behaviour of the preforms and the challenges of the blowing process have been carried out. A special focus has been placed on the different circumstances at University in contrast to industrial bottle production in particular the needed air pressure to form the bottles. The following step was to find the ideal method and principle to handle the preforms and to transform them in the desired shape. Finally the design, drawing of the parts and assemblies were carried out with the 3-D CAD software Solidworks.

The designed parts for the bottle blower have been manufactured at the mechanical Workshop at Massey University. To control the bottle blower, the National Instruments USB interface was selected which required the design and manufacture of an additional driver interface card to protect the USB interface and convert the TTL levels into higher voltage. The final assembly and testing of the blower then concluded the practical work for this master project.

A suitable design for the bottle production was found and the assembled Bottle Blower can now be used for the production of PET bottles.

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