

COLLECTION AND DISSEMINATION OF TES SYSTEM INFORMATION
FOR THE PAPER AND PULP INDUSTRY

M. W. Dietrich
NASA Lewis Research Center

PROJECT OUTLINE

Project Title: Collection and Dissemination of Thermal Energy Storage System Information for the Paper and Pulp Industry

Principal Investigator: Howard Edde

Organization: Howard Edde, Inc.
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Project Goals: The objectives of this procurement are to determine existing applications of TES in both the U.S. and international paper and pulp industries, to obtain and analyze the operating data from a representative number of these mills, and to transfer this information to the U.S. paper and pulp industry.

The Statement of Work (SOW) requires the contractor to conduct a knowledgeable survey of both U.S. and international paper and pulp mills using thermal energy storage (TES) systems as a part of their production processes; to obtain from these mills, sufficient operating data to conduct a benefits analysis encompassing; (a) energy conservation assessment, (b) economic benefits analysis, and (c) environmental impact assessment; and propose an information dissemination plan using brochures, displays and presentations at paper and pulp industry technical and management meetings that will effectively present the benefits of TES to the U.S. paper and pulp industry.

Project Status: Contract initiation meeting held in February, 1980.

Contract Number: DEN3-190

Contract Period: January, 1980 to March, 1981

Funding Level: \$113,816

Funding Source: NASA Lewis Research Center

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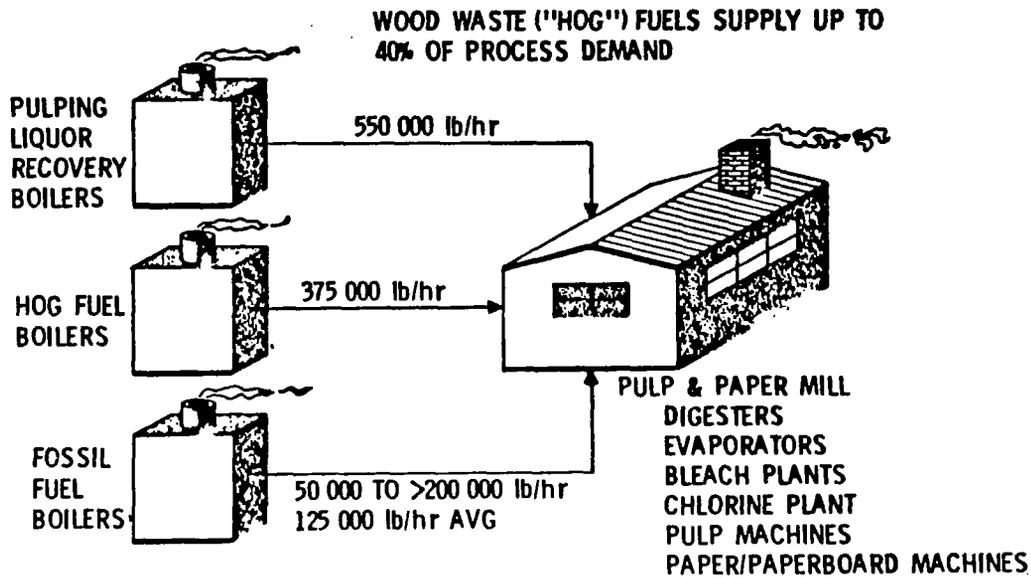
TASK OVERVIEW

- o CONTRACTED EFFORT
- o CONTRACTOR: TBD
- o PERIOD OF PERFORMANCE: 15 MONTHS
- o STATUS: COMPLETING NEGOTIATIONS WITH POTENTIAL CONTRACTORS.
CONTRACT TO BE AWARDED IN JANUARY, 1980.

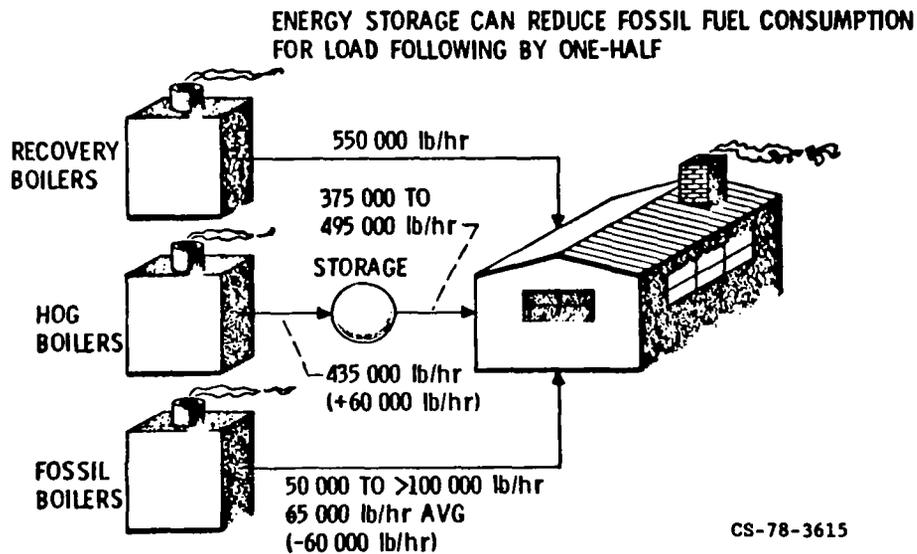
BACKGROUND

- o INITIAL PAPER AND PULP SYSTEMS STUDY (BOEING) 1978
- o IDENTIFIED AN OPERATIONAL TES INSTALLATION
- o DECISION TO PROCEED DIRECTLY TO TECHNOLOGY TRANSFER

