THE DEVELOPMENT OF A DECISION SUPPORT SYSTEM FOR ENERGY COST MANAGEMENT, USING AN EXPERT SYSTEM SHELL.

A CASE STUDY IN THE INTEGRATED USE OF SOFTWARE PACKAGES

Report presented by L J ROBERTSON

In fulfilment of the thesis requirements for the degree of;

Master of Technology (Computing Technology). 1989

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1 ABSTRACT

1.1 Key phrases:

Energy cost management;

Expert system;

Decision support system;

Integrated use of software products.

1.2 Abstract

The theory of minimizing total energy usage is well known (if not well documented), and the techniques are widely practiced. Because of the way in which energy is sold, the total cost incurred may be affected even more strongly by the time-distribution of the energy usage, than by the total quantity used. A major subject of ECM is the MANAGEMENT of this time-distribution of energy usage, with the objective of minimizing of total energy costs to the user.

A software package (named ECMES, Energy Cost Management Expert System) has been developed using the Lotus Symphony integrated spreadsheet software package. The ECMES application consists (currently) of three modules offering analyses of several aspects of electrical energy cost management (plus three corresponding modules for gas costs, which are not considered further). The Symphony ECM application modules have been developed over the last few years, largely on a spare time basis, by Professor W Monteith of Massey University's Production Technology Department.

The analysis of Energy Cost Management on a PC is one which requires functions supplied by several standard software packages, particularly spreadsheet, graphics, database and expert system. The relatively recent availability of moderately priced and user-friendly expert system development packages has brought an additional set of powerful tools within the reach of the application developer. A Decision Support System (using an Expert System shell) has been developed, which is well integrated with the spreadsheet data, and with a database, to expand the functions of the original spreadsheet ECM analysis tool.

Theoretical work on the data requirements and the production rules has opened up possibilities for future work.