

SYSTEMS ANALYSIS PROJECT ADVISORY COMMITTEE

and

MAPPS USERS GROUP

SLIDE MATERIAL

March 31-April 1, 1987

14

STATUS

VERSION 3.0

OPTIMIZER

PERFORMANCE ATTRIBUTE MODELING

STUDENT WORK

OPTIMIZER

VERIFIED NEED FOR IN-HOUSE DEVELOPMENT

NEED BETTER USER INTERFACE

STUDENT WORK

CONVERGENCE CONTROLLER (JOHN MCKIBBEN)

BROWN STOCK WASHER (FRANK HARPER)

SAVEALL (DOUG CRANE)

OXYGEN BLEACH TOWER (GREG KULAS)

MAPPS

PERFORMANCE ATTRIBUTE MODELING

GARY L. JONES

- ADDED IMPROVED HANDSHEET CORRELATIVE PROPERTY MODELS
  - SOFTWOOD, MECHANICAL PULPS
  - SGW, RMP, TMP, CMP
  - DEPEND ON CSF, LONG FIBER, SHIVES, FINES
  - BULK, TEAR, BURST, WET-WEB STRENGTH, BREAKING LENGTH, DRAINAGE TIME, SCATTERING COEFFICIENT, POROSITY, OPACITY
  - LITERATURE AND MILL DATA
- TESTED MODELS ON SEVERAL FLOW SHEETS

- EXTENSION OF PAT'S TO PAPER MACHINE

BASIS WEIGHT  
ZERO-SPAN TENSILE (FIBERS)  
SPECIFIC SURFACE  
HANDSHEET DENSITY  
FIBER COARSENESS  
WT.-AVERAGE LENGTH  
ORIENTATION  
X-DIRECTION  
Y-DIRECTION  
Z-DIRECTION

- EXTENSION OF PAT'S TO CHEMICAL PULPS

KAPPA NUMBER  
HEMICELLULOSE CONTENT  
WT.-AVERAGE LENGTH  
WT.-AVERAGE WIDTH  
ZERO-SPAN TENSILE  
COARSENESS  
CELL WALL THICKNESS  
SPECIFIC SURFACE  
CSF  
FIBRIL ANGLE

MAPPS VERSION 3.0

MARCH 1987

HIGHLIGHTS OF NEW FEATURES

IMPLEMENTATION ON THE PC

NEW FEATURES

PERFORMANCE ATTRIBUTE STREAMS

- RELATION TO PROCESS STREAMS
- MECHANICAL REFINING MODELS
- DISPLAY, PRINT, EDIT

NEW FEATURES

INPUT MESSAGE FILE

- OPTIONAL, FOR SYSTEM MESSAGES
- DEFINED IN BOOT FILE
- AUTOMATICALLY DISPLAYED AT START-UP

NEW FEATURES

HOOKS FOR OPTIMIZER

- OPTION SWITCH
- INPUT/OUTPUT OPTIMIZER DATA FILES

NEW FEATURES

SYSTEM COMMAND

- USER DEFINED
- AVAILABLE ON PC VERSION

NEW FEATURES

CONVRG MODEL

- CONVERGENCE ACCELERATION
- CONVERGENCE CHECK DELAY
- OUTPUT STREAM DATA

NEW FEATURES

CONVRT MODEL

- MASS BALANCE
- CONVERT TO FUEL STREAM

NEW FEATURES

SWITCH MODEL

- MODULE AND STREAM VARIABLES
- 6-DIGIT POINTER

NEW FEATURES

PCONT2 MODEL

- MODULE AND STREAM VARIABLES
- SEVERAL VARIABLE SETS

NEW FEATURES

NEW MODELS

- MECHANICAL REFINING
  - HYFRAC
  - HYRFN1
  - STOMIX
- BLEACHING
  - OXYG02
  - HYPROX
- SAVALL
- BSWASH
- DUMPAL

PC VERSION

PROGRAM SIZE, MEMORY LIMIT

INCREASES DUE TO:

- ADDITIONAL MODULES
- PERFORMANCE ATTRIBUTE STREAMS

PC VERSION

OBJECTIVES:

- FULL-FEATURED VERSION
- USER-DEFINED CONTENTS

IMPLEMENTATION:

