

Ignacio Sandoval | Principal Mechanical Engineer, PE

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Professional Summary:

Mr. Sandoval's specific areas of experience include CAD/CAE/CAM related to aeromechanical design, 3D design software, Finite Element Analysis, thermal/heat transfer, testing and methodology applications, materials/failure/fatigue analysis, design of engineering experiments, welding technology, composite materials, compression/injection molding, die casting, machining and programming, manufacturing, industrial inspection methods/site surveys, CMM equipment, and human factors as applied to private/public and government/US Armed Forces agencies. Inspection experience includes aerial drone systems, tracked ground combat vehicles, wind turbines, heavy industrial/processing/manufacturing equipment, process mapping, control systems, commercial/residential HVAC and refrigeration systems, fire sprinkler systems, plumbing systems, electrical systems, vehicle/EDR inspections, accident investigations, Human Factors, assisted with fire investigations related to mechanical systems, explosive gas leaks, leading and conducting joint inspections involving automobiles, accident reconstruction, major/minor appliances, supply tubing/connections, and other mechanical system subcomponents, R/D rapid prototyping, general systems troubleshooting, production SOPs, Permitting and general construction practices, FTIR, SEM, and general non-destructive testing (NDT) methods, material corrosion/failure analysis methodologies experience, HALT/HASS, statistical analysis, and engineering experiments design.

Licenses and Certifications:

Professional Engineer CA-#M32139, NV-#027890, WA-#26016985, Certified FAA sUAS Drone Pilot, #4281685, 3D-design software: Solidworks, Catia, Working model 2D/3D, Matlab, Arduino, C++, Fortran, Camp-G, FEA/CFD software, thermal imaging, Portable X-ray system setup and operation

Project Experience:

VESTA V-39-500KW Wind Turbine Fire

Supported fire loss investigation. Investigation revealed usage of non-OEM braking components that failed catastrophically causing ignition of fiberglass nacelle. Investigation included review of maintenance records, automated system data records, and scene investigation

Siemens 2.3MW-108 SWT Blade/Tower Failure

Supported investigation into failed composite turbine blades resulting from potential manufacturing/rework issues resulting in delamination cracking. Worked with owners and manufacturer to implement improved inspection procedures and monitoring of in-service units along with coordinating testing efforts with international wind turbine test experts (RPG)

Composite Engineering / Kratos Defense Systems, Sacramento, CA (Systems Integration)

Senior Systems/Project Engineer 2005-2012 Tyndall Air Force Base Subscale Aerial Targets (AFSAT) Launch Complex and Operations System redesign/upgrade and aeromechanical systems design. Launch Rail Design: Systems integration of hydraulic, pneumatic, electronics systems, structures to support drone launch operations. Drone Command and Control Systems integration, ground control structures

Ground Control Stations: set-up, system test and evaluation of ground control station antennas, receivers/transmitters, control interfaces, data links, and power supply systems. Drone system ground support equipment, pre-flight weight and balance; RATO ordinance handling/installation onto drone systems TRI-60 turbojet engine evaluation. Turbojet responsibilities included supervision of production engine test runs of target assemblies, noting operational characteristics and meeting target operational test threshold values. Drone system test and diagnostic equipment knowledge. Deployment from shore to ship, systems set-up and installation.

Qualimetrics /All Weather Inc, Sacramento, CA

Senior Design/Project Engineer, 2000-2002, FAA Certified AWOS (Automated Weather Observing System) /RWIS (Roadway Information Systems)/general weather systems design/installation/documentation/Bill of Materials/manufacturing support. Supported design, integration, site survey, and installation efforts related to AWOS/RWIS units. Specific experience with system sensor integration involving system structures, electronics cabling, power supplies for sensors and processing units that measure, analyze, and report real-time, airport/highway-specific meteorological data via VHF radio transmission for broadcasting weather reports directly to pilots, ground control stations, or system feeds to internet, telephone lines, or local airport/roadway information networks for data distribution.

C&K Systems/Honeywell Security Products, Folsom CA

Senior Design/Project Engineer 1998-2000 home security systems mechanical product development and design of injection molded polymeric housings and other machined components

FMC Ground Systems Division, San Jose, CA

Senior/Project Engineer, 1993-1997 ground combat vehicle systems development, design, and testing (Bradley M2/M3, M113, Turret Systems/NBC)

Court Qualifications/ Depositions:

Depositions: JC Diversified, Selma, CA, Case #702059721769-001; Mansfield Plumbing Products LLC #CL18-270, VA; Beverly Garrido Mediation-ACM #42002454 Mediation (engineering support)-\$95K award

Specialized Education:

Self-Certified X-ray Technician with RTR-4 Portable Digital X-ray System/XRS-3 X-ray source 2020

Certified Vehicle EDR Technician (black box data retrieval) 2019

United States Army Material Command Automotive Suspensions (AMCP 706-356) standards training 1994/NATO STANAG 2154, 2805, 2832 training on Combat Vehicle movement by road, floating/flotation, and railway requirements/design, 1994

Geometric Dimensioning and Tolerancing (ASME/ANSI Y14.5) 1992

Education:

Masters of Science, Mechanical Engineering, California State University at Sacramento, 2005 (emphasis on mechanical design, FEA, manufacturing, and heat transfer)

Bachelors of Science, Mechanical Engineering, University of California at Davis, 1992

Aerospace ISO-9001 trained 2010 (Composite Engineering-Kratos Defense Systems)

Affiliations:

American Society of Mechanical Engineering/American Society of Automotive Engineering/American Institute of Aeronautics and Astronautics/Society of Hispanic Professional Engineers

Courses Instructed/ Guest Lecturer:

Subrogation Training for Adjusters (Focus on Mechanical Systems and associated evidence, licensed to teach and offer insurance credit in CA/NV/TX/FL)-2023 NASP Webinar Presenter-car fire investigation

CSAA Insurance Forensic Overview-Subrogation Support-February 2022

Engineering 25 Professional Practice, University of the Pacific 2012-2015

Mechanical Engineering Technology 173- Computer Applications in Mechanical Engineering Technology CSUS 2005

Mechanical Systems Modeling and Feedback Systems Design, ME 171-172, mechanical control systems dynamic plant equation definitions using manual/computer derived dynamic modeling techniques and systems control stability analysis using computer simulation. CSUS 2019-Present

Publications and Presentations:

Prof. Jose Granda, Graduate Assistant, Ignacio Sandoval, Morphing Structural Concepts Evaluation Criteria Using Dimensionless Analysis and Computer Simulation", American Institute of Aerospace and Astronautics Conference 2005, paper #2005-2111.

Multiple inter-company peer reviewed technical articles and over one thousand forensic engineering reports

Honors and Awards:

Langley Aerospace Research and Summer Scholars Program (LARSS) 2004, selected via competitive national selection process to work at the NASA Langley Research Center for the summer at the structural dynamics branch