PAPER AND PULP ENERGY SUPPLY CHARACTERISTICS



ENERGY SUPPLY CHARACTERISTICS WITH THERMAL ENERGY STORAGE



PAPER AND PULP

CONCLUSIONS:

SYSTEM IS ECONOMICALLY AND TECHNICALLY FEASIBLE (>30% ROI)

INDUSTRY WIDE CONSERVATION POTENTIAL IS 3×10^6 BBL OIL/YR (>1982)

DEVELOPMENT REQUIRED

- o NONE

TECHNOLOGY DEMONSTRATION POSSIBLE

- o FULL SCALE IN AN OPERATING MILL BY FY 81

PAPER AND PULP TECHNOLOGY TRANSFER

APPROACH

- o DETERMINE EXISTING APPLICATIONS OF TES IN BOTH U.S. AND INTERNATIONAL PAPER AND PULP MILLS
- o OBTAIN AND ANALYZE OPERATING DATA FROM A REPRESENTATIVE NUMBER OF THE MILLS
- o DISSEMINATE BENEFITS FROM THE ANALYSIS TO THE U.S. PAPER AND PULP INDUSTRY

METHODOLOGY

SURVEY

- o CONDUCT THOROUGH SURVEY OF U.S. AND INTERNATIONAL PAPER AND PULP MILLS
- o TABULATE DATA SHOWING NAME AND LOCATION OF MILL, PRODUCT, ANNUAL PRODUCTION, TYPE AND SIZE OF TES SYSTEM, STORAGE MEDIUM, MAXIMUM CHARGING AND DISCHARGING RATES OF TES SYSTEM, MAXIMUM STEAM CAPACITY, MAXIMUM ELECTRICAL GENERATING CAPACITY, FUEL MIXTURE (I.E. % FOSSIL FUEL, % OTHER)
- o REDUCE TABLE TO "REPRESENTATIVE" LIST
- o DEFINE OPERATING CHARACTERISTICS OF "REPRESENTATIVE" MILLS TO OBTAIN HEAT SOURCES, END USES, TYPICAL PROCESS OPERATING CYCLES, ALL STREAM CONDITIONS, PROCESS THERMAL AND ELECTRICAL LOADS

METHODOLOGY - CONT.

BENEFIT ANALYSIS

- o CONDUCT ENERGY CONSERVATION ASSESSMENT
COMPARING DATA FROM:
 - RETROFITTED MILLS BEFORE AND AFTER TES INSTALLATION
 - NEWLY BUILT MILLS WHICH INCLUDE TES AS A PART OF THEIR INITIAL DESIGN
- o DETERMINE ANNUAL FUEL SAVINGS IN BOE/TON OF OUTPUT PRODUCT FOR "REPRESENTATIVE" MILLS
- o EXPAND DATA TO BE DESCRIPTIVE OF FUEL CONSERVATION POTENTIAL FOR U.S. PAPER AND PULP INDUSTRY FOR EXTENSIVE IMPLEMENTATION
- o PROJECT FUEL CONSERVATION BENEFITS FOR NEAR-TERM (THRU 1985) AND LONG TERM (THRU 2000)

METHODOLOGY - CONT.

- o CONDUCT AN ECONOMIC ANALYSIS USING:
 - FUEL CONSERVATION PROJECTIONS
 - PRICE PROJECTIONS OF OIL GAS, "HOG" FUEL, ELECTRICITY, ETC.

- o COMPUTE ROI FOR REPRESENTATIVE TES INSTALLATION

- o CONSIDER ANY OTHER ECONOMIC ADVANTAGE OBTAINED THRU INSTALLATION OF TES

- o PROJECT ECONOMIC BENEFITS FOR NEAR-TERM (THRU 1985) AND LONG-TERM (THRU 2000) ASSUMING WIDE-SPREAD IMPLEMENTATION OF TES BY THE PAPER AND PULP INDUSTRY

- o CONDUCT AN ENVIRONMENTAL IMPACT ASSESSMENT

METHODOLOGY - CONT.

INFORMATION DISSEMINATION

- o PREPARE INFORMATION DISSEMINATION PLAN TO INCLUDE:
 - BROCHURES

 - DISPLAY

 - PRESENTATIONS AND MEETING ATTENDANCE

ACTIVITY	19 79												19 80												19 81											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
3.4 TECHNOLOGY TRANSFER																																				
3.4.1 Information collection and dissemination - Paper/Pulp (CP: TBD)					r																															

- ▽ Milestone
- ▽ Rescheduled Activity
- ▼ Completed Activity
- s Establish SEB
- r Release RFP
- a Award Contract
- P Publish Report
- SS Sole Source Procurement
- CP Competitive Procurement
- IAA Interagency Agreement
- DHP DOE Headquarters Procurement
- PA Planning Activity