



"MICROCOMPUTER CONTROL OF A BLAST FURNACE
STOVE MODEL"

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This thesis embodies the results of supervised
project work making up $\frac{2}{3}$ of the work for the
degree.

DECLARATION

This thesis contains no material which has been accepted for the award of any other degree or diploma in any University, and to the best of my knowledge it contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

P. BUDIMIR

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SUMMARY

Because of the large fuel requirements of blast furnace stoves, methods of increasing their operating efficiency are of real practical concern.

This has motivated research into the feasibility of implementing a microprocessor system to control these stoves so as to achieve maximum thermal efficiency. The first phase of this study is the subject matter of this thesis. It involves the initial development of a system to be used for verifying/developing control strategies on an experimental stove model in the Department of Chemical Engineering, University of Adelaide.

The thesis describes,

- (1) basic stove structure,
- (2) operation and control requirements,
- (3) system specifications,
- (4) followed by a description of the microcomputer control system: consisting of an 'upper level' PDP-11/03 microcomputer (DEC) and a 'lower level' SDK-86 microcomputer kit (INTEL).

Hardware design, construction and testing has been completed. A pre-written 'package' has been chosen for the 'upper level' software and 'lower level' software has been developed in two stages. The first stage only involved a single feedback loop for initial hardware tests whereas stage two incorporates the multi-loop system as specified.

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