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Publication Date

1979-11-01

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ENERGY & ENVIRONMENT DIVISION

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Carlos Figueroa, Jim Wrathall and Sabri Ergun

November 1979

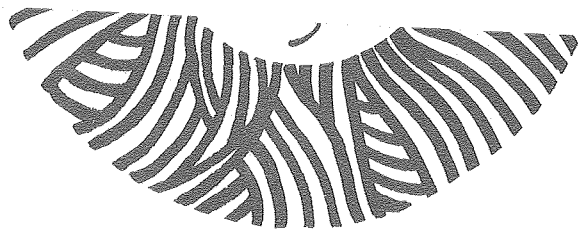
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LBL CONTINUOUS BIOMASS LIQUEFACTION

PROCESS ENGINEERING UNIT (PEU)

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Prepared for
Thermochemical Conversion Contractors' Meeting
Rolla, Missouri
7 November, 1979

Contract No. W-7405-ENG-48 U.S. Department of Energy

LBL CONTINUOUS BIOMASS LIQUEFACTION

PROCESS ENGINEERING UNIT (PEU)

INTRODUCTION

Ever since the commissioning and subsequent operation of the Albany, Oregon Biomass Liquefaction Process Development Unit (PDU) from 1977, it became very evident that the PDU would be unable to provide basic reactor design data for a commercial-sized plant. Beginning in 1977, LBL was contracted to provide technical monitoring followed in 1978 by supporting research. LBL research efforts were divided into three areas:

- (1) biomass liquefaction catalysis
- (2) biomass pretreatment-hydrolysis
- (3) construction of a continuous biomass liquefaction PDU.

Discussion centers on the latter of these three areas.

DISCUSSION

The intent of the PEU was to provide engineering support to the Albany, Oregon PDU. However, it later became clear that basic engineering design data for slurry pumping and reactor would be the final product. Undertaking this task meant long-term planning as high pressure equipment generally has long delivery times. By January 1979, a detailed schematic for the PEU was finalized as shown in Fig. 1. Major or minor equipment investigations, specifications, and procurement commenced and proceeded into late 1979.

Completion of major piping, electrical, and instrumentation is expected by December 1979. Preliminary shakedown testing would continue for three months after that with a preliminary liquefaction run expected by March 1980.

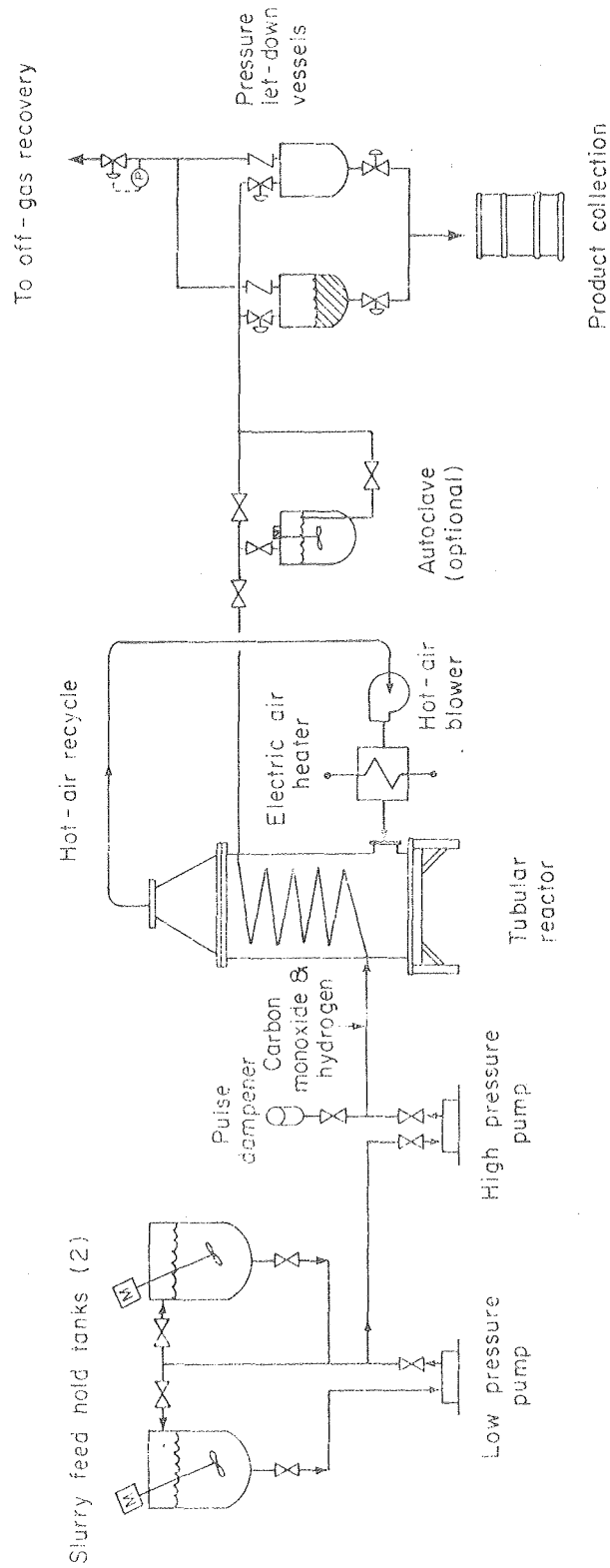
PRELIMINARY PEU TESTING

During the months of October and November, 1979, extensive testing of the PEU slurry pumping capabilities has taken place and is the subject of an unpublished report (ref. 1). Findings from this study indicate that hydrolyzed biomass slurries of 20% can be easily pumped without any difficulties. The key to this capability apparently lies with the slurry ability to uptake gas (approximately 10% by volume).

REFERENCE

1. Wrathall, J.A. "Hydrolyzed Wood Slurry Flow Modeling," Lawrence Berkeley Laboratory, University of California, Berkeley, CA.

Fig. 1



Biomass liquefaction process evaluation unit
LBL process

