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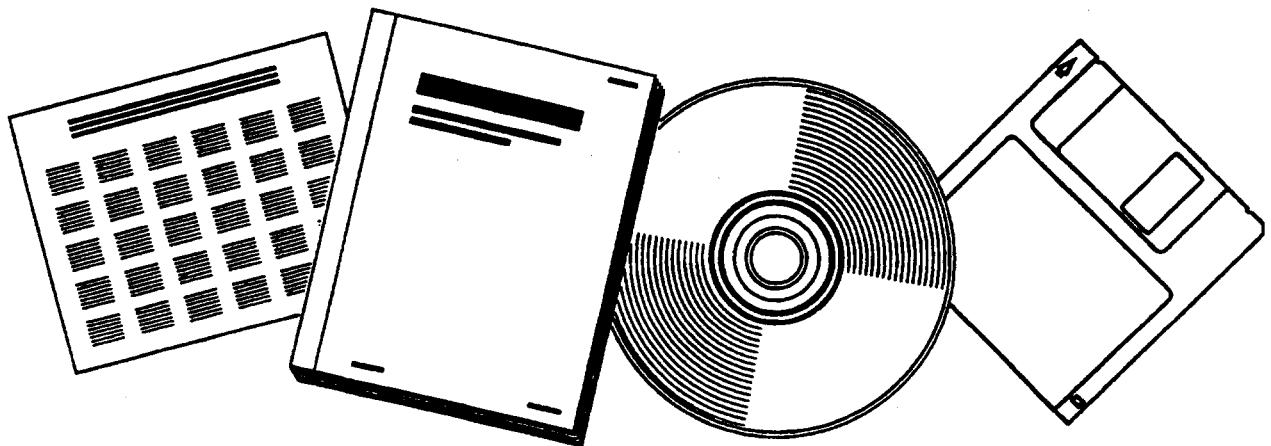
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A STUDY OF INDUSTRIAL HYDROGEN AND SYNGAS SUPPLY SYSTEMS

AIR PRODUCTS AND CHEMICALS, INC.
ALLENTOWN, PA

OCT 1979

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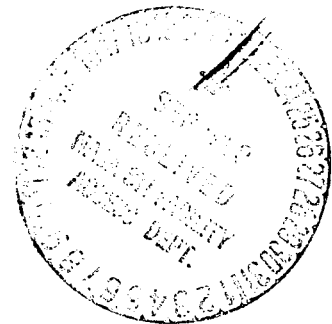
FINAL REPORT

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ABSTRACT

This summary outlines the work performed and conclusions reached under JPL Contract No. 955421.

This study evaluates the potential and incentives required for supplying hydrogen and syngas ($2\text{H}_2/\text{1CO}$) feedstocks to the U.S. chemical industry from coal gasification systems. Future hydrogen and syngas demand for chemical manufacture is estimated by geographic area. Projected economics for hydrogen and syngas manufacture are estimated with geographic area of manufacture and plant size as parameters. These estimates are made for natural gas, oil and coal feedstocks. The economic estimates for coal technology involve different coal type, lignite and bituminous, and also atmospheric and elevated pressure gasification.

Several problem areas presently affecting the commercial feasibility of coal gasification are considered in this study. The impact of potential process improvements are considered via the impact of hypothetical capital and operating cost improvements on hydrogen and syngas economics. Unique factors involved in financing coal gasification plants are discussed. Regulatory barriers are evaluated as they affect coal gasification. Coal mining/transportation, air quality regulations, and competitive feedstock pricing barriers are evaluated in summary fashion.

Finally, the study discusses the potential for making coal gasification the least costly H_2 and syngas supply option. Options to stimulate coal gasification system development are discussed.

NOTE: It must be emphasized that the results and conclusions in this report are based on energy escalation scenarios provided by JPL. Because of the continuing upward volatility of world oil prices, it is particularly important that the results and conclusions herein be viewed in the context of the energy escalation scenarios on which they are based.

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