

PACKAGE ID - 000413MNF00 MGAS

KWIC TITLE - METC-Gasifier Advanced Simulation Model

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LIMITATION CODE - UNL **AUDIENCE CODE** - UNL

COMPLETION DATE - 01/01/1991 **PUBLICATION DATE** - 01/01/1991

DESCRIPTION - MGAS is a mechanistic model for describing the transient operation of coflow, counterflow, or fixed-bed gasifiers. The model describes the gasifier in one or two dimensions and can simulate the addition, withdrawal, or recycle of gas and solids at multiple locations in the bed.

PACKAGE CONTENTS - Media Directory; Software Abstract;
DOE/METC-92/4108;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 2 3.5 Diskettes

METHOD OF SOLUTION - MGAS describes the gasifier in terms of a gas phase and a solids (coal or char) phase. These phases may exist at different temperatures. The model considers several combustion, gasification, and initial stage reactions. The model consists of a set of mass balances for 14 gas species and three coal (pseudo) species and energy balances for the gas and solids phases. The resulting partial differential equations are solved using a finite difference technique.

COMPUTER - MAINFRAMES

OPERATING SYSTEMS - Tested under VMS and UNIX.

PROGRAMMING LANGUAGES - FORTRAN-77 with certain VAX extensions.

SOFTWARE LIMITATIONS - The code may fail to give converged solution for simulations in which the combustion zone is moving to rapidly through the gasifier.

SOURCE CODE AVAILABLE (Y/N) - Y

UNIQUE FEATURES - The unique features of the MGAS model are the following: separate energy equations for gas and solids; ability to calculate tar production; ability to describe addition, withdrawal, or recycle from multiple locations in the bed;

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UNIQUE FEATURES - (CONT) user-friendly input data file; and modular code structure that allows changes in reaction schemes and kinetics.

OTHER PROG/OPER SYS INFO - The code is written in FORTRAN-77, but some VAX extensions, such as NAMELIST input, have been used. On most computers, these extensions are available and, hence, the code will run without any modifications.

HARDWARE REQS - Disk space and memory requirements will depend upon the problem and output specifications.

TIME REQUIREMENTS - The sample problem requires about 35 CPU minutes on a VAX-8650.

REFERENCES - Syamal M. and Bissett L.A., 'METC Gasifier Advanced Simulation (MGAS) Model,' NTISTechnical Note, DOE/METC-92/4108 (DE92001111), January 1992.

ABSTRACT STATUS - Submitted 5-21-92.

SUBJECT CLASS CODE - HTU

KEYWORDS -

COMPUTER PROGRAM DOCUMENTATION
M CODES
PACKED BEDS
TRANSIENTS
COMPUTERIZED SIMULATION
HEAT TRANSFER
COAL

EDB SUBJECT CATEGORIES -
990200 010404 420400

SPONSOR - DOE/MET

PACKAGE TYPE - SCREENED