

HIGHER TECHNICAL INSTITUTE

MECHANICAL ENGINEERING

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DIPLOMA PROJECT

DESIGN OF A HYDRODYNAMIC

FORMIGN SYSTEM

M / 443

KYRIACOU MARIOS

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HYDRODYNAMIC FORMING MACHINE

by M. Kyriacou

SUMMARY

The task of the present thesis is to design a simple Hydrodynamic forming system for the production of pipe reducers and parabolic dishes.

Hydrodynamic forming is a relatively new method of forming and it has been developed and investigated for the cheap production of small numbers of large shaped components, usually, of unconventional materials. The results showed that this method offers an attractive alternative to existing methods of forming.

In the first chapter a brief survey on explosives is given and the basics of transmission of explosive shock waves through water are studied. In chapter two the mechanics of energy transfer is studied and the energy transmitted to the blank in the form of a pressure wave is estimated. Chapters three and four investigate the explosive forming of parabolic dishes and pipe reducers respectively. Material selection and design calculations are carried out in each chapter. In the last part of the thesis detailed drawings of the above types of dies are produced.

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