PACKAGE ID - 000723IB38600 FLUFIXMOD2

KWIC TITLE - Two-fluid Hydrodynamic Model for Fluid-Flow Simulation in Fluid-Solids Systems

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

COMPLETION DATE - 04/01/1991 **PUBLICATION DATE -** 04/01/1992

DESCRIPTION - FLUFIX is a two-dimensional , transient, Eulerian, and finite-difference program, based on a two-fluid hydrodynamic model, for fluid flow simulation in fluid-solids systems. The software is written in a modular form using the Implicit Multi-Field (IMF) numerical technique. Quantities computed are the spatial distribution of solids loading, gas and solids velocities, pressure, and temperatures. Predicted are bubble formation, bed frequencies, and solids recirculation. Applications include bubbling and circulating atmospheric and pressurized fluidized bed reactors, combustors, gasifiers, and FCC (Fluid Catalytic Cracker) reactors.

PACKAGE CONTENTS - Media Directory; Software Abstract; DOE/MC/24193-3501; Media Includes Source Code, Sample Problem Input, READ.ME File;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 3.5 Diskette

METHOD OF SOLUTION - The hydrodynamic model of fluidization uses the principles of conservation of mass, momentum, and energy. A semi-implicit transient, Eulerian, two-phase flow solver is used for the equations considered.

COMPUTER - IBM PC 386

OPERATING SYSTEMS - Designed to be portable

PROGRAMMING LANGUAGES - FORTRAN 77

SOURCE CODE AVAILABLE (Y/N) - Y

UNIQUE FEATURES - The two-field equations of continuity and momentum are solved simultaneously for the fluid and solids phases.

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UNIQUE FEATURES -(CONT)
RELATED SOFTWARE - FLUFIXMOD2 incorporates the K-FIX numerical scheme with major modifications made to model fluid-solid systems. The major difference between FLUFIXMOD2 and FLUFIXMOD1 is the reinstatement of the viscous stress terms as contained in K-FIX and minor corrections. Other experimental versions of the software were developed for applications such as gas-solids and wall-solids/wall-gas heat transfer, multiple solids species, multiple gas species and coal-gasification chemistry, and liquid-solid lamella electrosetting.

HARDWARE REQS - Minima of 640 kbytes RAM and 2 Mbytes disk memory.

TIME REQUIREMENTS - For 500 modes about 8 hours of CPU time is required on a 386 PC for one second of real-time simulation.

REFERENCES - R.W. Lyczkowski, J.X. Bouillard, and S.M. Folga, User's Manual for FLUFIX/MOD2: A Computer Program for Fluid-Solids Hydrodynamics, DOE/MC/24193-3501, April 1992.

ABSTRACT STATUS - Submitted June 17, 1994. Released AS-IS 5/22/95.

SUBJECT CLASS CODE - H

KEYWORDS -
COMPUTER PROGRAM DOCUMENTATION
F CODES
TWO-PHASE FLOW
HYDRODYNAMICS
COMPUTERIZED SIMULATION
FLUIDS
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EDB SUBJECT CATEGORIES -
990200

SPONSOR - DOE/FE

PACKAGE TYPE - AS - IS