- USER SELECTS MODULES
- PROGRAM SIZE VARIES

PC VERSION

MAPPS MODULE CALLING ROUTINE

- CALLS TO PROCESS MODULES
- CALLS MUST BE RESOLVED
- ELIMINATE SOME CALLS
- DO NOT LINK MODULES NOT CALLED

PC VERSION

CREATING A NEW MODULE CALLING ROUTINE

- MAKMOD PROGRAM
- DEFAULT MODULES - GENMOD.FOR
- DEFINED IN MODULE DATABASE MMODTAB.DAT

PC VERSION

RUNTIME LIBRARIES

- FIVE LIBRARIES, CONTAIN ALL MAPPS MODULES
- MAPPS MODULE = "OBJECT" MODULE
- LIBRARY MANAGEMENT



PLANNING SESSION  
(JANUARY, 1987)

IDENTIFIED SEVERAL AREAS OF NEED  
DEVELOPED REPORT OUTLINES FOR FOUR AREAS

PURPOSE

DEVELOP A LONG-RANGE PLAN WHICH

- IS CONSISTENT WITH IPC GOALS
- GENERATES SUPPORT FROM THE INDUSTRY

SO THAT

- IPC CONTINUES TO BE A LEADER IN THE SYSTEMS AREA
- QUALITY STUDENTS ARE ATTRACTED TO IPC
- INDUSTRY NEEDS (PRESENT AND FUTURE) ARE MET

AREAS OF NEED

MATHEMATICAL MODELS FOR THE PULP AND PAPER INDUSTRY  
ARTIFICIAL INTELLIGENCE/EXPERT SYSTEMS  
PROCESS CONTROL/DYNAMIC MODELING  
STATISTICAL PROCESS/QUALITY CONTROL  
MILL MANUFACTURING INFORMATION SYSTEMS  
PROCESS SYNTHESIS AND SOFTWARE NEEDS  
FUTURE MAPPS SERVICES AND SUPPORT  
REQUIRED HARDWARE AND SOFTWARE

TASKS STUDIED

MATHEMATICAL MODELING

ARTIFICIAL INTELLIGENCE

PROCESS CONTROL

MATHEMATICAL MODELING

PURPOSE: USE MODELS FOR INFORMATION TRANSFER

PRODUCTS: MODELS; BETTER FOCUSED R&D EFFORT;  
BETTER UNDERSTANDING

REQUIREMENTS: INTERNAL FOCUS; ACCESS TO MILL DATA;  
CRITICAL REVIEW OF MODELS

MODELING BENEFITS

IPC:

SERVICE TO MEMBERS  
SOURCE OF RESEARCH TOPICS  
IDENTIFICATION OF RESEARCH NEEDS  
CROSS-FERTILIZATION OF IDEAS  
OPPORTUNITIES FOR STUDENTS  
MARKETING STRENGTHS FOR MAPPS AND RELATED PRODUCTS

INDUSTRY:

BETTER UNDERSTANDING OF PROCESSES  
IMPROVED PROFITABILITY AND QUALITY CONTROL  
BETTER SIMULATION TOOL  
FOUNDATION FOR EXPANDED MODELING APPLICATIONS

AI/ES

PURPOSE: UTILIZE AI/ES TO MORE EFFECTIVELY  
USE KNOWLEDGE

PRODUCT: KNOWLEDGE TRANSFER TOOLS

REQUIREMENTS: STAFF, TRAINING, HARDWARE/SOFTWARE,  
LIBRARY

AI/ES BENEFITS

IPC:

INTEGRATION OF NEW TECHNOLOGY  
ATTRACT QUALITY STUDENTS AND STAFF  
PROVIDE SERVICES TO THE INDUSTRY  
METHODOLOGY FOR SYSTEMIZING RESEARCH RESULTS

INDUSTRY:

ADDITIONAL METHOD OF TECHNOLOGY TRANSFER  
TRAINING FOR NEW EMPLOYEES  
EXISTENCE OF SOURCE OF SERVICE ON AI APPLICATIONS  
TRANSFER OF AI TECHNIQUES TO INDUSTRY

PROCESS CONTROL

PURPOSE: IMPROVE PROCESS PERFORMANCE  
DEVELOP A CENTER OF EXCELLENCE FOR INDUSTRY

PRODUCTS: QUALITY MANPOWER  
SENSORS  
MODELS  
STRATEGIES

RESOURCES: HARDWARE, SOFTWARE, PEOPLE

PROCESS CONTROL BENEFITS

IPC:

COMPLEMENTARY TO MAPPS  
POTENTIAL REVENUE SOURCE  
COMPLEMENTS ACADEMIC PROGRAM  
UNIQUE SOURCE FOR INDUSTRY

INDUSTRY:

FILLS NEED FOR QUALITY MANPOWER AND EXPERTISE  
IMPROVED MILL OPERATIONS  
ALTERNATIVE TO VENDOR SOLUTIONS