

CONTENTS

Preface

How to Use This Handbook

Table I.	Element Types
Table II.	Material Properties
Table III.	Analysis Capabilities
Table IV.	Other Capabilities
Table V.	Operating Systems
Table VI.	Availability of the Programs

INTRODUCTION

A Commentary on Commercial Finite Element Systems <i>H.H. Fong, PDA Engineering, California, U.S.A.</i>	3
--	---

CURRENT FINITE ELEMENT SYSTEMS

ABAQUS - A General Purpose Linear and Nonlinear Finite Element Code <i>H.D. Hibbitt, Hibbitt, Karlsson and Sorensen, Inc.</i>	21
--	----

The Use of ADINA in Engineering Practice <i>K. -J. Bathe, Massachusetts Institute of Technology, U.S.A. & G. Larsson, Adina Engineering AB, Sweden</i>	59
---	----

ANSYS <i>P.C. Kohnke, Swanson Analysis Systems, Inc., U.S.A.</i>	79
---	----

APPLE-SAP Structural Analysis System <i>M. Galluzzi, M. Giovagnoni & G.M. Manfredini, Italmplianti S.p.A. Italy</i>	87
--	----

ASAS - A Large-Scale, Sophisticated Finite Element Analysis System <i>J.B. Spooner, Atkins Research & Development</i>	107
--	-----

The ASKA Finite Element System <i>R. Goos, Ikoss GmbH</i>	115
--	-----

BEASY Boundary Element Analysis System <i>C.A. Brebbia, D. Danson & J. Baynham C.M. Beasy Ltd, Southampton, England</i>	141
--	-----

A Description of the BERSAFE System <i>T.K. Hellen, Central Electricity Generating Board, U.K.</i>	159
---	-----

The CASTEM Finite Element System <i>A. Combescure & A. Hoffmann, CEA-DEMT & P. Pasquet, CISI</i>	175
CA.ST.OR. : Structure Analysis Softwares on mega and micro-computers <i>M. Afzali & P. Devalan, CETIM, France</i>	187
CHALMFEM - A Package of Computer Programs for FEM-Analysis of Engineering Problems <i>N-E. Wiberg, Chalmers University of Technology, Sweden</i>	223
COMET-PR: The First Computer Implementation of the P-Version of the Finite Element Method <i>B. Szabo, Washington University, U.S.A. & A. Peano, ISMES, Italy</i>	233
COSMOS7 A Structural Analysis Finite Element Program <i>M. Lashkari & V.I. Weingarten, University of Southern California, U.S.A.</i>	245
DART - A Computer Program for the Design of Axisymmetric Reservoirs, Water Towers, Etc. <i>W.S. Doyle & A.R. Lloyd, University of Cape Town, South Africa</i>	259
DIAL Finite Element Analysis System <i>G.H. Ferguson & N.A. Cyr, Lockheed Missiles & Space Company, California, U.S.A.</i>	279
DIANA - A Comprehensive, but Flexible Finite Element System <i>R. de Borst, Ger M.A. Kusters, P. Nauta & F.C. de Witte, TNO Institute for Building Materials and Building Structures, the Netherlands</i>	299
A Finite Element Elastic Buckling Analysis for Slender Frames <i>C. Tahiani & H. Hearty, Royal Military College of Canada, Canada</i>	313
FASOR - A Program for Stress, Buckling and Vibration of Shells of Revolution <i>G.A. Cohen, Structures Research Associates, U.S.A.</i>	327
The FEGS Limited Pre - and Post - Processing Programs <i>G.A. Butlin, Fegs Limited, England</i>	351
FELCOG - An Interactive Fortran Code Based on Conjugate Gradients for the Solution of Large Sets of Finite Elements Equations <i>A.M. Perdon-Giuseppe Gambolati, University of Padova, Italy</i>	357
The FEMALE Modelling Language <i>P.A. Newton, SIA Ltd.</i>	363
FENRIS - A General Purpose Nonlinear Finite Element Program <i>P.G. Bergan, The Norwegian Institute of Technology and SINTEF, & A. Arnesen, The Norwegian VERITAS, Norway</i>	381
FIDAP - Fluid Dynamics Analysis Package <i>M.S. Engelman, Fluid Dynamics International, U.S.A.</i>	397

