Howard D. Chiger, PE

Registered Professional Mechanical Engineer
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QUALIFICATIONS

Thirty years experience in thermal/fluid analysis and software development. Expertise in writing and using finite element/finite difference software (SINDA, FLUINT, TRASYS, NASTRAN, TMG, FloTherm, FLUENT) and graphical processors (I-DEAS) to design, analyze and correct thermal problems in civilian and military aircraft and satellites, laser/laser diode devices, power generation systems and commercial and military electronics.

EXPERIENCE

Taggart Engineering, San Diego, CA: **1993-Present**
Consulting Engineer
Self employed consulting mechanical/software engineer responsible for the preparation and performance of project proposals and customer relations.

- Performed thermal studies, developed analysis software and led vacuum verification testing for NASA, ESA and NASDA (US, European and Japanese space agencies) satellites/spacecraft and US and European military air/spacecraft.
- Led mechanical design project to create a commercial, high frequency, Q-switched microlaser, by performing thermal/structural/system/CAD analyses.
- Analyzed and tested point-to-point laser communications systems requiring outside operation in environments ranging from –40C to +60C.
- Directed thermal and optical design and testing for several generations of computer projection devices using laser, laser diode, halogen, and metal halide illumination sources.
- Developed C, C++, Fortran, Pascal, X/motif, OpenGL and and 4GL commercial/scientific/security software.

SDRC, San Diego, CA: **1985-1993**
Senior Project Engineer and Computer System Manager
Lead consulting thermal analyst and computer system/network manager of clustered VAX "mainframe" and workstation computers, SGI and HP workstations, and PC's.

- Designed and wrote computer interface programs, and performed analyses to verify the feasibility of various NASA, Japanese and European Space Agency sponsored spacecraft, as well as other land-based structures, using the SDRC I-DEAS CAE/CAD/CAM software and such analysis programs as TRASYS, SINDA, ESATAN, TMG, FLOTherm, NASTRAN and Oracle.
- Wrote system service utility and computer management, monitoring, performance and security software in C, FORTRAN, BASIC, VAX MACRO-32, DECTPU, PostScript, DCL and both Bourne and C-shell UNIX scripts.

Int'l Nuclear Energy Systems Co., San Diego, CA: **1982-1984**
Senior Heat Transfer Design Engineer
Responsible for the design, analysis and testing of water cooling systems for electrically and nuclear heated magnets for prototype nuclear fusion reactors.

- Wrote finite element/finite difference computer programs to perform integrated transient electrical/thermal-hydraulic/structural analysis of such systems, particularly noting coolant flow distribution and material temperature limits in regions of extremely high heat generation with many small coolant channels.

General Atomic Company, San Diego, CA: **1974-1981**
Senior Engineer, Heat Exchanger Department
Technical manager for solar powered heat exchanger projects; notably responsible for the thermal and structural analyses for the fabrication and testing of a high temperature (1600 °F) solar receiver for sulfuric acid decomposition in a thermochemical water splitting cycle.

- General liaison for international heat exchanger programs and cognizant engineer for two steam generator test programs performed jointly with the French Atomic Energy Commission.
- Participated in steam generator thermal and flow design analyses, and performance and boiling stability analyses for High Temperature Gas Cooled Nuclear Reactors in accordance with Section III and Code Case N-47 of the ASME Boiler and Pressure Vessel Code.

EDUCATION

MSE (Mechanical Engineering) - December, 1973, University of Michigan

BSE (Mechanical Engineering) - May, 1973, The University of Michigan
  Minor in Computer Aided Engineering and Statistics/Quality Control
  Graduated Summa Cum Laude
  Joseph Aldrich Bursely Award - Outstanding Senior Mechanical Engineer
  Tau Beta Pi, Vice President 1972-1973

LICENSES, CLEARANCES & MISCELLANEOUS

Registered Professional Mechanical Engineer, California, License #M17394
DOD Secret Clearance
Registered ODTC Technology Exporter
Reading Proficiency in French and German
Current member of the Steering Committee and Newsletter Editor of the San Diego Local
  Users Group of the Digital Equipment Computer Users' Society
Past member of the Executive Committee and Board of Directors of the American Heart
  Association, San Diego County Chapter

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PUBLICATIONS

Chiger, H.D., Geier, J.C., "Introduction to TPU Programming", Digital Equipment Computer Users' Society Spring 1993 National Symposium, Atlanta, Georgia, June 7-11, 1993.

Chiger, H.D., Geier, J.C., Esbensen, D., "Comparing and Contrasting System Management Styles", Digital Equipment Computer Users' Society Spring 1992 National Symposium, Atlanta, Georgia, May 4-8, 1992.

Chiger, H.D., Geier, J.C., "The DEC EVE Editor for EDT Users", Digital Equipment Computer Users' Society Fall 1991 National Symposium, Anaheim, California, December 2-6, 1991.

DeRyder, L.J., Chiger H.D., et al., NASA In-House Commercially Developed Space Facility (CDSF) Study Report, NASA Technical Memorandum 101586, April 8, 1989.

Baker, M., Chiger H.D. et al, "Space Station Multidisciplinary Analysis Capability -- IDEAS^2," 27th AIAA Structures, Structural Dynamics and Materials Conference, San Antonio, Texas, May 19-21, 1986.

Chiger, H.D., Gas Flow and Thermal Mixing in a Helically Wound Tube Bundle, U.S. Department of Energy Report GA-A16015, General Atomic Company, July, 1980.

Chiger, H.D., et al., "Solar Hydrogen Production Via the Sulfur Iodine Thermochemical Water Splitting Cycle," Proceedings of the Solar Thermal Test Facilities Users Association Fuels Workshop, SERI/9020-3, November, 1979, p. 155-177.

Kearney, D.W., and Chiger, H.D., "Heat Transfer Considerations in the Blanket Design of a Non-Breeding Fusion Experimental Power Reactor," Proceedings of the Sixth Symposium on Engineering Problems of Fusion Research, IEEE Publication No. 75CH1097-5-NPS, November, 1975, p. 1162-1167.

Chiger, H.D., et al., Fatigue Testing of Fort Saint Vrain Core Outlet Thermometer Penetration Internal Attachment Welds, U.S. Energy Research Development Administration Report GA-A13603, General Atomic Company, November, 1975.