ABSTRACT

A Fault Diagnosing Expert System

Developed For A

Urea Formaldehyde Concentrate Plant.

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This thesis presents an application studies project in which a prototype expert system has been developed for trouble shooting processing and equipment problems on a Urea Formaldehyde Concentrate Plant.

The expert system called UFCXPERT, is an off-line advisory system which may be used for training new and inexperienced plant operators, for maintaining experience in veteran plant operators, and for ensuring the safe operation of the plant.

An expert system shell, Insight 2+ was used to develop the application. The expert system was formulated by consulting plant manuals, journal articles and interviewing the plant's design, construction, and operating personnel to produce the rules and fault trees contained in the knowledge base. The application has sub-divided possible problems into four areas

which consist of: reactor malfunction, absorber malfunction, product specification problems, and automatic plant shutdown. During a consulting session a plant operator may select a specific area of interest or may allow the system to guide him by answering questions as they are presented.

The expert system was successfully tested by using actual plant data.