The Finite Element Programs FLASH 2 and STATIK <i>U. Walder, Walder & Partners, Bern & D. Green, Glasgow University, Scotland</i>	407
The HIFINEL Concept: An Adaptive F.E.M. Program Based on Hierarchical, Hermitian Finite Elements <i>V. Hoppe, T. Knudsen & S. Lassota, M.A.N. -B&W-Diesel, Denmark</i>	427
RAFTS and LAWPILE - The Development of a Foundation Analysis and Design Suite <i>L.A. Wood, Queen Mary College, London</i>	439
The LUSAS System <i>L.P.R. Lyons & D.J. Irving, Finite Element Analysis Ltd., L.H. Boswell, City University, A. Stamenkovic, Kingston Polytechnic England and S.H. Zhang, The Ministry of Communications, China</i>	461
An Overview of the MARC General Purpose Finite Element Program <i>E. Hulst, MARC Analysis Research Corporation, The Netherlands</i>	473
MBB-MAN-ICES-STRUDL <i>O. Ohtmer, MBB Munchen, Germany</i>	483
MICAS - An Interactive Minicomputer Based General Purpose Finite Element Analysis and Design System <i>L.M. Rand & S.E. Soper, The Rand Group, U.S.A.</i>	511
The Philosophy and Implementation of MODEL - A Modular Finite Element Research Code <i>D. Harrison, T.J.W. Ward & J.R. Whiteman, The Institute of Computational Mathematics, U.K.</i>	527
MODULEF : A Library of Computer Procedures for Finite Element Analysis <i>M. Bernadou, P.L. George & M. Vidrascu, INRIA, France</i>	541
MSC/NASTRAN <i>S. Horne, MacNeal-Schwendler GmbH</i>	557
The PAFEC Finite Element Analysis System <i>P.M. Wheeler, PAFEC Ltd., UK</i>	565
PATRAN - The Computational Laboratory <i>C. Hayden Hamilton, and R.S. Gallagher, PDA Engineering, U.S.A.</i>	577
A Three-Dimensional B.I.E.M. Program <i>M. Doblare & E. Alarcon, Polytechnic University, Spain</i>	595
PREFEM and SERFEM - Special Purpose Programs for Elastic Plate Bending and In-Plane Analysis of Plates <i>L. Bolteus, Gothenburg Universities Computing Centre, Sweden</i>	617
Boundary Enhancement of SAP and LISA Systems <i>Shengnian Qu, Peking University, China</i>	627

SCIA's Finite Element System on Desktop Computers <i>J.P. Rammant, SCIA S.V. Belgium</i>	639
Application of Finite Element Systems for Calculation of Fatigue Growth of Surface and Internal Cracks <i>I. Lotsberg, Det Norske Veritas, Norway</i>	659
SET - A Program Chain for Design Computations in Structural Engineering <i>H. Werner, Technical University of Munich, Germany</i>	679
The Place of a Special-Purpose Program System in a 'Multi-Purpose System World' <i>V. Svalbonas, Koppers Company Inc. U.S.A.</i>	697
New Implementations in Structural Code STDYNL <i>B.A. Ovunc, University of Southwestern Louisiana, U.S.A.</i>	713
THAFEM - A Finite Element Program for Heat Transfer Analysis <i>D. Loyd & G. Andersson, Linkoping Institute of Technology, Sweden and M. Froier, University of Lulea, Sweden</i>	721
TITUS: A General Finite Element System <i>P. Bougrelle, Framatome, France</i>	733
United Computing's Guide to the F.E. Jungle! <i>D. Churchill, United Computing Systems, UK</i>	751
The Finite Element Method in Education <i>G.D. Alford & D.H.B. Gibbs, Teesside Polytechnic, UK</i>	755