

Ken Harp

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Profile

Innovation and a high degree of foresight combined with broad experience in Avionics, Marine Electronics, Telecommunications, Electronic Power Distribution Systems and Flat Panel SatCom Antennae design.

Professional Experience

Takeo Innovation, LLC, Kirkland, WA 09/2015 – Present **Owner / Mechanical Design Engineer**
Contract Engineer and consultant serving the Greater Seattle, Eastside and adjacent areas.

Kymeta Corporation, Redmond, WA 04/2016 – Present **Staff Mechanical Engineer**
First generation Ku-band flat panel antenna development for land mobile, maritime, airborne and fixed platforms. New technology mechanical research and development from initial concept to product market launch.

- Designing state-of-the-art flat panel satellite antennas to meet harsh environmental requirements.
- Thermal management systems architect and structural analyst for antenna and terminal systems.
- Technical mentor and advisor to a team of 6 mechanical engineers.

Astronics Advanced Electronic Systems, Redmond, WA 04/2008 – 09/2015 **Principal Mechanical Engineer**
Electronics packaging and electronic power distribution design, analysis and test for commercial avionics.

- Top to bottom avionics mechanical research, development and new product design.
- First “through the pipe” with LRU designs completed and tested for new development aircraft applications.
- Performed extensive analysis, design validation and environmental qualification testing and documentation.
- Developed structural, thermal, solder joint and PTH/VIA design for reliability guidelines.

Raytheon Integrated Defense Systems, Keyport, WA, 09/2006–03/2008 **Senior Mechanical Engineer**
Electronics packaging design, analysis and test for torpedo applications – Mk 54 and Mk 48 torpedoes.

- Performed thermal and dynamic response characterization testing of prototype electronics assemblies.
- Rapidly identified numerous design changes to restore a halted multimillion dollar program to production.
- Successfully performed extensive environmental qualification testing to vet the needed design changes.
- Customer approved formal EQT report without reservation and restored program production.

Northrop Grumman Space Technology, San Diego, CA, 12/2004–08/2006 **Mechanical Design Engineer II**
Electronics packaging design, analysis and test for military avionics applications - Joint Strike Fighter (F-35) CNI System and Apache Longbow (AH-64D) Joint Tactical Radio System (JTRS)

- Performed detailed structural, thermal, CTE and PTH/VIA reliability analyses of electronics systems.
- Performed extensive vibration and shock characterization testing of prototype communications systems.
- Addressed critical program risks by performing successful MIL-STD-810 qualification tests in record time.

Raytheon Integrated Defense Systems, San Diego, CA, 05/2000–11/2004 **Mechanical Systems Engineer II**
Electronics packaging design, analysis and test for military shipboard applications – USS San Antonio (LPD-17) Shipboard Wide Area Network (SWAN)

- Lead Mechanical Design Engineer responsible for the integration of COTS electronics into ruggedized network system cabinet assemblies for Navy shipboard use. Electronics assembly, electrical/fiber optic cable harness and support structure design, thermal/structural analyses and subsequent validation testing.
- Led a team in the completion of a complex drawing package within tight schedule and budget constraints.

United States Navy, San Diego, CA, 08/1990 – 08/1994 **Administrative Office Manager**
Navy veteran with two deployments. Command advanced to E5. Proven team player in an arduous environment.

Education

University of California, San Diego, B.S. Mechanical Engineering, September 2001

University of Southern California, Graduate Level Coursework; ME Analysis, EM Theory, Antenna Analysis

AREAS OF EXPERIENCE

ENGINEERING

Mechanical Design Engineering
Research & Development (R&D)
Design for Manufacturing/Assembly (DFMA)
Design to Cost (DTC)
Systems Engineering / Requirements Mgmt.
Design Verification / Environmental Qualification
New Product Development (NPD)
New Product Introduction (NPI)

DESIGN

System Level Mechanical Design
Thermal and Structural Design
Printed Wiring Boards (PWB)
Circuit Card Assemblies (CCA)
Electronics Packaging
Electronic Components
Sheet Metal Parts
Machined, Extruded and Formed Parts
Injection Molded Plastics and Foams
Electrical Connectors / Interconnects
Wiring / Cable Design (Standard, Coax, Fiber)
Power Bussing / High Current
Electro-Mechanical Design
Human Factors and Ergonomics
RF Considerations (Dk, Loss Tangent)
Electromagnetic Compatibility (EMC/EMI)
Rapid Prototyping
Custom Packaging
Legacy Design Upgrade
Test Fixture Design

ANALYSIS

Finite Element Analysis (FEA)
Thermal, Vibration, Shock, Stress & Fatigue
Computational Fluid Dynamics (CFD)
Thermal Conduction, Natural and Forced
Convection, High Altitude, Radiative Effects,
Solar Loading, High Current Applications, TEC
Solder Joint / PTH / VIA / Board Level Reliability

DOCUMENTATION

PWB and CCA Drawings
Component and Subassembly Part Drawings
Cable and Interconnect Drawings
System Block Diagrams
Assembly Drawings and BOMs
Engineering Change Requests (ECR)
Engineering Change Orders (ECO)
Full Product Data Management (PDM)

TEST

Temperature, Temperature Variation,
Vibration, Shock, Acceleration, Altitude,
Humidity, Water Proofness, Fluids Susceptibility,
Explosion Proofness, Sand & Dust, Salt Fog/Mist,
Solar Loading & UV Exposure
Design Verification Test (DVT)
Environmental Qualification Test (EQT)
Highly Accelerated Life Test & Stress Screen
(HALT/HASS), DVT & EQT Plan, Procedure &
Report Development

PRODUCTS

Avionics & Aerospace
Commercial & Industrial Electronics
Defense Electronics Systems
Marine Electronics
Ku/Ka Band Flat Panel SatCom Antennae

SOFTWARE

SolidWorks (15k+ hours)
SolidWorks Simulation
SolidWorks Flow Simulation
ANSYS Mechanical
FloTherm (Mentor Graphics)
ProEngineer (ProE)
CATIA
AutoCAD
SolidEdge
Nastran / Patran (MSC)
MS Office (Word, Excel, PowerPoint, Visio)

COMMUNICATIONS

Formal Design Reviews (PDR, CDR, TRR)
Informal Design Reviews (DFMA, DTC/S)
Internal & External Presentations
Technical Writing & Memoranda
Proposal Development

STANDARDS

RTCA DO-160	MIL-STD-810
MIL-STD-202	MIL-STD-167
MIL-S-901D	MIL-HNBK-454
MIL-HNBK-5400	IPC-SM-750
MIL-HNBK-759	IPC-D-279
IPC-TM-650	IPC-2221A
IPC-9701A	IPC-7095
IEC 60529 (IP66/IP67)	IEC 60068
ARINC 404/600	IEC 60945
ASME Y14.5 GD&T	J-STD-001